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Godina LXXVI



NAUTIČKI GODIŠNJAK

— ZA —
2018
— GODINU —

UPRAVA ZA SIGURNOST PLOVIDBE REPUBLIKE SRBIJE
ZEMUN – BEOGRAD SRBIJA

UKUPNA POPRAVKA VISINE

PRVA POPRAVKA VISINE ZA SUNCE, ZVEZDE I PLANETE		
Opažena visina	☉	★ i planeta
	refrakcija paralaksa radijus = 16'	refrakcija
6 30	+ 8.2	- 7.9
6 40	8.4	7.7
6 50	8.6	7.6
7 00	8.7	7.4
7 10	8.9	7.2
7 20	+ 9.0	- 7.1
7 30	9.2	7.0
7 40	9.3	6.8
7 50	9.5	6.7
8 00	9.6	6.6
8 10	+ 9.7	- 6.4
8 20	9.8	6.3
8 30	10.0	6.2
8 40	10.1	6.1
8 50	10.2	6.0
9 00	+ 10.3	- 5.9
9 20	10.5	5.7
9 40	10.6	5.5
10 00	10.8	5.3
10 20	11.0	5.2
10 40	+ 11.2	- 5.0
11 00	11.3	4.9
11 30	11.5	4.7
12 00	11.7	4.5
12 30	11.9	4.3
13 00	+ 12.0	- 4.1
13 30	12.2	4.0
14 00	12.3	3.8
15 00	12.6	3.6
16 00	12.8	3.4
17 00	+ 13.0	- 3.2
18 00	13.2	3.0
19 00	13.3	2.8
20 00	13.5	2.6
22 00	13.7	2.4
24 00	+ 14.0	- 2.2
26 00	14.1	2.0
28 00	14.3	1.8
30 00	14.4	1.7
32 00	14.6	1.6
34 00	+ 14.7	- 1.4
36 00	14.8	1.3
38 00	14.9	1.3
40 00	15.0	1.2
50 00	15.3	0.8
60 00	+ 15.5	- 0.6
70 00	15.7	0.4
80 00	15.8	0.2
90 00	16.0	0.0

DRUGA POPRAVKA VISINE ZA VISINU OKA			
Visina oka	depresija	Visina oka	depresija
metara	/	metara	/
0.5	- 1.3	18	- 7.5
1.0	1.8	19	7.7
1.5	2.2	20	7.9
2.0	2.5	21	8.1
8.5	2.8	22	8.3
3.0	- 3.1	23	- 8.5
3.5	3.3	24	8.7
4.0	3.5	25	8.9
4.5	3.8	26	9.0
5.0	3.9	27	9.2
5.5	- 4.1	28	- 9.4
6.0	4.3	29	9.6
6.5	4.5	30	9.7
7.0	4.7	50	12.6
7.5	4.9	75	15.4
8.0	- 5.0	100	- 17.7
8.5	5.2	125	19.9
9.0	5.3	150	21.8
9.5	5.4	175	23.5
10.0	5.6	200	25.1
11.0	- 5.9	250	- 28.1
12.0	6.1	300	30.8
13.0	6.4	350	33.2
14.0	6.5	400	35.5
15.0	6.9	450	37.7
16.0	- 7.1	500	- 39.7
17.0	7.3	600	43.5

TREĆA POPRAVKA VISINE ZA VISINU PLANETE S OBZIROM NA PARALAKSU						
Opažena visina planete	Horizontska paralaksa					
	/	/	/	/	/	/
0	/	/	/	/	/	/
10	0.1	0.2	0.3	0.4	0.5	0.6
30	0.1	0.2	0.3	0.3	0.4	0.5
50	0.1	0.1	0.2	0.3	0.3	0.4
70	0.0	0.1	0.1	0.2	0.2	0.2

TREĆA POPRAVKA VISINE ZBOG PARALAKSE I PROMENE RADIJUSA SUNCA												
	Jan.	Feb.	Mart	Apr.	Maj	Jun	Jul	Avg.	Sep.	Okt.	Nov.	Dec.
od 1. do 15.	/	/	/	/	/	/	/	/	/	/	/	/
od 16. do kraja	+0.3	+0.2	+0.1	0.0	-0.1	-0.2	-0.2	-0.2	-0.1	+0.1	+0.2	+0.3
	+0.3	+0.2	+0.1	-0.1	-0.2	-0.2	-0.2	-0.2	0.0	+0.1	+0.2	+0.3

☉ Za gornji rub Sunca korekcija = tablična vrednost manje dvostruki radijus (2r)

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NAUTIČKI GODIŠNJAK

— ZA —
2018
— GODINU —



UPRAVA ZA SIGURNOST PLOVIDBE REPUBLIKE SRBIJE
STEVO ŠEGAN, ZEMUN – BEOGRAD SRBIJA



PRVO ELEKTRONSKO IZDANJE

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MARŠALA TITA 1, 11080 ZEMUN**



PRVO ELEKTRONSKO IZDANJE

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var = promenljivi deo Nautičkog godišnjaka
const = stalni deo Nautičkog godišnjaka

PREDGOVOR

Ovo je četvrti broj NAUTIČKOG GODIŠNJAKA koji izdaje Stevo Šegan i odnosi se na 2018. godinu. To je sedamdesetišesti broj u ukupnom nizu izdanja ove publikacije na našim prostorima.

Za sedamdesetišest brojeva Nautičkog godišnjaka, do sada, možemo zahvaliti nekolikim armijama, koje su dale svoj doprinos da ova publikacija bude 42 godine prisutna među pomorcima Kraljevine Jugoslavije, Socijalističke Jugoslavije i njihovih pravnih i bespravnih naslednika, a 34 godine je period u kojem je Stevo Šegan računarski pripremio preostala 34 broja.

Put je išao preko preuzimanja ruskih Nautičkih godišnjaka, koji su prevedeni na naš jezik, kada su ručno ukucavane brojevnosti efemerida, tablica popravki i svih ostalih delova Godišnjaka, do današnje računarske obrade podataka i elektronskih izdanja.

Od 1983. godine, zahvaljujući prof. dr Stevi Šeganu, počelo se sa računarskom obradom Nautičkog godišnjaka.

Algoritme i softver za potrebna izračunavanja, kao i računarsku pripremu za štampu i za ovaj broj, kao i za prethodnih tridesettri, izvršio je prof. dr Stevo Šegan.

Svi podaci potrebni za navigaciju izračunati su polazeći od heliocentričnih pravougljih koordinata nebeskih tela za standardnu epohu J2000.0, a izračunavanja su usklađena sa preporukama i rešenjima Međunarodne astronomske unije (IAU 1976–1983 i XXIV GA 2000). Takvim postupkom osigurana je maksimalna tačnost u današnje vreme.

Podaci u Nautičkom godišnjaku izračunati su i priređeni isključivo za potrebe astronomske navigacije.

Godišnjak se sastoji iz dva dela—*efemeridskog* (var) i *stalnog* (const). Efemeridski deo sadrži efemeride Sunca, Meseca, četiri velike planete (Venere, Marsa, Jupitera i Saturna) i pedeset četiri najsjajnije (nautičke) zvezde za celu godinu i tablice za određivanje geografske širine pomoću visine i azimuta Severnjače. Stalni deo Godišnjaka sadrži interpolacione i pomoćne tablice.

Svi vremenski podaci u Nautičkom godišnjaku odnose se na Grinički meridijan. Prema tome, argument u svim efemeridama je univerzalno vreme, koje se računa od ponoći (00^h.00).

Tačnost astronomskih podataka data je u ugaonoj meri od jedne desetine minuta, u vremenskoj skali od jedne sekunde, odnosno, gde je to bilo potrebno, do jedne desetine sekunde. Podaci izračunati u interpolacionim tablicama imaju približno istu tačnost.

Izbor i sastav efemerida ostao je neizmenjen i u ovom izdanju. Raspored efemerida je, kao i ranije, po datumima, po dva na svakoj stranici. Efemeride zvezda i tablice za izračunavanje geografske širine pomoću visine i azimuta Severnjače izdvojene su posebno. Interpolacione tablice, zajedničke za ispravke časovnog ugla i deklinacije, takođe su date posebno.

Sve primedbe, koje smo dobili nakon izlaženja prethodnih brojeva, ukoliko se pokazalo da su tačne, uvažili smo.

Molimo da nam i u buduće dostavite eventualne i opravdane primedbe i ispravke, koje ćemo, sa punim uvažavanjem, razmotriti.

STEVO ŠEGAN

ASTRONOMSKI ZNACI, SKRAĆENICE I KONSTANTE

NAŠI I ENGLJSKI NAZIVI ZA ZNAKOVE Domestic and English Names for Symbols

☉ ... Sunce	The Sun
☾ ... Mesec	The Moon
★ ... Zvezda	A Star
♀ ... Venera	Venus
♂ ... Mars	Mars
♃ ... Jupiter	Jupiter
♄ ... Saturn	Saturn
♈ ... Prolećna tačka	First Point of Aries
● ... Mlad Mesec	New Moon
◐ ... Prva četvrt	First Quarter
◑ ... Pun Mesec	Full Moon
◓ ... Poslednja četvrt	Last Quarter
° ... Stepen	Degree
' ... Minut (luka)	Minute of Arc
" ... Sekunda (luka)	Second of Arc

ZODIJAČKI ZNACI I SAZVEŽĐA

♈ ... Ovan	Aries
♉ ... Bik	Taurus
♊ ... Blizanci	Gemini
♋ ... Rak	Cancer
♌ ... Lav	Leo
♍ ... Devojka	Virgo
♎ ... Vaga	Libra
♏ ... Škorpija	Scorpius
♐ ... Strelac	Sagittarius
♑ ... Jarac	Capricornus
♒ ... Vodolija	Aquarius
♓ ... Ribe	Pisces
♈ ... Prolećna tačka	
♏ ... Jesenja tačka	

OPŠTI ASTRONOMSKI ZNACI

☉ ... Sunce	♅ ... Uran
☾ ... Mesec	♆ ... Neptun
☿ ... Merkur	♇ ... Pluton
♀ ... Venera	☄ ... Kometa
♁ ... Zemlja	● ... Mlad Mesec
♂ ... Mars	◐ ... Prva četvrt
♃ ... Jupiter	◑ ... Pun Mesec
♄ ... Saturn	◓ ... Poslednja četvrt

SKRAĆENICE

d ... dan	} vremena
h ... čas	
min ... minut	
s ... sekunda	
° ... stepen	} ugla
' ... minut	
" ... sekunda	
+	{ severne geografske širine i deklinacije; istočne geografske dužine
-	{ južne geografske širine i deklinacije; zapadne geografske dužine

OSNOVNE ASTRONOMSKE KONSTANTE IAU(1976) XXIV(2000)

DEFINICIONE KONSTANTE

Gausova gravitaciona konstanta $k = 0.017\ 202\ 098\ 95$
Brzina svetlosti $c = 299\ 792\ 458\ m/s$

OSNOVNE KONSTANTE

Svetlosno vreme $\tau_A = 499.004\ 786\ s$
Ekvatorski poluprečnik Zemlje $a_e = 6\ 378\ 137\ m$
Dinamički faktor oblika Zemlje $J_2 = 0.001\ 082\ 64$
Geocentrična gravitaciona konstanta $GE = 3.986\ 004 \times 10^{14}\ m^3/s^2$
Konstanta gravitacije $G = 6.673 \times 10^{-11}\ m^3/kg\ s^2$
Masa Meseca u jedinicama mase Zemlje $\mu = 0.012\ 300\ 04$
Opšta precesija u longitudi,
za Julijansko stoleće $\rho = 5029''.7970$
Nagib ekliptike $\epsilon = 23^\circ 26' 21''.448$

IZVEDENE KONSTANTE

Konstanta nutacije $N = 9''.2052$
Jedinica rastojanja (astronomska jed.) $c\tau_A = A = 1.495\ 978\ 71 \times 10^{11}\ m$
Paralaksa Sunca $\arcsin(a_e/A) = \pi_\odot = 8''.794\ 143$
Konstanta aberacije $\alpha = 20''.495\ 51$
Faktor Zemljine spljoštenosti $f = 0.003\ 352\ 82 = 1/298.256$
Heliocentrična gravitaciona konstanta $GS = 1.327\ 124\ 42 \times 10^{20}\ m^3/s^2$
Masa Sunca u jedinicama mase Zemlje $GS/GE = S/E = 332\ 946.0$
Masa Sunca $GS/G = S = 1.9884 \times 10^{30}\ kg$
Relativne mase planeta:
Merkur 6023 600
Venera 408 523.7
Zemlja + Mesec 328 900.6
Mars 3098 708
Jupiter 1 047.349
Saturn 3 497.9
Uran 22 903
Neptun 19 412
Pluton 135 200 000

NAŠE I ENGLLESKE SKRAĆENICE I KLJUČNE REČI

Domestic and English Abbreviations and Key Words

<p>UT Univerzalno (svetsko) vreme</p> <p>T_p Griničko pravo vreme</p> <p>T_z Griničko zvezdano vreme</p> <p>T_m Srednje vreme gornjeg prolaza kroz meridijan u Griniču</p> <p>T_m Srednje vreme donjeg prolaza kroz meridijan u Griniču</p> <p>t_s Mesno srednje vreme</p> <p>t_p Mesno pravo vreme</p> <p>t_z Mesno zvezdano vreme</p> <p>t_x Zonsko vreme</p> <p>t_{zv} Zvanično vreme</p> <p>e Jednačina vremena</p> <p>S Grinički časovni ugao</p> <p>s Mesni časovni ugao</p> <p>δ Deklinacija</p> <p>α Rektascenzija</p> <p>(360° - α) Surektascenzija</p> <p>γ Prolećna tačka</p> <p>π Horizontska paralaksa</p> <p>φ Geografska širina</p> <p>λ Geografska dužina</p> <p>r Poluprečnik</p> <p>Pl. Planete</p> <p>Br. Broj</p> <p>Vel. Veličina</p> <p>d Dan</p> <p>h Čas</p> <p>min Minut</p> <p>s Sekunda</p>	<p>UT Universal Time</p> <p>GAT Greenwich Apparent Time</p> <p>GST Greenwich Sidereal Time</p> <p>T_U Greenwich Mean Time of the Upper Transit on the Meridian of Greenwich</p> <p>T_L Greenwich Mean Time of the Lower Transit on the Meridian of Greenwich</p> <p>LMT Local Mean Time</p> <p>LAT Local Apparent Time</p> <p>LST Local Sidereal Time</p> <p>ZT Zone Time</p> <p>LCT Local Civil Time</p> <p>Eq.T. Equation of Time (App.-Mean)</p> <p>GHA Greenwich Hour Angle</p> <p>LHA Local Hour Angle, Meridian Angle</p> <p>Dec. Declination</p> <p>RA Right Ascension</p> <p>SHA Sidereal Hour Angle</p> <p>γ First Point of Aries</p> <p>H.P. Horizontal Parallax</p> <p>Lat. Latitude</p> <p>Long. Longitude</p> <p>SD Semidiameter</p> <p>Pl. Planets</p> <p>No. Number</p> <p>Mag. Magnitude</p> <p>d Day</p> <p>h Hour</p> <p>min Minute of Time</p> <p>s Second of Time</p>
---	--

Pregled zvezda	Review of Selected Stars
Prividni položaji zvezda	Apparent Places of Selected Stars
Popravka časovnog ugla	Increment to GHA
Druga popravka za časovni ugao i deklinaciju	Correction to GHA and Declination
Vreme prolaza zvezda	Upper Transit of Stars at Greenwich
Popravka	Correction
Tablice za određivanje geografske širine i azimuta pomoću Severnjače	Latitude and Azimuth by Polaris
Interpolacione tablice	Interpolation Tables
Izlaz, zalaz	Rise, Set
Trajanje sumraka	Twilight Duration
Građanski	Civil
Astronomski	Astronomic
Mesečeve mene	Moon Phases
Starost Meseca	Moon Age
Perigej	Perigee
Apogej	Apogee

PODACI O MESECU I POČETKU GODIŠNJIH DOBA

MESEČEVE MENE																										
mesec	MLAD MESEC				PRVA ČETVRT				PUN MESEC				POSLEDNJA ČETVRT				mesec									
	●		●		●		●		○		○		●		●											
	dan	h	min	dan	h	min	dan	h	min	dan	h	min	dan	h	min	dan		h	min							
Januar				17	2	17				24	22	20	2	2	24	31	13	27				8	22	25	Januar	
Februar				15	21	05				23	8	09											7	15	54	Februar
Mart				17	13	12				24	15	35	2	0	51	31	12	37					9	11	20	Mart
April				16	1	57				22	21	46				30	0	58					8	7	18	April
Maj				15	11	48				22	3	49				29	14	20					8	2	09	Maj
Jun				13	19	43				20	10	51				28	4	53					6	18	32	Jun
Jul				13	2	48				19	19	52				27	20	21					6	7	51	Jul
Avgust				11	9	58				18	7	49				26	11	56					4	18	18	Avgust
Septembar				9	18	01				16	23	15				25	2	53					3	2	37	Septembar
Oktober				9	3	47				16	18	02				24	16	45	31	16	40		2	9	45	Oktober
Novembar				7	16	02				15	14	54				23	5	39	30	0	19				Novembar	
Decembar				7	7	20				15	11	49				22	17	49	29	9	34				Decembar	

PERIGEJ I APOGEJ MESECA																
mesec	PERIGEJ					APOGEJ				mesec						
	dan	h	min	dan		h	min	dan	h		min	dan	h	min		
Januar	1	21	54.0	30	9	54.0				15	2	10.0			Januar	
Februar				27	14	48.0				11	14	16.0			Februar	
Mart				26	17	17.0				11	9	13.0			Mart	
April				20	14	44.0				8	5	32.0			April	
Maj				17	21	06.0				6	0	35.0			Maj	
Jun				14	23	55.0				2	16	34.0	30	2	43.0	Jun
Jul				13	8	28.0							27	5	44.0	Jul
Avgust				10	18	05.0							23	11	23.0	Avgust
Septembar				8	1	21.0							20	0	54.0	Septembar
Oktober	31	20	05.0	5	22	29.0							17	19	16.0	Oktober
Novembar	26	12	10.0										14	15	57.0	Novembar
Decembar	24	9	52.0										12	12	25.0	Decembar

VIDLJIVOST PLANETA												
Osenčeni deo dijagrama pokazuje kada je planeta nevidljiva												
Planeta	Jan.	Feb.	Mart	Apr.	Maj	Jun	Jul	Avg.	Sep.	Okt.	Nov.	Dec.
♀ Venera	28. II									16. X	1. XI	
♂ Mars												
♃ Jupiter										12. XI	11. XII	
♄ Saturn											20. XII	

POČECI GODIŠNJIH DOBA			
PROLEĆE	LETO	JESEN	ZIMA
20. mart u 16 ^h 15 ^m 0	21. jun u 10 ^h 7 ^m 0	23. septembar u 1 ^h 54 ^m 0	21. decembar u 22 ^h 23 ^m 0

POMRAČENJA SUNCA I MESECA u 2018. godini

DESIĆE SE UKUPNO PET POMRAČENJA:
TRI DELIMIČNA POMRAČENJA SUNCA
DVA POTPUNA POMRAČENJA MESECA

1.	31. JANUAR	POTPUNO POMRAČENJE MESECA	univerzalno (svetsko) vreme dan h min
•	→	ULAZAK MESECA U POLUSENKU	31 10 49.7
•••	←	PRVI KONTAKT SA SENKOM	31 11 48.1
••••	↔	SREDINA POMRAČENJA	31 13 29.8
•••	←	POSLEDNJI KONTAKT SA SENKOM	31 15 11.5
•	←	IZLAZAK MESECA IZ POLUSENKE	31 16 9.9
4.	15. FEBRUAR	DELIMIČNO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
•	→	POČETAK POMRAČENJA	15 18 55.8
••••	↔	SREDINA POMRAČENJA	15 20 51.3
•	←	KRAJ POMRAČENJA	15 22 47.1
		VIDLJIVOST: JUŽNA AMERIKA, ANTARKTIK	
4.	13. JUL	DELIMIČNO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
•	→	POČETAK POMRAČENJA	13 1 48.3
••••	↔	SREDINA POMRAČENJA	13 2 9.4
•	←	KRAJ POMRAČENJA	13 4 13.7
		VIDLJIVOST: JUŽNA AUSTRALIJA, DEO ANTARKTIKA	
1.	27. JUL	POTPUNO POMRAČENJE MESECA	univerzalno (svetsko) vreme dan h min
•	→	ULAZAK MESECA U POLUSENKU	27 17 13.0
•••	←	PRVI KONTAKT SA SENKOM	27 18 24.1
••••	↔	SREDINA POMRAČENJA	27 20 21.7
•••	←	POSLEDNJI KONTAKT SA SENKOM	27 22 19.3
•	←	IZLAZAK MESECA IZ POLUSENKE	27 23 30.3
4.	11. AVGUST	DELIMIČNO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
•	→	POČETAK POMRAČENJA	11 8 2.0
••••	↔	SREDINA POMRAČENJA	11 9 46.3
•	←	KRAJ POMRAČENJA	11 11 30.7
		VIDLJIVOST: KANADA, GRENLAND, SKANDINAVIJA, RUSIJA, KINA, MONGOLIJA	

KALENDAR

za prostu 2018. godinu

JANUAR				FEBRUAR				MART				APRIL				MAJ				JUN			
Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum
			245				245				245				245				245				245
PO	1	1	8119.5	ČE	1	32	8150.5	ČE	1	60	8178.5	NE13	1	91	8209.5	UT	1	121	8239.5	PE	1	152	8270.5
UT	2	2	8120.5	PE	2	33	8151.5	PE	2	61	8179.5	PO	2	92	8210.5	SR	2	122	8240.5	SU	2	153	8271.5
SR	3	3	8121.5	SU	3	34	8152.5	SU	3	62	8180.5	UT	3	93	8211.5	ČE	3	123	8241.5	NE23	3	154	8272.5
ČE	4	4	8122.5	NE5	4	35	8153.5	NE9	4	63	8181.5	SR	4	94	8212.5	PE	4	124	8242.5	PO	4	155	8273.5
PE	5	5	8123.5	PO	5	36	8154.5	PO	5	64	8182.5	ČE	5	95	8213.5	SU	5	125	8243.5	UT	5	156	8274.5
SU	6	6	8124.5	UT	6	37	8155.5	UT	6	65	8183.5	PE	6	96	8214.5	NE18	6	126	8244.5	SR	6	157	8275.5
NE1	7	7	8125.5	SR	7	38	8156.5	SR	7	66	8184.5	SU	7	97	8215.5	PO	7	127	8245.5	ČE	7	158	8276.5
PO	8	8	8126.5	PE	8	39	8157.5	ČE	8	67	8185.5	NE14	8	98	8216.5	UT	8	128	8246.5	PE	8	159	8277.5
UT	9	9	8127.5	ČE	9	40	8158.5	PE	9	68	8186.5	PO	9	99	8217.5	SR	9	129	8247.5	SU	9	160	8278.5
SR	10	10	8128.5	SU	10	41	8159.5	SU	10	69	8187.5	UT	10	100	8218.5	ČE	10	130	8248.5	NE23	10	161	8279.5
ČE	11	11	8129.5	NE6	11	42	8160.5	NE10	11	70	8188.5	SR	11	101	8219.5	PE	11	131	8249.5	PO	11	162	8280.5
PE	12	12	8130.5	PO	12	43	8161.5	PO	12	71	8189.5	ČE	12	102	8220.5	SU	12	132	8250.5	UT	12	163	8281.5
SU	13	13	8131.5	UT	13	44	8162.5	UT	13	72	8190.5	PE	13	103	8221.5	NE19	13	133	8251.5	SR	13	164	8282.5
NE2	14	14	8132.5	SR	14	45	8163.5	SR	14	73	8191.5	SU	14	104	8222.5	PO	14	134	8252.5	ČE	14	165	8283.5
PO	15	15	8133.5	ČE	15	46	8164.5	ČE	15	74	8192.5	NE15	15	105	8223.5	UT	15	135	8253.5	PE	15	166	8284.5
UT	16	16	8134.5	PE	16	47	8165.5	PE	16	75	8193.5	PO	16	106	8224.5	SR	16	136	8254.5	SU	16	167	8285.5
SR	17	17	8135.5	SU	17	48	8166.5	SU	17	76	8194.5	UT	17	107	8225.5	ČE	17	137	8255.5	NE24	17	168	8286.5
ČE	18	18	8136.5	NE7	18	49	8167.5	NE11	18	77	8195.5	SR	18	108	8226.5	PE	18	138	8256.5	PO	18	169	8287.5
PE	19	19	8137.5	PO	19	50	8168.5	PO	19	78	8196.5	ČE	19	109	8227.5	SU	19	139	8257.5	UT	19	170	8288.5
SU	20	20	8138.5	UT	20	51	8169.5	UT	20	79	8197.5	PE	20	110	8228.5	NE20	20	140	8258.5	SR	20	171	8289.5
NE3	21	21	8139.5	SR	21	52	8170.5	SR	21	80	8198.5	SU	21	111	8229.5	PO	21	141	8259.5	ČE	21	172	8290.5
PO	22	22	8140.5	ČE	22	53	8171.5	ČE	22	81	8199.5	NE16	22	112	8230.5	UT	22	142	8260.5	PE	22	173	8291.5
UT	23	23	8141.5	PE	23	54	8172.5	PE	23	82	8200.5	PO	23	113	8231.5	SR	23	143	8261.5	SU	23	174	8292.5
SR	24	24	8142.5	SU	24	55	8173.5	SU	24	83	8201.5	UT	24	114	8232.5	ČE	24	144	8262.5	NE25	24	175	8293.5
ČE	25	25	8143.5	NE8	25	56	8174.5	NE12	25	84	8202.5	SR	25	115	8233.5	PE	25	145	8263.5	PO	25	176	8294.5
PE	26	26	8144.5	PO	26	57	8175.5	PO	26	85	8203.5	ČE	26	116	8234.5	SU	26	146	8264.5	UT	26	177	8295.5
SU	27	27	8145.5	UT	27	58	8176.5	UT	27	86	8204.5	PE	27	117	8235.5	NE21	27	147	8265.5	SR	27	178	8296.5
NE4	28	28	8146.5	SR	28	59	8177.5	SR	28	87	8205.5	SU	28	118	8236.5	PO	28	148	8266.5	ČE	28	179	8297.5
PO	29	29	8147.5					ČE	29	88	8206.5	NE17	29	119	8237.5	UT	29	149	8267.5	PE	29	180	8298.5
UT	30	30	8148.5					PE	30	89	8207.5	PO	30	120	8238.5	SR	30	150	8268.5	SU	30	181	8299.5
SR	31	31	8149.5					SU	31	90	8208.5					ČE	31	151	8269.5				

JUL				AVGUST				SEPTEMBAR				OKTOBAR				NOVEMBAR				DECEMBAR			
Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum	Dan u sed.	Dan u mes.	Dan u god.	Julijanski datum
			245				245				245				245				245				245
NE26	1	182	8300.5	SR	1	213	8331.5	SU	1	244	8362.5	PO	1	274	8392.5	ČE	1	305	8423.5	SU	1	335	8453.5
PO	2	183	8301.5	ČE	2	214	8332.5	PO	2	245	8363.5	UT	2	275	8393.5	PE	2	306	8424.5	NE48	2	336	8454.5
UT	3	184	8302.5	PE	3	215	8333.5	PO	3	246	8364.5	SR	3	276	8394.5	SU	3	307	8425.5	PO	3	337	8455.5
SR	4	185	8303.5	SU	4	216	8334.5	UT	4	247	8365.5	ČE	4	277	8395.5	NE44	4	308	8426.5	UT	4	338	8456.5
ČE	5	186	8304.5	NE31	5	217	8335.5	SR	5	248	8366.5	PE	5	278	8396.5	PO	5	309	8427.5	SR	5	339	8457.5
PE	6	187	8305.5	PO	6	218	8336.5	ČE	6	249	8367.5	SU	6	279	8397.5	UT	6	310	8428.5	ČE	6	340	8458.5
SU	7	188	8306.5	UT	7	219	8337.5	PE	7	250	8368.5	NE40	7	280	8398.5	SR	7	311	8429.5	PE	7	341	8459.5
NE27	8	189	8307.5	SR	8	220	8338.5	SU	8	251	8369.5	PO	8	281	8399.5	ČE	8	312	8430.5	SU	8	342	8460.5
PO	9	190	8308.5	ČE	9	221	8339.5	NE36	9	252	8370.5	UT	9	282	8400.5	PE	9	313	8431.5	NE49	9	343	8461.5
UT	10	191	8309.5	PE	10	222	8340.5	PO	10	253	8371.5	SR	10	283	8401.5	SU	10	314	8432.5	PO	10	344	8462.5
SR	11	192	8310.5	SU	11	223	8341.5	UT	11	254	8372.5	ČE	11	284	8402.5	NE45	11	315	8433.5	UT	11	345	8463.5
ČE	12	193	8311.5	NE32	12	224	8342.5	SR	12	255	8373.5	PE	12	285	8403.5	PO	12	316	8434.5	SR	12	346	8464.5
PE	13	194	8312.5	PO	13	225	8343.5	ČE	13	256	8374.5	SU	13	286	8404.5	UT	13	317	8435.5	ČE	13	347	8465.5
SU	14	195	8313.5	UT	14	226	8344.5	PE	14	257	8375.5	NE41	14	287	8405.5	SR	14	318	8436.5	PE	14	348	8466.5
NE28	15	196	8314.5	SR	15	227	8345.5	SU	15	258	8376.5	PO	15	288	8406.5	ČE	15	319	8437.5	SU	15	349	8467.5
PO	16	197	8315.5	ČE	16	228	8346.5	NE37	16	259	8377.5	UT	16	289	8407.5	PE	16	320	8438.5	NE50	16	350	8468.5
UT	17	198	8316.5	PE	17	229	8347.5	PO	17	260	8378.5	SR	17	290	8408.5	SU	17	321	8439.5	PO	17	351	8469.5
SR	18	199	8317.5	SU	18	230	8348.5	UT	18	261	8379.5	ČE	18	291	8409.5	NE46	18	322	8440.5	UT	18	352	8470.5
ČE	19	200	8318.5	NE33	19	231	8349.5	SR	19	262	8380.5	PE	19	292	8410.5	PO	19	323	8441.5	SR	19	353	8471.5
PE	20	201	8319.5	PO	20	232	8350.5	ČE	20	263	8381.5	SU	20	293	8411.5	UT	20	324	8442.5	ČE	20	354	8472.5
SU	21	202	8320.5	UT	21	233	8351.5	PE	21	264	8382.5	NE42	21	294	8412.5	SR	21	325	8443.5	PE	21	355	8473.5
NE29	22	203	8321.5	SR	22	234	8352.5	SU	22	265	8383.5	PO	22	295	8413.5	ČE	22	326	8444.5	SU	22	356	8474.5
PO	23	204	8322.5	ČE	23	235	8353.5	NE38	23	266	8384.5	UT	23	296	8414.5	PE	23	327	8445.5	NE51	23	357	8475.5
UT	24	205	8323.5	PE	24	236	8354.5	PO	24	267	8385.5	SR	24	297	8415.5	SU	24	328	8446.5	PO	24	358	8476.5
SR	25	206	8324.5	SU	25	237	8355.5	UT	25	268	8386.5	ČE	25	298	8416.5	NE47	25	329	8447.5	UT	25	35	



Efemeride

*SUNCA, MESECA, VENERE,
MARSA, JUPITERA I SATURNA*

1. JANUAR

2018.

PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	10.0	-23	1.1	100	35.7	181	17.6	-23	37.9	238	37.1	-15	13.7	
2	209	9.4	-23	.7	130	40.6	211	15.6	-23	37.6	268	39.0	-15	14.7	
4	239	8.9	-23	.3	160	45.6	241	13.7	-23	37.4	298	40.8	-15	15.6	
6	269	8.3	-22	59.9	190	50.5	271	11.8	-23	37.2	328	42.7	-15	16.6	
8	299	7.7	-22	59.5	220	55.4	301	9.8	-23	36.9	358	44.5	-15	17.5	
10	329	7.1	-22	59.1	251	.3	331	7.9	-23	36.7	28	46.4	-15	18.5	
12	359	6.5	-22	58.7	281	5.3	1	5.9	-23	36.5	58	48.2	-15	19.4	
14	29	5.9	-22	58.3	311	10.2	31	4.0	-23	36.2	88	50.1	-15	20.4	
16	59	5.3	-22	57.8	341	15.1	61	2.1	-23	36.0	118	51.9	-15	21.3	
18	89	4.7	-22	57.4	11	20.1	91	.1	-23	35.7	148	53.8	-15	22.3	
20	119	4.2	-22	57.0	41	25.0	120	58.2	-23	35.4	178	55.6	-15	23.2	
22	149	3.6	-22	56.5	71	29.9	150	56.3	-23	35.2	208	57.5	-15	24.1	
Δ		-3		2				-10		1			9		-5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	15 5	0 57	2 44	14 60	2.8	7 47	2.8
55	8 25	15 42	0 45	2 17	15 31	2.7	7 15	2.8
50	7 59	16 9	0 38	1 59	15 55	2.7	6 53	2.7
45	7 38	16 29	0 34	1 46	16 13	2.7	6 35	2.7
40	7 22	16 45	0 30	1 37	16 27	2.7	6 20	2.7
35	7 8	16 59	0 28	1 30	16 40	2.7	6 8	2.7
30	6 56	17 11	0 26	1 25	16 51	2.7	5 57	2.7
20	6 35	17 32	0 24	1 18	17 9	2.7	5 39	2.7
10	6 17	17 50	0 23	1 15	17 26	2.7	5 23	2.7
0	5 60	18 7	0 22	1 15	17 41	2.7	5 8	2.7
10	5 43	18 25	0 23	1 17	17 57	2.6	4 53	2.6
20	5 24	18 43	0 24	1 24	18 13	2.6	4 37	2.6
30	5 2	19 5	0 27	1 36	18 32	2.6	4 18	2.6
35	4 50	19 17	0 30	1 46	18 43	2.6	4 7	2.6
40	4 35	19 32	0 33	2 2	18 56	2.6	3 55	2.6
45	4 17	19 50	0 37	2 30	19 11	2.6	3 41	2.6
50	3 55	20 12	0 44	:::	19 29	2.5	3 23	2.5
55	3 26	20 41	0 57	:::	19 53	2.5	3 0	2.5
60	2 43	21 23	1 35	:::	20 26	2.4	2 29	2.4
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	16	6.3	32	19	19.1	35	235	49.4	-15	53.1	189	5.9	-22	31.9		
2	44	50.8	31	19	26.1	32	265	53.5	-15	53.3	219	10.2	-22	31.9		
4	73	35.0	30	19	32.5	29	295	57.6	-15	53.5	249	14.5	-22	31.9		
6	102	19.1	30	19	38.4	26	326	1.6	-15	53.8	279	18.8	-22	31.9		
8	131	3.0	29	19	43.6	23	356	5.7	-15	54.0	309	23.1	-22	31.9		
10	159	46.8	28	19	48.2	20	26	9.8	-15	54.2	339	27.4	-22	31.9		
12	188	30.5	28	19	52.2	17	56	13.9	-15	54.4	9	31.7	-22	31.8		
14	217	14.1	27	19	55.6	14	86	18.0	-15	54.7	39	36.0	-22	31.8		
16	245	57.6	27	19	58.4	11	116	22.1	-15	54.9	69	40.3	-22	31.8		
18	274	41.0	27	20	.6	8	146	26.2	-15	55.1	99	44.6	-22	31.8		
20	303	24.4	27	20	2.1	5	176	30.3	-15	55.4	129	48.9	-22	31.8		
22	332	7.7	27	20	3.1	2	206	34.4	-15	55.6	159	53.1	-22	31.8		
Δ								20		-1			21		0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 3 19.9	-1.2	16.3	T _m	23 56	2.7	61.3	16.7	
12	- 3 33.9	T _{m☉}	12 h 3.6 min	Starost	13.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 5	.1	138	-2.9	♄	8 16	.0	135	-1.4
					♅	11 22	.0	88	.7

2. JANUAR

UTORAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	3.0	-22	56.1	101	34.8	180	54.3	-23	34.9	238	59.3	-15	25.1	
2	209	2.4	-22	55.7	131	39.8	210	52.4	-23	34.6	269	1.2	-15	26.0	
4	239	1.8	-22	55.2	161	44.7	240	50.5	-23	34.3	299	3.0	-15	27.0	
6	269	1.3	-22	54.8	191	49.6	270	48.5	-23	34.0	329	4.8	-15	27.9	
8	299	.7	-22	54.3	221	54.6	300	46.6	-23	33.7	359	6.7	-15	28.9	
10	329	.1	-22	53.9	251	59.5	330	44.7	-23	33.4	29	8.5	-15	29.8	
12	358	59.5	-22	53.4	282	4.4	0	42.8	-23	33.1	59	10.4	-15	30.7	
14	28	58.9	-22	52.9	312	9.3	30	40.8	-23	32.8	89	12.2	-15	31.7	
16	58	58.4	-22	52.5	342	14.3	60	38.9	-23	32.5	119	14.1	-15	32.6	
18	88	57.8	-22	52.0	12	19.2	90	37.0	-23	32.2	149	15.9	-15	33.6	
20	118	57.2	-22	51.5	42	24.1	120	35.0	-23	31.9	179	17.7	-15	34.5	
22	148	56.6	-22	51.1	72	29.1	150	33.1	-23	31.5	209	19.6	-15	35.4	
Δ		-3		2				-10		2			9		-5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	15 7	0 56	2 44	16 6	3.3	8 53	2.1
55	8 25	15 44	0 45	2 16	16 37	3.2	8 21	2.2
50	7 58	16 10	0 38	1 59	17 0	3.1	7 58	2.3
45	7 38	16 30	0 34	1 46	17 18	3.0	7 40	2.4
40	7 22	16 46	0 30	1 37	17 33	2.9	7 26	2.4
35	7 8	17 0	0 28	1 30	17 45	2.9	7 13	2.5
30	6 56	17 12	0 26	1 25	17 56	2.8	7 2	2.5
20	6 35	17 33	0 24	1 18	18 14	2.7	6 43	2.5
10	6 17	17 51	0 23	1 15	18 30	2.7	6 27	2.6
0	6 0	18 8	0 22	1 15	18 45	2.6	6 12	2.6
10	5 43	18 25	0 23	1 17	19 0	2.5	5 56	2.7
20	5 25	18 43	0 24	1 24	19 16	2.4	5 40	2.7
30	5 3	19 5	0 27	1 36	19 35	2.4	5 21	2.8
35	4 50	19 17	0 29	1 46	19 45	2.3	5 10	2.8
40	4 36	19 32	0 33	2 1	19 58	2.2	4 57	2.8
45	4 18	19 50	0 37	2 29	20 12	2.2	4 42	2.9
50	3 56	20 11	0 44	:::	20 30	2.1	4 23	2.9
55	3 27	20 40	0 56	:::	20 53	1.9	3 60	3.0
60	2 45	21 23	1 34	:::	21 24	1.7	3 27	3.1
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	0	51.1	27	20	3.4	-2	236	38.5	-15	55.8	189	57.4	-22	31.8		
2	29	34.5	27	20	3.1	-5	266	42.5	-15	56.0	220	1.7	-22	31.8		
4	58	17.8	27	20	2.1	-8	296	46.6	-15	56.3	250	6.0	-22	31.8		
6	87	1.3	27	20	.6	-11	326	50.7	-15	56.5	280	10.3	-22	31.8		
8	115	44.7	28	19	58.4	-14	356	54.8	-15	56.7	310	14.6	-22	31.8		
10	144	28.3	28	19	55.6	-17	26	58.9	-15	56.9	340	18.9	-22	31.8		
12	173	11.9	29	19	52.2	-20	57	3.0	-15	57.2	10	23.2	-22	31.8		
14	201	55.7	29	19	48.2	-23	87	7.1	-15	57.4	40	27.5	-22	31.8		
16	230	39.6	30	19	43.6	-26	117	11.2	-15	57.6	70	31.8	-22	31.8		
18	259	23.6	31	19	38.3	-29	147	15.3	-15	57.9	100	36.1	-22	31.8		
20	288	7.8	32	19	32.5	-32	177	19.4	-15	58.1	130	40.4	-22	31.8		
22	316	52.2	33	19	26.1	-35	207	23.5	-15	58.3	160	44.7	-22	31.8		
Δ								20		-1			21		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min</						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 56.0	-22 50.6	102 34.0	180 31.2	-23 31.2	239 21.4	-15 36.4
2	208 55.5	-22 50.1	132 38.9	210 29.3	-23 30.8	269 23.3	-15 37.3
4	238 54.9	-22 49.6	162 43.8	240 27.3	-23 30.5	299 25.1	-15 38.2
6	268 54.3	-22 49.2	192 48.8	270 25.4	-23 30.1	329 27.0	-15 39.2
8	298 53.8	-22 48.7	222 53.7	300 23.5	-23 29.8	359 28.8	-15 40.1
10	328 53.2	-22 48.2	252 58.6	330 21.6	-23 29.4	29 30.6	-15 41.0
12	358 52.6	-22 47.7	283 3.6	0 19.7	-23 29.1	59 32.5	-15 42.0
14	28 52.0	-22 47.2	313 8.5	30 17.7	-23 28.7	89 34.3	-15 42.9
16	58 51.5	-22 46.7	343 13.4	60 15.8	-23 28.3	119 36.2	-15 43.8
18	88 50.9	-22 46.2	13 18.3	90 13.9	-23 27.9	149 38.0	-15 44.7
20	118 50.3	-22 45.7	43 23.3	120 12.0	-23 27.5	179 39.8	-15 45.7
22	148 49.8	-22 45.2	73 28.2	150 10.1	-23 27.2	209 41.7	-15 46.6
Δ	-3	2		-10	2	9	-5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	15 8	0 56	2 43	17 26	3.6	9 43	1.5
55	8 24	15 45	0 45	2 16	17 54	3.4	9 14	1.7
50	7 58	16 11	0 38	1 59	18 14	3.2	8 54	1.9
45	7 38	16 31	0 34	1 46	18 29	3.1	8 37	2.0
40	7 22	16 47	0 30	1 37	18 42	3.0	8 24	2.1
35	7 8	17 1	0 28	1 30	18 53	2.9	8 12	2.2
30	6 56	17 13	0 26	1 25	19 3	2.8	8 2	2.2
20	6 36	17 33	0 24	1 18	19 19	2.7	7 45	2.3
10	6 18	17 51	0 23	1 15	19 34	2.6	7 29	2.4
0	6 1	18 8	0 22	1 15	19 47	2.4	7 15	2.5
10	5 44	18 25	0 23	1 17	20 1	2.3	7 1	2.6
20	5 25	18 44	0 24	1 23	20 15	2.2	6 45	2.7
30	5 4	19 5	0 27	1 36	20 31	2.1	6 27	2.8
35	4 51	19 18	0 29	1 46	20 41	2.0	6 17	2.9
40	4 37	19 32	0 32	2 1	20 52	1.9	6 5	3.0
45	4 19	19 50	0 37	2 28	21 4	1.8	5 51	3.0
50	3 57	20 11	0 44	:::	21 20	1.7	5 34	3.2
55	3 29	20 40	0 56	:::	21 39	1.5	5 11	3.3
60	2 46	21 22	1 32	:::	22 5	1.2	4 41	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	345 36.8	34	19 19.1	-38	237 27.6	-15 58.5	190 49.0	-22 31.8
2	14 21.5	35	19 11.5	-41	267 31.7	-15 58.8	220 53.3	-22 31.8
4	43 6.5	36	19 3.4	-43	297 35.8	-15 59.0	250 57.6	-22 31.8
6	71 51.7	37	18 54.7	-46	327 39.9	-15 59.2	281 1.9	-22 31.8
8	100 37.2	39	18 45.5	-49	357 44.0	-15 59.4	311 6.2	-22 31.8
10	129 22.9	40	18 35.7	-52	27 48.1	-15 59.6	341 10.5	-22 31.8
12	158 8.9	41	18 25.3	-54	57 52.2	-15 59.9	11 14.8	-22 31.8
14	186 55.2	43	18 14.5	-57	87 56.3	-16 .1	41 19.1	-22 31.8
16	215 41.8	44	18 3.1	-59	118 .4	-16 .3	71 23.4	-22 31.8
18	244 28.6	46	17 51.3	-62	148 4.5	-16 .5	101 27.7	-22 31.8
20	273 15.8	48	17 38.9	-64	178 8.6	-16 .8	131 32.0	-22 31.8
22	302 3.3	49	17 26.0	-67	208 12.7	-16 1.0	161 36.3	-22 31.8
Δ					21	-1	21	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	- 4 15.8	-1.1	16.3	T _m	1 0	2.5	61.3 16.7		
12	- 4 29.5	T _{m☉}	12 h 4.5 min	Starost	15.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	11 59	.1	78	-2.9	♃	8 9	.0	135	-1.4
♂	8 2	.1	137	1.2	♄	11 15	.0	88	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 49.2	-22 44.6	103 33.1	180 8.1	-23 26.8	239 43.5	-15 47.5
2	208 48.6	-22 44.1	133 38.0	210 6.2	-23 26.4	269 45.3	-15 48.4
4	238 48.1	-22 43.6	163 43.0	240 4.3	-23 26.0	299 47.2	-15 49.4
6	268 47.5	-22 43.1	193 47.9	270 2.4	-23 25.5	329 49.0	-15 50.3
8	298 46.9	-22 42.6	223 52.8	300 .5	-23 25.1	359 50.9	-15 51.2
10	328 46.4	-22 42.0	253 57.8	329 58.6	-23 24.7	29 52.7	-15 52.1
12	358 45.8	-22 41.5	284 2.7	359 56.6	-23 24.3	59 54.5	-15 53.1
14	28 45.2	-22 41.0	314 7.6	29 54.7	-23 23.8	89 56.4	-15 54.0
16	58 44.7	-22 40.4	344 12.5	59 52.8	-23 23.4	119 58.2	-15 54.9
18	88 44.1	-22 39.9	14 17.5	89 50.9	-23 23.0	150 .0	-15 55.8
20	118 43.6	-22 39.3	44 22.4	119 49.0	-23 22.5	180 1.9	-15 56.7
22	148 43.0	-22 38.8	74 27.3	149 47.1	-23 22.1	210 3.7	-15 57.7
Δ	-3	3		-10	2	9	-5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 0	15 10	0 56	2 43	18 54	3.7	10 18	1.1
55	8 24	15 46	0 45	2 16	19 15	3.4	9 56	1.3
50	7 58	16 12	0 38	1 58	19 31	3.2	9 38	1.5
45	7 38	16 32	0 34	1 46	19 43	3.0	9 25	1.7
40	7 22	16 48	0 30	1 37	19 53	2.9	9 14	1.8
35	7 8	17 2	0 28	1 30	20 2	2.8	9 4	1.9
30	6 57	17 14	0 26	1 25	20 10	2.7	8 55	2.0
20	6 36	17 34	0 24	1 18	20 23	2.5	8 41	2.1
10	6 18	17 52	0 23	1 15	20 35	2.4	8 28	2.2
0	6 1	18 9	0 22	1 15	20 46	2.3	8 16	2.4
10	5 44	18 26	0 23	1 17	20 57	2.1	8 3	2.5
20	5 26	18 44	0 24	1 23	21 8	2.0	7 50	2.6
30	5 5	19 5	0 27	1 35	21 21	1.8	7 35	2.8
35	4 52	19 18	0 29	1 45	21 29	1.8	7 26	2.9
40	4 37	19 32	0 32	2 1	21 38	1.7	7 16	3.0
45	4 20	19 49	0 37	2 28	21 48	1.5	7 4	3.1
50	3 58	20 11	0 44	:::	21 60	1.4	6 50	3.2
55	3 30	20 39	0 56	:::	22 15	1.2	6 31	3.4
60	2 48	21 21	1 31	:::	22 35	.9	6 6	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	330 51.2	51	17 12.7	-69	238 16.8	-16 1.2	191 40.6	-22 31.8
2	359 39.4	53	16 59.0	-71	268 21.0	-16 1.4	221 44.9	-22 31.8
4	28 27.9	54	16 44.7	-73	298 25.1	-16 1.6	251 49.2	-22 31.8
6	57 16.7	56	16 30.1	-75	328 29.2	-16 1.9	281 53.5	-22 31.8
8	86 6.0	58	16 15.0	-77	358 33.3	-16 2.1	311 57.8	-22 31.8
10	114 55.6	60	15 59.5	-79	28 37.4	-16 2.3	342 2.1	-22 31.7
12	143 45.5	62	15 43.6	-81	58 41.5	-16 2.5	12 6.3	-22 31.7
14	172 35.8	63	15 27.3	-83	88 45.6	-16 2.7	42 10.6	-22 31.7
16	201 26.5	65	15 10.7	-85	118 49.7	-16 3.0	72 14.9	-22 31.7
18	230 17.6	67	14 53.7	-87	148 53.8	-16 3.2	102 19.2	-22 31.7
20	259 9.0	69	14 36.3	-89	178 58.0	-16 3.4	132 23.5	-22 31.7
22	288 .8	71	14 18.6	-90	209 2.1	-16 3.6	162 27.8	-22 31.7
Δ					21	-1	21	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	- 4 43.2	-1.1	16.3	T _m	2 1	2.4	60.8 16.6		
12	- 4 56.7	T _{m☉}	12 h 4.9 min	Starost	16.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	12 0	.1	77	-2.9	♃	8 6	.0	135	-1.4
♂	8 1	.1	136	1.2	♄	11 12	.0	88	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 42.4 -22 38.2		104 32.3	179 45.2 -23 21.6	240 5.5 -15 58.6		
2	208 41.9 -22 37.7		134 37.2	209 43.3 -23 21.1	270 7.4 -15 59.5		
4	238 41.3 -22 37.1		164 42.1	239 41.4 -23 20.7	300 9.2 -16 .4		
6	268 40.8 -22 36.6		194 47.0	269 39.5 -23 20.2	330 11.0 -16 1.3		
8	298 40.2 -22 36.0		224 52.0	299 37.6 -23 19.7	0 12.9 -16 2.2		
10	328 39.6 -22 35.4		254 56.9	329 35.7 -23 19.2	30 14.7 -16 3.2		
12	358 39.1 -22 34.9		285 1.8	359 33.7 -23 18.8	60 16.5 -16 4.1		
14	28 38.5 -22 34.3		315 6.8	29 31.8 -23 18.3	90 18.3 -16 5.0		
16	58 38.0 -22 33.7		345 11.7	59 29.9 -23 17.8	120 20.2 -16 5.9		
18	88 37.4 -22 33.1		15 16.6	89 28.0 -23 17.3	150 22.0 -16 6.8		
20	118 36.9 -22 32.5		45 21.5	119 26.1 -23 16.8	180 23.8 -16 7.7		
22	148 36.3 -22 32.0		75 26.5	149 24.2 -23 16.2	210 25.7 -16 8.6		
Δ	-3	3		-10	2	9	-5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 60	15 11	0 56	2 43	20 22	3.6	10 44	.8
55	8 23	15 48	0 45	2 16	20 36	3.3	10 27	1.1
50	7 58	16 13	0 38	1 58	20 47	3.1	10 15	1.3
45	7 38	16 33	0 33	1 46	20 56	2.9	10 5	1.4
40	7 22	16 49	0 30	1 37	21 3	2.8	9 56	1.6
35	7 9	17 2	0 28	1 30	21 10	2.7	9 49	1.7
30	6 57	17 14	0 26	1 25	21 15	2.6	9 43	1.8
20	6 36	17 35	0 24	1 18	21 25	2.4	9 31	1.9
10	6 18	17 52	0 23	1 15	21 33	2.3	9 22	2.1
0	6 2	18 9	0 22	1 15	21 41	2.1	9 12	2.2
10	5 45	18 26	0 23	1 17	21 48	2.0	9 3	2.3
20	5 27	18 44	0 24	1 23	21 56	1.8	8 53	2.5
30	5 5	19 5	0 27	1 35	22 6	1.7	8 41	2.7
35	4 53	19 18	0 29	1 45	22 11	1.6	8 35	2.8
40	4 38	19 32	0 32	2 0	22 17	1.5	8 27	2.9
45	4 21	19 49	0 37	2 27	22 24	1.3	8 18	3.0
50	3 60	20 11	0 43	:::	22 33	1.2	8 7	3.2
55	3 31	20 39	0 55	:::	22 43	1.0	7 53	3.4
60	2 50	21 20	1 29	:::	22 57	.7	7 35	3.7

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	316 53.0 73 14 .6 -92				239 6.2 -16 3.8				192 32.1 -22 31.7			
2	345 45.6 75 13 42.2 -93				269 10.3 -16 4.1				222 36.4 -22 31.7			
4	14 38.5 77 13 23.6 -95				299 14.4 -16 4.3				252 40.7 -22 31.7			
6	43 31.8 78 13 4.7 -96				329 18.5 -16 4.5				282 45.0 -22 31.7			
8	72 25.5 80 12 45.5 -97				359 22.7 -16 4.7				312 49.3 -22 31.7			
10	101 19.6 82 12 26.0 -99				29 26.8 -16 4.9				342 53.6 -22 31.7			
12	130 14.0 84 12 6.3 -100				59 30.9 -16 5.1				12 57.9 -22 31.7			
14	159 8.8 86 11 46.3 -101				89 35.0 -16 5.4				43 2.2 -22 31.7			
16	188 4.0 88 11 26.1 -102				119 39.1 -16 5.6				73 6.5 -22 31.7			
18	216 59.5 89 11 5.7 -103				149 43.3 -16 5.8				103 10.8 -22 31.7			
20	245 55.4 91 10 45.1 -104				179 47.4 -16 6.0				133 15.1 -22 31.7			
22	274 51.6 93 10 24.3 -105				209 51.5 -16 6.2				163 19.4 -22 31.7			
Δ					21	-1			22	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 5 10.3	-1.1	16.3	T _m	2 59	2.3	60.0	16.3
12	- 5 23.6	T _{m☉}	12 h 5.4 min	Starost	17.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	12 2	.1	75	-2.9	♃	7 59	.0	135	-1.4
♂	7 59	.1	136	1.2	♄	11 8	.0	88	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 35.8 -22 31.4		105 31.4	179 22.3 -23 15.7	240 27.5 -16 9.5		
2	208 35.2 -22 30.8		135 36.3	209 20.4 -23 15.2	270 29.3 -16 10.4		
4	238 34.7 -22 30.2		165 41.3	239 18.6 -23 14.7	300 31.1 -16 11.3		
6	268 34.1 -22 29.6		195 46.2	269 16.7 -23 14.1	330 33.0 -16 12.2		
8	298 33.6 -22 29.0		225 51.1	299 14.8 -23 13.6	0 34.8 -16 13.1		
10	328 33.0 -22 28.4		255 56.0	329 12.9 -23 13.1	30 36.6 -16 14.0		
12	358 32.5 -22 27.8		286 1.0	359 11.0 -23 12.5	60 38.5 -16 15.0		
14	28 31.9 -22 27.2		316 5.9	29 9.1 -23 12.0	90 40.3 -16 15.9		
16	58 31.4 -22 26.6		346 10.8	59 7.2 -23 11.4	120 42.1 -16 16.8		
18	88 30.9 -22 25.9		16 15.8	89 5.3 -23 10.9	150 43.9 -16 17.7		
20	118 30.3 -22 25.3		46 20.7	119 3.4 -23 10.3	180 45.8 -16 18.6		
22	148 29.8 -22 24.7		76 25.6	149 1.5 -23 9.7	210 47.6 -16 19.5		
Δ	-3	3		-9	3	9	-5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 59	15 13	0 56	2 42	21 48	3.4	11 3	.7
55	8 23	15 49	0 44	2 15	21 56	3.2	10 53	.9
50	7 58	16 14	0 38	1 58	22 2	3.0	10 45	1.1
45	7 38	16 34	0 33	1 46	22 7	2.8	10 39	1.3
40	7 22	16 50	0 30	1 37	22 11	2.7	10 34	1.4
35	7 9	17 3	0 28	1 30	22 14	2.6	10 29	1.5
30	6 57	17 15	0 26	1 25	22 17	2.5	10 25	1.6
20	6 37	17 35	0 24	1 18	22 22	2.3	10 18	1.8
10	6 19	17 53	0 23	1 15	22 27	2.1	10 11	1.9
0	6 2	18 10	0 22	1 15	22 32	2.0	10 5	2.1
10	5 45	18 26	0 23	1 17	22 36	1.9	9 59	2.2
20	5 27	18 44	0 24	1 23	22 40	1.7	9 53	2.4
30	5 6	19 5	0 27	1 35	22 46	1.5	9 45	2.5
35	4 54	19 18	0 29	1 45	22 49	1.4	9 41	2.6
40	4 39	19 32	0 32	1 60	22 52	1.3	9 36	2.8
45	4 22	19 49	0 37	2 26	22 56	1.2	9 30	2.9
50	4 1	20 10	0 43	:::	23 1	1.1	9 23	3.0
55	3 33	20 38	0 55	:::	23 7	.9	9 14	3.3
60	2 52	21 19	1 27	:::	23 14	.6	9 3	3.5

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	303 48.2 95 10 3.3 -106				239 55.6 -16 6.4				193 23.7 -22 31.7			
2	332 45.1 96 9 42.2 -107				269 59.8 -16 6.7				223 28.0 -22 31.7			
4	1 42.4 98 9 20.9 -107				300 3.9 -16 6.9				253 32.3 -22 31.7			
6	30 40.0 100 8 59.4 -108				330 8.0 -16 7.1				283 36.6 -22 31.7			
8	59 37.9 101 8 37.8 -109				0 12.1 -16 7.3				313 40.9 -22 31.6			
10	88 36.2 103 8 16.1 -109				30 16.3 -16 7.5				343 45.3 -22 31.6			
12	117 34.8 104 7 54.2 -110				60 20.4 -16 7.7				13 49.6 -22 31.6			
14	146 33.7 106 7 32.3 -110				90 24.5 -16 7.9				43 53.9 -22 31.6			
16	175 32.8 107 7 10.2 -111				120 28.6 -16 8.2				73 58.2 -22 31.6			
18	204 32.3 109 6 48.1 -111				150 32.8 -16 8.4				104 2.5 -22 31.6			
20	233 32.1 110 6 25.9 -111				180 36.9 -16 8.6				134 6.8 -22 31.6			
22	262 32.2 112 6 3.6 -112				210 41.0 -16 8.8				164 11.1 -22 31.6			
Δ					21	-1			22	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 5 36.9	-1.1	16.3	T _m	3 53	2.1	59.1	16.1
12	- 5 50.0	T _{m☉}	12 h 5.8 min	Starost	18.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	12 3	.1	74	-2.9	♃	7 59	.0	134	-1.4
♂	7 58	.1	135	1.2	♄	11 5	.0	88	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 29.2	-22 24.1	106 30.5	178 59.6	-23 9.1	240 49.4	-16 20.4	
2	208 28.7	-22 23.4	136 35.5	208 57.8	-23 8.6	270 51.2	-16 21.3	
4	238 28.2	-22 22.8	166 40.4	238 55.9	-23 8.0	300 53.1	-16 22.1	
6	268 27.6	-22 22.2	196 45.3	268 54.0	-23 7.4	330 54.9	-16 23.0	
8	298 27.1	-22 21.5	226 50.3	298 52.1	-23 6.8	0 56.7	-16 23.9	
10	328 26.5	-22 20.9	256 55.2	328 50.2	-23 6.2	30 58.5	-16 24.8	
12	358 26.0	-22 20.3	287 .1	358 48.3	-23 5.6	61 .3	-16 25.7	
14	28 25.5	-22 19.6	317 5.0	28 46.5	-23 5.0	91 2.2	-16 26.6	
16	58 24.9	-22 19.0	347 10.0	58 44.6	-23 4.3	121 4.0	-16 27.5	
18	88 24.4	-22 18.3	17 14.9	88 42.7	-23 3.7	151 5.8	-16 28.4	
20	118 23.9	-22 17.6	47 19.8	118 40.8	-23 3.1	181 7.6	-16 29.3	
22	148 23.3	-22 17.0	77 24.7	148 39.0	-23 2.5	211 9.4	-16 30.2	
Δ	-3	3		-9	3	9	-4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 58	15 15	0 55	2 42	23 10	1.4	11 20	1.2
55	8 22	15 50	0 44	2 15	23 12	1.5	11 15	1.3
50	7 57	16 16	0 38	1 58	23 13	2.0	11 12	1.4
45	7 38	16 35	0 33	1 46	23 14	2.0	11 9	1.5
40	7 22	16 51	0 30	1 37	23 15	2.0	11 7	1.6
35	7 9	17 4	0 28	1 30	23 16	2.0	11 5	1.6
30	6 57	17 16	0 26	1 25	23 16	2.0	11 3	1.7
20	6 37	17 36	0 24	1 18	23 18	1.9	11 0	1.8
10	6 19	17 53	0 23	1 15	23 19	1.9	10 57	1.9
0	6 3	18 10	0 22	1 14	23 20	1.9	10 55	2.0
10	5 46	18 27	0 23	1 17	23 21	1.9	10 52	2.0
20	5 28	18 45	0 24	1 23	23 22	1.9	10 49	2.1
30	5 7	19 5	0 27	1 35	23 23	1.9	10 46	2.2
35	4 55	19 18	0 29	1 45	23 23	1.9	10 44	2.3
40	4 40	19 32	0 32	1 59	23 24	1.8	10 42	2.4
45	4 23	19 49	0 36	2 25	23 25	1.8	10 39	2.4
50	4 2	20 10	0 43	:::	23 26	1.8	10 36	2.5
55	3 34	20 38	0 55	:::	23 27	1.8	10 32	2.6
60	2 54	21 18	1 26	:::	23 29	1.7	10 27	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	291 32.5	113	5 41.2	-112	240 45.2	-16 9.0	194 15.4	-22 31.6
2	320 33.1	114	5 18.8	-112	270 49.3	-16 9.2	224 19.7	-22 31.6
4	349 34.0	116	4 56.3	-112	300 53.4	-16 9.4	254 24.0	-22 31.6
6	18 35.2	117	4 33.8	-113	330 57.6	-16 9.6	284 28.3	-22 31.6
8	47 36.6	118	4 11.3	-113	1 1.7	-16 9.8	314 32.6	-22 31.6
10	76 38.2	119	3 48.8	-113	31 5.8	-16 10.1	344 36.9	-22 31.6
12	105 40.1	121	3 26.2	-113	61 10.0	-16 10.3	14 41.2	-22 31.6
14	134 42.2	122	3 3.7	-113	91 14.1	-16 10.5	44 45.5	-22 31.6
16	163 44.5	123	2 41.1	-113	121 18.2	-16 10.7	74 49.8	-22 31.6
18	192 47.0	124	2 18.6	-113	151 22.4	-16 10.9	104 54.1	-22 31.6
20	221 49.8	125	1 56.0	-113	181 26.5	-16 11.1	134 58.4	-22 31.6
22	250 52.7	126	1 33.5	-112	211 30.7	-16 11.3	165 2.7	-22 31.5
Δ					21	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6 3.1	-1.1	16.3	T _m	4 43	2.0	58.1 15.8		
12	- 6 15.9	T _{m☉}	12 h 6.3 min	Starost	19.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 5	.1	72	-2.9	♄	7 56	.0	134	-1.4
♂	7 56	.1	134	1.1	♅	11 1	.0	88	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.8	-22 16.3	107 29.7	178 37.1	-23 1.8	241 11.3	-16 31.1	
2	208 22.3	-22 15.7	137 34.6	208 35.2	-23 1.2	271 13.1	-16 32.0	
4	238 21.7	-22 15.0	167 39.5	238 33.3	-23 .5	301 14.9	-16 32.9	
6	268 21.2	-22 14.3	197 44.5	268 31.5	-22 59.9	331 16.7	-16 33.7	
8	298 20.7	-22 13.6	227 49.4	298 29.6	-22 59.2	1 18.5	-16 34.6	
10	328 20.2	-22 13.0	257 54.3	328 27.7	-22 58.6	31 20.4	-16 35.5	
12	358 19.6	-22 12.3	287 59.2	358 25.9	-22 57.9	61 22.2	-16 36.4	
14	28 19.1	-22 11.6	318 4.2	28 24.0	-22 57.2	91 24.0	-16 37.3	
16	58 18.6	-22 10.9	348 9.1	58 22.1	-22 56.6	121 25.8	-16 38.2	
18	88 18.1	-22 10.2	18 14.0	88 20.3	-22 55.9	151 27.6	-16 39.0	
20	118 17.5	-22 9.5	48 19.0	118 18.4	-22 55.2	181 29.4	-16 39.9	
22	148 17.0	-22 8.8	78 23.9	148 16.5	-22 54.5	211 31.3	-16 40.8	
Δ	-3	3		-9	3	9	-4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 57	15 17	0 55	2 41	23 43	1.9	11 48	3.3
55	8 22	15 52	0 44	2 15	23 47	1.9	11 47	3.0
50	7 57	16 17	0 38	1 58	...	.0	11 46	2.8
45	7 38	16 36	0 33	1 45	...	.0	11 46	2.7
40	7 22	16 52	0 30	1 37	...	.0	11 45	2.5
35	7 9	17 5	0 28	1 30	...	.0	11 44	2.4
30	6 57	17 17	0 26	1 25	...	.0	11 44	2.3
20	6 37	17 37	0 24	1 18	...	.0	11 43	2.2
10	6 19	17 54	0 23	1 15	...	.0	11 42	2.0
0	6 3	18 10	0 22	1 14	...	.0	11 42	1.9
10	5 46	18 27	0 23	1 17	...	.0	11 41	1.8
20	5 28	18 45	0 24	1 23	...	.0	11 40	1.6
30	5 8	19 6	0 27	1 35	...	.0	11 39	1.5
35	4 55	19 18	0 29	1 44	...	.0	11 39	1.4
40	4 41	19 32	0 32	1 59	...	.0	11 38	1.3
45	4 24	19 49	0 36	2 24	...	.0	11 37	1.1
50	4 3	20 9	0 43	:::	...	.0	11 37	1.0
55	3 36	20 37	0 54	:::	...	.0	11 36	.8
60	2 56	21 17	1 24	:::	...	.0	11 34	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	279 55.9	127	1 11.1	-112	241 34.8	-16 11.5	195 7.0	-22 31.5
2	308 59.2	128	0 48.6	-112	271 38.9	-16 11.7	225 11.3	-22 31.5
4	338 2.7	128	0 26.2	-112	301 43.1	-16 11.9	255 15.6	-22 31.5
6	7 6.4	129	0 3.9	72	331 47.2	-16 12.1	285 19.9	-22 31.5
8	36 10.2	130	0 18.4	111	1 51.4	-16 12.4	315 24.2	-22 31.5
10	65 14.2	131	0 40.6	111	31 55.5	-16 12.6	345 28.5	-22 31.5
12	94 18.4	131	1 2.7	110	61 59.7	-16 12.8	15 32.8	-22 31.5
14	123 22.7	132	1 24.8	110	92 3.8	-16 13.0	45 37.1	-22 31.5
16	152 27.1	133	1 46.8	109	122 8.0	-16 13.2	75 41.4	-22 31.5
18	181 31.6	133	2 8.6	109	152 12.1	-16 13.4	105 45.8	-22 31.5
20	210 36.3	134	2 30.4	108	182 16.3	-16 13.6	135 50.1	-22 31.5
22	239 41.1	134	2 52.1	108	212 20.4	-16 13.8	165 54.4	-22 31.5
Δ					21	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6 28.8	-1.1	16.3	T _m	5 31	1.9	57.1 15.6		
12	- 6 41.4	T _{m☉}	12 h 6.7 min	Starost	20.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 6	.1	71	-2.9	♄	7 53	.0	134	-1.4
♂	7 55	.1	134	1.1	♅	10 58	.0	88	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	16.5	-22	8.1	108	28.8	178	14.7	-22	53.8	241	33.1	-16	41.7	
2	208	16.0	-22	7.4	138	33.7	208	12.8	-22	53.1	271	34.9	-16	42.6	
4	238	15.5	-22	6.7	168	38.7	238	11.0	-22	52.4	301	36.7	-16	43.4	
6	268	14.9	-22	6.0	198	43.6	268	9.1	-22	51.7	331	38.5	-16	44.3	
8	298	14.4	-22	5.3	228	48.5	298	7.3	-22	51.0	1	40.3	-16	45.2	
10	328	13.9	-22	4.6	258	53.5	328	5.4	-22	50.3	31	42.1	-16	46.1	
12	358	13.4	-22	3.9	288	58.4	358	3.5	-22	49.5	61	44.0	-16	46.9	
14	28	12.9	-22	3.2	319	3.3	28	1.7	-22	48.8	91	45.8	-16	47.8	
16	58	12.4	-22	2.4	349	8.2	57	59.8	-22	48.1	121	47.6	-16	48.7	
18	88	11.9	-22	1.7	19	13.2	87	58.0	-22	47.3	151	49.4	-16	49.6	
20	118	11.3	-22	1.0	49	18.1	117	56.1	-22	46.6	181	51.2	-16	50.4	
22	148	10.8	-22	.3	79	23.0	147	54.3	-22	45.8	211	53.0	-16	51.3	
Δ		-3		4				-9		4			9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 56	15 19	0 55	2 41	.. .	.0	13 7	3.2
55	8 21	15 53	0 44	2 15	.. .	.0	12 60	2.9
50	7 56	16 18	0 38	1 57	0 10	1.0	12 54	2.7
45	7 37	16 37	0 33	1 45	0 -7	1.1	12 50	2.6
40	7 22	16 53	0 30	1 36	0 -5	1.3	12 46	2.5
35	7 9	17 6	0 28	1 30	0 -4	1.4	12 43	2.4
30	6 57	17 17	0 26	1 25	0 -2	1.4	12 40	2.3
20	6 37	17 37	0 24	1 18	0 1	1.6	12 35	2.1
10	6 20	17 55	0 23	1 15	0 3	1.7	12 31	2.0
0	6 3	18 11	0 22	1 14	0 6	1.9	12 27	1.9
10	5 47	18 27	0 23	1 17	0 8	2.0	12 23	1.7
20	5 29	18 45	0 24	1 23	0 11	2.1	12 19	1.6
30	5 8	19 6	0 27	1 34	0 13	2.3	12 14	1.5
35	4 56	19 18	0 29	1 44	0 15	2.4	12 12	1.4
40	4 42	19 32	0 32	1 59	0 17	2.5	12 8	1.3
45	4 26	19 48	0 36	2 23	0 19	2.6	12 5	1.2
50	4 5	20 9	0 43	:::	0 22	2.8	12 1	1.0
55	3 37	20 36	0 54	:::	0 26	3.0	11 55	.8
60	2 58	21 15	1 23	:::	0 30	3.2	11 48	.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	268	46.0	135	3	13.7	107	242	24.6	-16	14.0	195	58.7	-22	31.5		
2	297	51.0	135	3	35.2	107	272	28.7	-16	14.2	226	3.0	-22	31.5		
4	326	56.1	136	3	56.6	106	302	32.9	-16	14.4	256	7.3	-22	31.5		
6	356	1.2	136	4	17.8	106	332	37.0	-16	14.6	286	11.6	-22	31.4		
8	25	6.5	137	4	39.0	105	2	41.2	-16	14.8	316	15.9	-22	31.4		
10	54	11.8	137	4	59.9	104	32	45.3	-16	15.0	346	20.2	-22	31.4		
12	83	17.2	137	5	20.8	104	62	49.5	-16	15.2	16	24.5	-22	31.4		
14	112	22.7	138	5	41.5	103	92	53.6	-16	15.4	46	28.8	-22	31.4		
16	141	28.2	138	6	2.1	102	122	57.8	-16	15.6	76	33.1	-22	31.4		
18	170	33.8	138	6	22.5	101	153	1.9	-16	15.8	106	37.4	-22	31.4		
20	199	39.4	138	6	42.8	101	183	6.1	-16	16.0	136	41.7	-22	31.4		
22	228	45.0	138	7	2.9	100	213	10.2	-16	16.2	166	46.0	-22	31.4		
Δ							21			-1		22			0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	- 6 54.0	-1.0	16.3	T _m	6 16	1.9	56.3	15.3
12	- 7 6.4	T _{m☉}	12 h 7.1 min	Starost	21.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	12 8	.1	70	-2.9	♃	7 49	.0	134	-1.4
♂	7 53	.1	133	1.1	♄	10 55	.0	87	.7

10. JANUAR

SREDA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	10.3	-21	59.5	109	28.0	177	52.5	-22	45.1	241	54.8	-16	52.2	
2	208	9.8	-21	58.8	139	32.9	207	50.6	-22	44.3	271	56.6	-16	53.0	
4	238	9.3	-21	58.1	169	37.8	237	48.8	-22	43.6	301	58.4	-16	53.9	
6	268	8.8	-21	57.3	199	42.7	267	46.9	-22	42.8	332	.3	-16	54.8	
8	298	8.3	-21	56.6	229	47.7	297	45.1	-22	42.0	2	2.1	-16	55.6	
10	328	7.8	-21	55.8	259	52.6	327	43.2	-22	41.2	32	3.9	-16	56.5	
12	358	7.3	-21	55.1	289	57.5	357	41.4	-22	40.5	62	5.7	-16	57.4	
14	28	6.8	-21	54.3	320	2.5	27	39.6	-22	39.7	92	7.5	-16	58.2	
16	58	6.3	-21	53.5	350	7.4	57	37.7	-22	38.9	122	9.3	-16	59.1	
18	88	5.8	-21	52.8	20	12.3	87	35.9	-22	38.1	152	11.1	-16	60.0	
20	118	5.3	-21	52.0	50	17.2	117	34.1	-22	37.3	182	12.9	-17	.8	
22	148	4.8	-21	51.3	80	22.2	147	32.2	-22	36.5	212	14.7	-17	1.7	
Δ		-3		4				-9		4			9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 55	15 21	0 54	2 40	0 -2	.7	14 22	3.1
55	8 20	15 55	0 44	2 14	0 7	.9	14 10	2.8
50	7 56	16 19	0 37	1 57	0 14	1.0	13 60	2.7
45	7 37	16 38	0 33	1 45	0 20	1.2	13 52	2.5
40	7 22	16 54	0 30	1 36	0 25	1.3	13 46	2.4
35	7 8	17 7	0 28	1 30	0 29	1.4	13 40	2.3
30	6 57	17 18	0 26	1 25	0 33	1.5	13 35	2.2
20	6 37	17 38	0 24	1 18	0 39	1.6	13 26	2.1
10	6 20	17 55	0 23	1 15	0 45	1.7	13 19	2.0
0	6 4	18 11	0 22	1 14	0 51	1.9	13 12	1.9
10	5 47	18 28	0 23	1 17	0 56	2.0	13 5	1.8
20	5 30	18 45	0 24	1 23	1 2	2.1	12 58	1.6
30	5 9	19 6	0 27	1 34	1 9	2.3	12 49	1.5
35	4 57	19 18	0 29	1 44	1 13	2.3	12 44	1.4
40	4 43	19 31	0 32	1 58	1 17	2.4	12 39	1.3
45	4 27	19 48	0 36	2 23	1 23	2.6	12 33	1.2
50	4 6	20 8	0 42	3 38	1 29	2.7	12 25	1.1
55	3 39	20 35	0 54	:::	1 37	2.9	12 16	.9
60	2 60	21 14	1 21	:::	1 47	3.1	12 3	.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	257	50.7	139	7	22.8	99	243	14.4	-16	16.4	196	50.4	-22	31.4		
2	286	56.4	139	7	42.6	98	273	18.6	-16	16.7	226	54.7	-22	31.4		
4	316	2.1	139	8	2.2	97	303	22.7	-16	16.9	256	59.0	-22	31.4		
6	345	7.9	139	8	21.6	96	333	26.9	-16	17.1	287	3.3	-22	31.4		
8	14	13.6	139	8	40.9	95	3	31.0	-16	17.3	317	7.6	-22	31.4		
10	43	19.4	139	8	59.9	94	33	35.2	-16	17.5	347	11.9	-22	31.4		
12	72	25.1	139	9	18.8	93	63	39.4	-16	17.7	17	16.2	-22	31.3		
14	101	30.9	139	9	37.5	92	93	43.5	-16	17.9	47	20.5	-22	31.3		
16	130	36.6	139	9	55.9	91	123	47.7	-16	18.1	77	24.8	-22	31.3		
18	159	42.3	138	10	14.2	90	153	51.9	-16	18.3	107	29.1	-22	31.3		
20	188	48.0	138	10	32.3	89	183	56.0	-16	18.5	137	33.4	-22	31.3		
22	217	53.7	138	10	50.1	88	214	.2	-16	18.7	167	37.7	-22	31.3		
Δ							21			-1		22			0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	- 7 18.7	-1.0</					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	4.3	-21	50.5	110	27.1	177	30.4	-22	35.7	242	16.5	-17	2.5	
2	208	3.8	-21	49.7	140	32.0	207	28.6	-22	34.8	272	18.3	-17	3.4	
4	238	3.3	-21	48.9	170	36.9	237	26.8	-22	34.0	302	20.1	-17	4.3	
6	268	2.8	-21	48.2	200	41.9	267	24.9	-22	33.2	332	21.9	-17	5.1	
8	298	2.3	-21	47.4	230	46.8	297	23.1	-22	32.4	2	23.7	-17	6.0	
10	328	1.8	-21	46.6	260	51.7	327	21.3	-22	31.5	32	25.6	-17	6.8	
12	358	1.3	-21	45.8	290	56.7	357	19.5	-22	30.7	62	27.4	-17	7.7	
14	28	.8	-21	45.0	321	1.6	27	17.6	-22	29.9	92	29.2	-17	8.5	
16	58	.3	-21	44.2	351	6.5	57	15.8	-22	29.0	122	31.0	-17	9.4	
18	87	59.8	-21	43.4	21	11.4	87	14.0	-22	28.1	152	32.8	-17	10.3	
20	117	59.3	-21	42.6	51	16.4	117	12.2	-22	27.3	182	34.6	-17	11.1	
22	147	58.9	-21	41.8	81	21.3	147	10.4	-22	26.4	212	36.4	-17	12.0	
Δ		-2		4				-9		4			9		-4

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	8 53	15 23	0 54	2 39	0 14	.8	15 36	3.0		
55	8 20	15 57	0 44	2 14	0 28	1.0	15 18	2.7		
50	7 55	16 21	0 37	1 57	0 39	1.1	15 4	2.6		
45	7 37	16 40	0 33	1 45	0 48	1.3	14 53	2.5		
40	7 21	16 55	0 30	1 36	0 56	1.4	14 44	2.4		
35	7 8	17 8	0 28	1 30	1 2	1.5	14 36	2.3		
30	6 57	17 19	0 26	1 24	1 8	1.5	14 29	2.2		
20	6 37	17 39	0 24	1 18	1 18	1.7	14 17	2.1		
10	6 20	17 56	0 23	1 15	1 27	1.8	14 7	2.0		
0	6 4	18 12	0 22	1 14	1 35	1.9	13 57	1.9		
10	5 48	18 28	0 23	1 17	1 44	2.0	13 47	1.8		
20	5 30	18 45	0 24	1 23	1 53	2.1	13 37	1.7		
30	5 10	19 5	0 27	1 34	2 3	2.2	13 25	1.6		
35	4 58	19 17	0 29	1 44	2 9	2.3	13 19	1.5		
40	4 44	19 31	0 32	1 58	2 16	2.4	13 11	1.4		
45	4 28	19 47	0 36	2 22	2 24	2.5	13 2	1.3		
50	4 7	20 8	0 42	3 30	2 34	2.6	12 51	1.2		
55	3 41	20 34	0 53	:::	2 46	2.8	12 38	1.1		
60	3 2	21 13	1 20	:::	3 2	3.0	12 20	.8		

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	246	59.3	138	11	7.8	87	244	4.4	-16	18.9	197	42.1	-22	31.3		
2	276	4.9	138	11	25.2	86	274	8.5	-16	19.1	227	46.4	-22	31.3		
4	305	10.5	138	11	42.4	85	304	12.7	-16	19.3	257	50.7	-22	31.3		
6	334	16.0	137	11	59.4	84	334	16.9	-16	19.4	287	55.0	-22	31.3		
8	3	21.5	137	12	16.1	83	4	21.0	-16	19.6	317	59.3	-22	31.3		
10	32	27.0	137	12	32.6	81	34	25.2	-16	19.8	348	3.6	-22	31.3		
12	61	32.4	137	12	48.9	80	64	29.4	-16	20.0	18	7.9	-22	31.3		
14	90	37.7	136	13	4.9	79	94	33.5	-16	20.2	48	12.2	-22	31.2		
16	119	43.0	136	13	20.7	78	124	37.7	-16	20.4	78	16.5	-22	31.2		
18	148	48.2	136	13	36.2	76	154	41.9	-16	20.6	108	20.9	-22	31.2		
20	177	53.3	135	13	51.5	75	184	46.1	-16	20.8	138	25.2	-22	31.2		
22	206	58.4	135	14	6.5	74	214	50.2	-16	21.0	168	29.5	-22	31.2		
Δ								21		-1			22		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 7 42.9	-1.0	16.3	T _m	7 46	1.9	54.9	15.0
12	- 7 54.7	T _{m☉}	12 h 7.9 min	Starost	23.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 11	.1	67	-2.9	♄	7 43	.0	134	-1.4
♂	7 50	.1	132	1.1	♂	10 48	.0	87	.7

12. JANUAR

PETAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	58.4	-21	41.0	111	26.2	177	8.6	-22	25.6	242	38.2	-17	12.8	
2	207	57.9	-21	40.2	141	31.2	207	6.8	-22	24.7	272	40.0	-17	13.7	
4	237	57.4	-21	39.4	171	36.1	237	4.9	-22	23.8	302	41.8	-17	14.5	
6	267	56.9	-21	38.6	201	41.0	267	3.1	-22	22.9	332	43.6	-17	15.3	
8	297	56.4	-21	37.8	231	45.9	297	1.3	-22	22.0	2	45.4	-17	16.2	
10	327	56.0	-21	36.9	261	50.9	326	59.5	-22	21.1	32	47.2	-17	17.0	
12	357	55.5	-21	36.1	291	55.8	356	57.7	-22	20.2	62	49.0	-17	17.9	
14	27	55.0	-21	35.3	322	.7	26	55.9	-22	19.3	92	50.8	-17	18.7	
16	57	54.5	-21	34.5	352	5.7	56	54.1	-22	18.4	122	52.6	-17	19.6	
18	87	54.0	-21	33.6	22	10.6	86	52.3	-22	17.5	152	54.4	-17	20.4	
20	117	53.6	-21	32.8	52	15.5	116	50.5	-22	16.6	182	56.2	-17	21.3	
22	147	53.1	-21	32.0	82	20.4	146	48.7	-22	15.7	212	58.0	-17	22.1	
Δ		-2		4				-9		4			9		-4

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	8 52	15 25	0 54	2 39	0 32	.9	16 47	2.8		
55	8 19	15 58	0 44	2 14	0 52	1.2	16 23	2.6		
50	7 55	16 22	0 37	1 57	1 7	1.3	16 6	2.5		
45	7 36	16 41	0 33	1 45	1 19	1.4	15 52	2.4		
40	7 21	16 56	0 30	1 36	1 29	1.5	15 40	2.3		
35	7 8	17 9	0 28	1 29	1 37	1.6	15 31	2.2		
30	6 57	17 20	0 26	1 24	1 45	1.6	15 22	2.2		
20	6 38	17 39	0 24	1 18	1 58	1.7	15 7	2.1		
10	6 21	17 56	0 23	1 14	2 10	1.8	14 54	2.0		
0	6 5	18 12	0 22	1 14	2 20	1.9	14 42	1.9		
10	5 49	18 28	0 23	1 16	2 31	2.0	14 31	1.9		
20	5 31	18 45	0 24	1 22	2 43	2.1	14 18	1.8		
30	5 11	19 5	0 27	1 34	2 57	2.2	14 3	1.7		
35	4 59	19 17	0 29	1 43	3 4	2.3	13 55	1.6		
40	4 45	19 31	0 32	1 57	3 13	2.3	13 45	1.6		
45	4 29	19 47	0 36	2 21	3 24	2.4	13 34	1.5		
50	4 9	20 7	0 42	3 24	3 36	2.5	13 20	1.4		
55	3 42	20 33	0 53	:::	3 52	2.7	13 3	1.3		
60	3 4	21 11	1 18	:::	4 14	2.9	12 41	1.1		

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	236	3.4	135	14	21.3	72	244	54.4	-16	21.2	198	33.8	-22	31.2		
2	265	8.3	134	14	35.8	71	274	58.6	-16	21.4	228	38.1	-22	31.2		
4	294	13.2	134	14	50.0	70	305	2.8	-16	21.6	258	42.4	-22	31.2		
6	323	18.0	134	15	3.9	68	335	7.0	-16	21.8	288	46.7	-22	31.2		
8	352	22.7	133	15	17.6	67	5	11.1	-16	22.0	318	51.0	-22	31.2		
10	21	27.3	133	15	31.0	66	35	15.3	-16	22.2	348	55.4	-22	31.2		
12	50	31.9	132	15	44.1	64	65	19.5	-16	22.4	18	59.7	-22	31.2		
14	79	36.3	132	15	57.0	63	95	23.7	-16	22.6	49	4.0	-22	31.1		
16	108	40.7	131	16	9.5	61	125	27.9	-16	22.8	79	8.3	-22	31.1		
18	137	45.0	131	16	21.7	60	155	32.0	-16	23.0	109	12.6	-22	31.1		
20	166	49.2	131	16	33.7	58	185	36.2	-16	23.2	139	16.9	-22	31.1		
22	195	53.3	130	16	45.3	57	215	40.4	-16	23.4	169	21.2	-22	31.1		
Δ								21		-1			22		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	177	52.6	-21	31.1	112	25.4	176	46.9	-22	14.8	242	59.8	-17	22.9
2	207	52.1	-21	30.3	142	30.3	206	45.1	-22	13.8	273	1.6	-17	23.8
4	237	51.7	-21	29.4	172	35.2	236	43.3	-22	12.9	303	3.4	-17	24.6
6	267	51.2	-21	28.6	202	40.2	266	41.6	-22	12.0	333	5.2	-17	25.5
8	297	50.7	-21	27.7	232	45.1	296	39.8	-22	11.0	3	7.0	-17	26.3
10	327	50.3	-21	26.9	262	50.0	326	38.0	-22	10.1	33	8.8	-17	27.1
12	357	49.8	-21	26.0	292	54.9	356	36.2	-22	9.1	63	10.6	-17	28.0
14	27	49.3	-21	25.2	322	59.9	26	34.4	-22	8.2	93	12.4	-17	28.8
16	57	48.9	-21	24.3	353	4.8	56	32.6	-22	7.2	123	14.2	-17	29.6
18	87	48.4	-21	23.4	23	9.7	86	30.8	-22	6.2	153	15.9	-17	30.5
20	117	47.9	-21	22.6	53	14.7	116	29.1	-22	5.3	183	17.7	-17	31.3
22	147	47.5	-21	21.7	83	19.6	146	27.3	-22	4.3	213	19.5	-17	32.1
Δ		-2		4				-9		5		9		-4

UT	MESEC				JUPITER				SATURN					
	S _♄	Δ	δ _♄	Δ	S _♃	Δ	δ _♃	Δ	S _♄	Δ	δ _♄	Δ		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	224	57.4	130	16	56.7	55	245	44.6	-16	23.5	199	25.5	-22	31.1
2	254	1.3	129	17	7.7	54	275	48.8	-16	23.7	229	29.9	-22	31.1
4	283	5.2	129	17	18.4	52	305	53.0	-16	23.9	259	34.2	-22	31.1
6	312	8.9	128	17	28.9	50	335	57.2	-16	24.1	289	38.5	-22	31.1
8	341	12.6	128	17	39.0	49	6	1.4	-16	24.3	319	42.8	-22	31.1
10	10	16.2	128	17	48.7	47	36	5.5	-16	24.5	349	47.1	-22	31.1
12	39	19.7	127	17	58.2	46	66	9.7	-16	24.7	19	51.4	-22	31.1
14	68	23.1	127	18	7.3	44	96	13.9	-16	24.9	49	55.8	-22	31.0
16	97	26.5	126	18	16.1	42	126	18.1	-16	25.1	80	.1	-22	31.0
18	126	29.7	126	18	24.6	41	156	22.3	-16	25.3	110	4.4	-22	31.0
20	155	32.9	125	18	32.7	39	186	26.5	-16	25.4	140	8.7	-22	31.0
22	184	36.0	125	18	40.5	37	216	30.7	-16	25.6	170	13.0	-22	31.0
Δ								21		-1		22		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 51	15 27	0 53	2 38	0 55	1.2	17 54	2.5
55	8 18	16 0	0 43	2 13	1 19	1.4	17 25	2.4
50	7 54	16 24	0 37	1 57	1 38	1.5	17 5	2.3
45	7 36	16 42	0 33	1 45	1 53	1.6	16 49	2.2
40	7 21	16 57	0 30	1 36	2 5	1.6	16 35	2.2
35	7 8	17 10	0 28	1 29	2 15	1.7	16 24	2.2
30	6 57	17 21	0 26	1 24	2 44	1.7	16 14	2.1
20	6 38	17 40	0 24	1 18	2 40	1.8	15 57	2.1
10	6 21	17 57	0 23	1 14	2 53	1.9	15 43	2.0
0	6 5	18 12	0 22	1 14	3 6	2.0	15 29	2.0
10	5 49	18 28	0 23	1 16	3 19	2.0	15 15	1.9
20	5 32	18 45	0 24	1 22	3 33	2.1	15 0	1.9
30	5 12	19 5	0 27	1 34	3 49	2.2	14 44	1.8
35	5 0	19 17	0 29	1 43	3 58	2.2	14 34	1.8
40	4 46	19 30	0 32	1 57	4 9	2.2	14 23	1.7
45	4 30	19 47	0 36	2 20	4 22	2.3	14 10	1.7
50	4 10	20 6	0 42	3 19	4 37	2.4	13 54	1.6
55	3 44	20 32	0 52	:::	4 56	2.5	13 34	1.5
60	3 6	21 9	1 17	:::	5 23	2.7	13 6	1.4

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♄	r	
h	min	s	s	h min	min	'	'	
00	- 8 29.5	-.9	16.3	T _m	9 18	2.0	54.2	14.8
12	- 8 40.7	T _{m☉}	12 h 8.7 min	Starost	25.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	12 14	.1	64	-2.9	♃	7 36	.0	133	-1.4
♂	7 48	.1	131	1.1	♄	10 41	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	177	47.0	-21	20.8	113	24.5	176	25.5	-22	3.3	243	21.3	-17	33.0
2	207	46.6	-21	19.9	143	29.4	206	23.7	-22	2.3	273	39.1	-16	26.0
4	237	46.1	-21	19.1	173	34.4	236	22.0	-22	1.3	303	24.9	-17	34.6
6	267	45.6	-21	18.2	203	39.3	266	20.2	-22	.3	333	26.7	-17	35.4
8	297	45.2	-21	17.3	233	44.2	296	18.4	-21	59.3	3	28.5	-17	36.3
10	327	44.7	-21	16.4	263	49.2	326	16.7	-21	58.3	33	30.3	-17	37.1
12	357	44.3	-21	15.5	293	54.1	356	14.9	-21	57.3	63	32.1	-17	37.9
14	27	43.8	-21	14.6	323	59.0	26	13.1	-21	56.3	93	33.9	-17	38.7
16	57	43.4	-21	13.7	354	3.9	56	11.4	-21	55.3	123	35.7	-17	39.6
18	87	42.9	-21	12.8	24	8.9	86	9.6	-21	54.3	153	37.5	-17	40.4
20	117	42.5	-21	11.9	54	13.8	116	7.8	-21	53.2	183	39.3	-17	41.2
22	147	42.0	-21	11.0	84	18.7	146	6.1	-21	52.2	213	41.1	-17	42.0
Δ		-2		4				-9		5		9		-4

UT	MESEC				JUPITER				SATURN					
	S _♄	Δ	δ _♄	Δ	S _♃	Δ	δ _♃	Δ	S _♄	Δ	δ _♄	Δ		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	213	39.0	125	18	48.0	36	246	34.9	-16	25.8	200	17.3	-22	31.0
2	242	41.9	124	18	55.1	34	276	39.1	-16	26.0	230	21.6	-22	31.0
4	271	44.8	124	19	1.9	32	306	43.3	-16	26.2	260	26.0	-22	31.0
6	300	47.5	124	19	8.3	30	336	47.5	-16	26.4	290	30.3	-22	31.0
8	329	50.2	123	19	14.4	29	6	51.7	-16	26.6	320	34.6	-22	31.0
10	358	52.9	123	19	20.2	27	36	55.9	-16	26.8	350	38.9	-22	31.0
12	27	55.5	123	19	25.5	25	67	.1	-16	27.0	20	43.2	-22	30.9
14	56	58.0	122	19	30.6	23	97	4.3	-16	27.1	50	47.6	-22	30.9
16	86	.4	122	19	35.2	22	127	8.5	-16	27.3	80	51.9	-22	30.9
18	115	2.8	122	19	39.6	20	157	12.7	-16	27.5	110	56.2	-22	30.9
20	144	5.1	121	19	43.5	18	187	16.9	-16	27.7	141	.5	-22	30.9
22	173	7.4	121	19	47.1	16	217	21.1	-16	27.9	171	4.8	-22	30.9
Δ								21		-1		22		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 49	15 29	0 53	2 38	1 24	1.6	18 54	2.1
55	8 17	16 2	0 43	2 13	1 53	1.7	18 23	2.1
50	7 53	16 25	0 37	1 56	2 14	1.7	17 60	2.1
45	7 35	16 43	0 33	1 44	2 30	1.8	17 42	2.1
40	7 20	16 58	0 30	1 36	2 44	1.8	17 28	2.1
35	7 8	17 11	0 28	1 29	2 56	1.8	17 16	2.1
30	6 57	17 22	0 26	1 24	3 6	1.9	17 5	2.0
20	6 38	17 40	0 24	1 18	3 23	1.9	16 47	2.0
10	6 21	17 57	0 22	1 14	3 39	2.0	16 31	2.0
0	6 5	18 13	0 22	1 14	3 53	2.0	16 16	2.0
10	5 50	18 28	0 23	1 16	4 8	2.0	16 1	2.0
20	5 32	18 45	0 24	1 22	4 23	2.0	15 45	2.0
30	5 13	19 5	0 27	1 33	4 41	2.1	15 27	1.9
35	5 1	19 17	0 29	1 43	4 51	2.1	15 16	1.9
40	4 48	19 30	0 32	1 56	5 3	2.1	15 4	1.9
45	4 32	19 46	0 36	2 19	5 17	2.2	14 50	1.9
50	4 12	20 6	0 42	3 15	5 34	2.2	14 32	1.9
55	3 46	20 31	0 52	:::	5 56	2.3	14 10	1.8
60	3 9	21 8	1 16	:::	6 27	2.3	13 39	1.8

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♄	r	
h	min	s	s	h min	min	'	'	
00	- 8 51.9	-.9	16.3	T _m	10 5	2.0	54.0	14.7
12	- 9 2.8	T _{m☉}	12 h 9.1 min					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	41.6	-21	10.1	114	23.6	176	4.3	-21	51.2	243	42.8	-17	42.9	
2	207	41.1	-21	9.2	144	28.6	206	2.6	-21	50.1	273	44.6	-17	43.7	
4	237	40.7	-21	8.3	174	33.5	236	.8	-21	49.1	303	46.4	-17	44.5	
6	267	40.2	-21	7.3	204	38.4	265	59.1	-21	48.0	333	48.2	-17	45.3	
8	297	39.8	-21	6.4	234	43.4	295	57.3	-21	47.0	3	50.0	-17	46.1	
10	327	39.3	-21	5.5	264	48.3	325	55.6	-21	45.9	33	51.8	-17	46.9	
12	357	38.9	-21	4.6	294	53.2	355	53.8	-21	44.8	63	53.6	-17	47.8	
14	27	38.5	-21	3.7	324	58.1	25	52.1	-21	43.8	93	55.4	-17	48.6	
16	57	38.0	-21	2.7	355	3.1	55	50.3	-21	42.7	123	57.2	-17	49.4	
18	87	37.6	-21	1.8	25	8.0	85	48.6	-21	41.6	153	58.9	-17	50.2	
20	117	37.2	-21	.8	55	12.9	115	46.9	-21	40.5	184	.7	-17	51.0	
22	147	36.7	-20	59.9	85	17.9	145	45.1	-21	39.5	214	2.5	-17	51.8	
Δ		-2		5				-9		5			9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 48	15 32	0 53	2 37	2 1	2.0	19 45	1.7
55	8 16	16 4	0 43	2 12	2 33	2.0	19 13	1.8
50	7 53	16 27	0 37	1 56	2 55	2.0	18 50	1.9
45	7 35	16 44	0 33	1 44	3 13	2.0	18 32	1.9
40	7 20	16 59	0 30	1 36	3 28	2.0	18 18	1.9
35	7 8	17 12	0 28	1 29	3 40	2.0	18 5	1.9
30	6 57	17 22	0 26	1 24	3 51	2.0	17 54	1.9
20	6 38	17 41	0 24	1 17	4 9	2.0	17 35	2.0
10	6 21	17 58	0 22	1 14	4 26	2.0	17 19	2.0
0	6 6	18 13	0 22	1 14	4 41	2.0	17 4	2.0
10	5 50	18 29	0 23	1 16	4 56	2.0	16 49	2.0
20	5 33	18 46	0 24	1 22	5 12	2.0	16 32	2.0
30	5 13	19 5	0 27	1 33	5 31	2.0	16 14	2.1
35	5 2	19 16	0 29	1 42	5 42	2.0	16 3	2.1
40	4 49	19 30	0 32	1 56	5 54	2.0	15 50	2.1
45	4 33	19 45	0 36	2 18	6 9	2.0	15 35	2.1
50	4 13	20 5	0 41	3 11	6 27	2.0	15 17	2.1
55	3 48	20 30	0 52	:::	6 50	2.0	14 54	2.1
60	3 11	21 6	1 14	:::	7 23	1.9	14 21	2.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	202	9.6	121	19	50.3	14	247	25.3	-16	28.1	201	9.1	-22	30.9		
2	231	11.8	121	19	53.2	12	277	29.5	-16	28.3	231	13.5	-22	30.9		
4	260	13.9	120	19	55.7	11	307	33.7	-16	28.4	261	17.8	-22	30.9		
6	289	16.0	120	19	57.8	9	337	37.9	-16	28.6	291	22.1	-22	30.9		
8	318	18.1	120	19	59.6	7	7	42.1	-16	28.8	321	26.4	-22	30.8		
10	347	20.1	120	20	1.0	5	37	46.3	-16	29.0	351	30.7	-22	30.8		
12	16	22.1	120	20	2.0	3	67	50.5	-16	29.2	21	35.1	-22	30.8		
14	45	24.1	120	20	2.6	1	97	54.8	-16	29.4	51	39.4	-22	30.8		
16	74	26.0	120	20	2.9	0	127	59.0	-16	29.5	81	43.7	-22	30.8		
18	103	28.0	120	20	2.8	-2	158	3.2	-16	29.7	111	48.0	-22	30.8		
20	132	29.9	120	20	2.4	-4	188	7.4	-16	29.9	141	52.3	-22	30.8		
22	161	31.8	119	20	1.5	-6	218	11.6	-16	30.1	171	56.7	-22	30.8		
Δ								21		-1			22		0	

SUNCE				MESEC						
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r			
h	min	s	'	h min	min	'	'			
00	- 9 13.7	-.9	16.3	T _m	10 52	2.0	53.9 14.7			
12	- 9 24.3	T _{m☉}	12 h 9.4 min	Starost	27.7 d	Faza	●			
PLANETE										
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.	
h min	'	°		h min	'	°		h min	'	°
♀	12 16	.1	62	-2.9	♀	7 29	.0	133	-1.5	
♂	7 45	.1	129	1.0	♂	10 34	.0	87	.7	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	36.3	-20	59.0	115	22.8	175	43.4	-21	38.4	244	4.3	-17	52.6	
2	207	35.9	-20	58.0	145	27.7	205	41.7	-21	37.3	274	6.1	-17	53.4	
4	237	35.4	-20	57.1	175	32.6	235	39.9	-21	36.2	304	7.9	-17	54.2	
6	267	35.0	-20	56.1	205	37.6	265	38.2	-21	35.1	334	9.7	-17	55.1	
8	297	34.6	-20	55.2	235	42.5	295	36.5	-21	34.0	4	11.4	-17	55.9	
10	327	34.1	-20	54.2	265	47.4	325	34.7	-21	32.8	34	13.2	-17	56.7	
12	357	33.7	-20	53.3	295	52.4	355	33.0	-21	31.7	64	15.0	-17	57.5	
14	27	33.3	-20	52.3	325	57.3	25	31.3	-21	30.6	94	16.8	-17	58.3	
16	57	32.9	-20	51.3	356	2.2	55	29.6	-21	29.5	124	18.6	-17	59.1	
18	87	32.4	-20	50.4	26	7.1	85	27.9	-21	28.3	154	20.4	-17	59.9	
20	117	32.0	-20	49.4	56	12.1	115	26.1	-21	27.2	184	22.2	-18	.7	
22	147	31.6	-20	48.4	86	17.0	145	24.4	-21	26.1	214	23.9	-18	1.5	
Δ		-2		5				-9		6			9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 46	15 34	0 52	2 36	2 48	2.4	20 27	1.4
55	8 15	16 5	0 43	2 12	3 20	2.3	19 57	1.5
50	7 52	16 28	0 37	1 56	3 43	2.2	19 35	1.6
45	7 34	16 46	0 33	1 44	4 1	2.2	19 17	1.7
40	7 20	17 0	0 30	1 35	4 16	2.2	19 3	1.7
35	7 7	17 12	0 27	1 29	4 28	2.1	18 51	1.8
30	6 56	17 23	0 26	1 24	4 39	2.1	18 41	1.8
20	6 38	17 42	0 24	1 17	4 57	2.1	18 23	1.9
10	6 22	17 58	0 22	1 14	5 14	2.0	18 7	1.9
0	6 6	18 13	0 22	1 14	5 29	2.0	17 52	2.0
10	5 51	18 29	0 23	1 16	5 44	2.0	17 37	2.0
20	5 34	18 46	0 24	1 22	6 0	1.9	17 21	2.1
30	5 14	19 5	0 27	1 33	6 19	1.9	17 3	2.1
35	5 3	19 16	0 29	1 42	6 30	1.9	16 52	2.2
40	4 50	19 29	0 31	1 55	6 42	1.8	16 40	2.2
45	4 34	19 45	0 35	2 17	6 57	1.8	16 26	2.3
50	4 15	20 4	0 41	3 7	7 15	1.7	16 8	2.3
55	3 50	20 29	0 51	:::	7 38	1.7	15 45	2.4
60	3 14	21 4	1 13	:::	8 9	1.5	15 13	2.5
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	190	33.7	119	20	.3	-8	248	15.8	-16	30.3	202	1.0	-22	30.8		
2	219	35.6	119	19	58.8	-10	278	20.0	-16	30.5	232	5.3	-22	30.8		
4	248	37.5	120	19	56.8	-12	308	24.3	-16	30.6	262	9.6	-22	30.7		
6	277	39.4	120	19	54.5	-13	338	28.5	-16	30.8	292	14.0	-22	30.7		
8	306	41.3	120	19	51.8	-15	8	32.7	-16	31.0	322	18.3	-22	30.7		
10	335	43.2	120	19	48.8	-17	38	36.9	-16	31.2	352	22.6	-22	30.7		
12	4	45.1	120	19	45.4	-19	68	41.1	-16	31.4	22	26.9	-22	30.7		
14	33	47.1	120	19	41.6	-21	98	45.3	-16	31.5	52	31.2	-22	30.7		
16	62	49.1	120	19	37.4	-23	128	49.6	-16	31.7	82	35.6	-22	30.7		
18	91	51.1	120	19	32.9	-24	158	53.8	-16	31.9	112	39.9	-22	30.7		
20	120	53.1	120	19	28.0	-26	188	58.0	-16	32.1	142	44.2	-22	30.7		
22	149	55.2	121	19	22.7	-28	219	2.2	-16	32.3	172	48.5	-22	30.7		
Δ								21		-1			22		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 31.2 -20 47.4		116 21.9	175 22.7 -21 24.9	244 25.7 -18 2.3		
2	207 30.8 -20 46.5		146 26.9	205 21.0 -21 23.8	274 27.5 -18 3.1		
4	237 30.3 -20 45.5		176 31.8	235 19.3 -21 22.6	304 29.3 -18 3.9		
6	267 29.9 -20 44.5		206 36.7	265 17.6 -21 21.5	334 31.1 -18 4.7		
8	297 29.5 -20 43.5		236 41.6	295 15.9 -21 20.3	4 32.8 -18 5.5		
10	327 29.1 -20 42.5		266 46.6	325 14.2 -21 19.1	34 34.6 -18 6.3		
12	357 28.7 -20 41.5		296 51.5	355 12.5 -21 18.0	64 36.4 -18 7.1		
14	27 28.3 -20 40.5		326 56.4	25 10.8 -21 16.8	94 38.2 -18 7.8		
16	57 27.9 -20 39.5		357 1.4	55 9.1 -21 15.6	124 40.0 -18 8.6		
18	87 27.5 -20 38.5		27 6.3	85 7.4 -21 14.4	154 41.8 -18 9.4		
20	117 27.1 -20 37.5		57 11.2	115 5.7 -21 13.2	184 43.5 -18 10.2		
22	147 26.6 -20 36.5		87 16.1	145 4.0 -21 12.0	214 45.3 -18 11.0		
Δ	-2	5		-9	6	9	-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 44	15 36	0 52	2 36	3 45	2.7	21 0	1.1
55	8 14	16 7	0 43	2 12	4 15	2.5	20 33	1.3
50	7 51	16 30	0 37	1 56	4 37	2.4	20 14	1.4
45	7 34	16 47	0 33	1 44	4 53	2.3	19 58	1.5
40	7 19	17 1	0 30	1 35	5 7	2.3	19 45	1.6
35	7 7	17 13	0 27	1 29	5 19	2.2	19 34	1.6
30	6 56	17 24	0 26	1 24	5 29	2.2	19 24	1.7
20	6 38	17 42	0 24	1 17	5 47	2.1	19 8	1.8
10	6 22	17 59	0 22	1 14	6 2	2.0	18 53	1.9
0	6 6	18 14	0 22	1 14	6 17	2.0	18 40	2.0
10	5 51	18 29	0 23	1 16	6 31	1.9	18 26	2.0
20	5 34	18 46	0 24	1 22	6 46	1.8	18 11	2.1
30	5 15	19 5	0 27	1 33	7 4	1.8	17 54	2.2
35	5 4	19 16	0 29	1 42	7 14	1.7	17 45	2.3
40	4 51	19 29	0 31	1 55	7 26	1.7	17 33	2.3
45	4 35	19 44	0 35	2 16	7 39	1.6	17 20	2.4
50	4 16	20 3	0 41	3 3	7 56	1.5	17 4	2.5
55	3 51	20 28	0 51	:::	8 18	1.4	16 43	2.6
60	3 16	21 2	1 12	:::	8 47	1.2	16 15	2.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 57.3 121 19	17.1	-30	249 6.5 -16 32.4	202 52.9 -22 30.6			
2	207 59.5 121 19	11.2	-32	279 10.7 -16 32.6	232 57.2 -22 30.6			
4	237 1.7 121 19	4.8	-33	309 14.9 -16 32.8	263 1.5 -22 30.6			
6	266 4.0 122 18	58.1	-35	339 19.1 -16 33.0	293 5.8 -22 30.6			
8	295 6.3 122 18	51.1	-37	9 23.4 -16 33.2	323 10.2 -22 30.6			
10	324 8.6 122 18	43.7	-39	39 27.6 -16 33.3	353 14.5 -22 30.6			
12	353 11.0 122 18	36.0	-40	69 31.8 -16 33.5	23 18.8 -22 30.6			
14	22 13.5 123 18	27.9	-42	99 36.1 -16 33.7	53 23.1 -22 30.6			
16	51 16.0 123 18	19.4	-44	129 40.3 -16 33.9	83 27.5 -22 30.6			
18	80 18.6 123 18	10.7	-46	159 44.5 -16 34.0	113 31.8 -22 30.5			
20	109 21.3 124 18	1.5	-47	189 48.8 -16 34.2	143 36.1 -22 30.5			
22	138 24.0 124 17	52.1	-49	219 53.0 -16 34.4	173 40.4 -22 30.5			
Δ				21	-1	22	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 9 55.3	- .8	16.3	T _m	12 28	2.0	54.1 14.7
12	-10 5.2	T _{m☉}	12 h 10.1 min	Starost	29.7 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 19	.1	59	-2.9	♄	7 23	.0	133	-1.5
♂	7 42	.1	128	1.0	♂	10 27	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 26.2 -20 35.5		117 21.1	175 2.3 -21 10.8	244 47.1 -18 11.8		
2	207 25.8 -20 34.5		147 26.0	205 .6 -21 9.6	274 48.9 -18 12.6		
4	237 25.4 -20 33.5		177 30.9	234 58.9 -21 8.4	304 50.7 -18 13.4		
6	267 25.0 -20 32.5		207 35.8	264 57.2 -21 7.2	334 52.4 -18 14.2		
8	297 24.6 -20 31.5		237 40.8	294 55.5 -21 6.0	4 54.2 -18 14.9		
10	327 24.2 -20 30.4		267 45.7	324 53.9 -21 4.8	34 56.0 -18 15.7		
12	357 23.8 -20 29.4		297 50.6	354 52.2 -21 3.5	64 57.8 -18 16.5		
14	27 23.4 -20 28.4		327 55.6	24 50.5 -21 2.3	94 59.5 -18 17.3		
16	57 23.1 -20 27.4		358 .5	54 48.8 -21 1.1	125 1.3 -18 18.1		
18	87 22.7 -20 26.3		28 5.4	84 47.1 -20 59.8	155 3.1 -18 18.9		
20	117 22.3 -20 25.3		58 10.3	114 45.5 -20 58.6	185 4.9 -18 19.6		
22	147 21.9 -20 24.2		88 15.3	144 43.8 -20 57.4	215 6.6 -18 20.4		
Δ	-2	5		-8	6	9	-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 43	15 39	0 52	2 35	4 50	2.9	21 26	.8
55	8 12	16 9	0 42	2 11	5 16	2.7	21 4	1.1
50	7 50	16 31	0 37	1 55	5 35	2.6	20 47	1.2
45	7 33	16 48	0 33	1 44	5 50	2.5	20 34	1.3
40	7 19	17 2	0 30	1 35	6 2	2.4	20 23	1.4
35	7 7	17 14	0 27	1 29	6 13	2.3	20 14	1.5
30	6 56	17 25	0 26	1 24	6 22	2.2	20 5	1.6
20	6 38	17 43	0 23	1 17	6 37	2.1	19 51	1.7
10	6 22	17 59	0 22	1 14	6 51	2.0	19 38	1.8
0	6 7	18 14	0 22	1 13	7 4	1.9	19 27	1.9
10	5 52	18 29	0 23	1 16	7 17	1.9	19 15	2.0
20	5 35	18 45	0 24	1 21	7 31	1.8	19 2	2.1
30	5 16	19 4	0 27	1 32	7 46	1.6	18 47	2.2
35	5 5	19 15	0 29	1 41	7 55	1.6	18 39	2.3
40	4 52	19 28	0 31	1 54	8 6	1.5	18 29	2.4
45	4 37	19 43	0 35	2 15	8 18	1.4	18 18	2.5
50	4 18	20 2	0 41	3 0	8 32	1.3	18 4	2.6
55	3 53	20 26	0 50	:::	8 51	1.2	17 46	2.8
60	3 19	21 1	1 11	:::	9 16	.9	17 23	3.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	167 26.8 124 17	42.3	-51	249 57.2 -16 34.6	203 44.8 -22 30.5			
2	196 29.7 125 17	32.2	-52	280 1.5 -16 34.7	233 49.1 -22 30.5			
4	225 32.6 125 17	21.7	-54	310 5.7 -16 34.9	263 53.4 -22 30.5			
6	254 35.7 125 17	10.9	-55	340 9.9 -16 35.1	293 57.8 -22 30.5			
8	283 38.8 126 16	59.9	-57	10 14.2 -16 35.3	324 2.1 -22 30.5			
10	312 41.9 126 16	48.4	-59	40 18.4 -16 35.4	354 6.4 -22 30.5			
12	341 45.2 127 16	36.7	-60	70 22.7 -16 35.6	24 10.7 -22 30.4			
14	10 48.5 127 16	24.7	-62	100 26.9 -16 35.8	54 15.1 -22 30.4			
16	39 51.9 127 16	12.3	-63	130 31.1 -16 36.0	84 19.4 -22 30.4			
18	68 55.4 128 15	59.7	-65	160 35.4 -16 36.1	114 23.7 -22 30.4			
20	97 59.0 128 15	46.7	-66	190 39.6 -16 36.3	144 28.1 -22 30.4			
22	127 2.7 129 15	33.5	-68	220 43.9 -16 36.5	174 32.4 -22 30.4			
Δ				21	-1	22	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	-10 15.0	- .8	16.3	T _m	13 15	2.0	54.3 14.8
12	-10 24.5	T _{m☉}	12 h 10.4 min	Starost	.9 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 21	.1	58	-2.9	♄	7 19	.0	133	-1.5
♂	7 40	.1	127	1.0	♂	10 24	.0	86	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 21.5 -20 23.2		118 20.2	174 42.1 -20 56.1	245 8.4 -18 21.2		
2	207 21.1 -20 22.2		148 25.1	204 40.5 -20 54.9	275 10.2 -18 22.0		
4	237 20.7 -20 21.1		178 30.1	234 38.8 -20 53.6	305 12.0 -18 22.7		
6	267 20.3 -20 20.1		208 35.0	264 37.1 -20 52.3	335 13.8 -18 23.5		
8	297 19.9 -20 19.0		238 39.9	294 35.5 -20 51.1	5 15.5 -18 24.3		
10	327 19.6 -20 18.0		268 44.8	324 33.8 -20 49.8	35 17.3 -18 25.1		
12	357 19.2 -20 16.9		298 49.8	354 32.2 -20 48.5	65 19.1 -18 25.8		
14	27 18.8 -20 15.8		328 54.7	24 30.5 -20 47.2	95 20.8 -18 26.6		
16	57 18.4 -20 14.8		358 59.6	54 28.8 -20 46.0	125 22.6 -18 27.4		
18	87 18.0 -20 13.7		29 4.6	84 27.2 -20 44.7	155 24.4 -18 28.2		
20	117 17.7 -20 12.7		59 9.5	114 25.5 -20 43.4	185 26.2 -18 28.9		
22	147 17.3 -20 11.6		89 14.4	144 23.9 -20 42.1	215 27.9 -18 29.7		
Δ	-2 5			-8 6	9 -4		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 41	15 41	0 51	2 35	6 0	3.1	21 46	.7
55	8 11	16 11	0 42	2 11	6 21	2.8	21 29	.9
50	7 49	16 33	0 36	1 55	6 37	2.7	21 16	1.1
45	7 32	16 50	0 32	1 44	6 49	2.5	21 6	1.2
40	7 18	17 4	0 30	1 35	6 59	2.4	20 58	1.3
35	7 6	17 15	0 27	1 29	7 8	2.3	20 50	1.4
30	6 56	17 26	0 26	1 24	7 15	2.3	20 44	1.5
20	6 38	17 44	0 23	1 17	7 28	2.1	20 32	1.7
10	6 22	17 60	0 22	1 14	7 40	2.0	20 22	1.8
0	6 7	18 14	0 22	1 13	7 51	1.9	20 13	1.9
10	5 52	18 29	0 23	1 16	8 1	1.8	20 3	2.0
20	5 36	18 45	0 24	1 21	8 13	1.7	19 53	2.1
30	5 17	19 4	0 26	1 32	8 26	1.6	19 41	2.3
35	5 6	19 15	0 28	1 41	8 33	1.5	19 35	2.4
40	4 53	19 28	0 31	1 54	8 42	1.4	19 27	2.5
45	4 38	19 43	0 35	2 14	8 52	1.3	19 18	2.6
50	4 19	20 1	0 41	2 57	9 4	1.2	19 7	2.7
55	3 55	20 25	0 50	:::	9 19	1.0	18 53	2.9
60	3 21	20 59	1 9	:::	9 38	.8	18 35	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	156 6.4 129	15 19.9	-69		250 48.1 -16 36.6	204 36.7 -22 30.4		
2	185 10.3 130	15 6.1	-71		280 52.4 -16 36.8	234 41.0 -22 30.4		
4	214 14.2 130	14 52.0	-72		310 56.6 -16 37.0	264 45.4 -22 30.4		
6	243 18.1 130	14 37.6	-73		341 .9 -16 37.2	294 49.7 -22 30.3		
8	272 22.2 131	14 22.9	-75		11 5.1 -16 37.3	324 54.0 -22 30.3		
10	301 26.4 131	14 8.0	-76		41 9.4 -16 37.5	354 58.4 -22 30.3		
12	330 30.6 131	13 52.8	-77		71 13.6 -16 37.7	25 2.7 -22 30.3		
14	359 34.9 132	13 37.3	-79		101 17.9 -16 37.8	55 7.0 -22 30.3		
16	28 39.3 132	13 21.6	-80		131 22.1 -16 38.0	85 11.4 -22 30.3		
18	57 43.7 133	13 5.6	-81		161 26.4 -16 38.2	115 15.7 -22 30.3		
20	86 48.2 133	12 49.4	-82		191 30.6 -16 38.3	145 20.0 -22 30.3		
22	115 52.8 133	12 32.9	-84		221 34.9 -16 38.5	175 24.4 -22 30.2		
Δ					21 -1	22 0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	-10 34.1	-.8 16.3	T _m	14 2	1.9	54.6	14.9		
12	-10 43.2	T _{m☉} 12 h 10.7 min		Starost	1.9 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♂	12 22	.1	56	-2.9	♃	7 16	.0	132	-1.5
	7 39	.1	127	1.0	♄	10 20	.0	86	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 16.9 -20 10.5		119 19.3	174 22.3 -20 40.8	245 29.7 -18 30.5		
2	207 16.5 -20 9.4		149 24.3	204 20.6 -20 39.5	275 31.5 -18 31.2		
4	237 16.2 -20 8.4		179 29.2	234 19.0 -20 38.2	305 33.3 -18 32.0		
6	267 15.8 -20 7.3		209 34.1	264 17.3 -20 36.8	335 35.0 -18 32.8		
8	297 15.4 -20 6.2		239 39.1	294 15.7 -20 35.5	5 36.8 -18 33.5		
10	327 15.1 -20 5.1		269 44.0	324 14.1 -20 34.2	35 38.6 -18 34.3		
12	357 14.7 -20 4.0		299 48.9	354 12.4 -20 32.9	65 40.3 -18 35.0		
14	27 14.3 -20 2.9		329 53.8	24 10.8 -20 31.5	95 42.1 -18 35.8		
16	57 14.0 -20 1.8		359 58.8	54 9.2 -20 30.2	125 43.9 -18 36.6		
18	87 13.6 -20 .7		30 3.7	84 7.5 -20 28.9	155 45.7 -18 37.3		
20	117 13.3 -19 59.6		60 8.6	114 5.9 -20 27.5	185 47.4 -18 38.1		
22	147 12.9 -19 58.5		90 13.6	144 4.3 -20 26.2	215 49.2 -18 38.8		
Δ	-2 5			-8 7	9 -4		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 39	15 43	0 51	2 34	7 14	3.2	22 3	.6
55	8 10	16 13	0 42	2 11	7 29	2.9	21 52	.8
50	7 48	16 34	0 36	1 55	7 41	2.7	21 43	1.0
45	7 31	16 51	0 32	1 43	7 50	2.6	21 36	1.2
40	7 18	17 5	0 29	1 35	7 57	2.5	21 30	1.3
35	7 6	17 16	0 27	1 28	8 4	2.4	21 25	1.4
30	6 56	17 27	0 26	1 23	8 10	2.3	21 20	1.5
20	6 38	17 44	0 23	1 17	8 20	2.1	21 12	1.6
10	6 22	17 60	0 22	1 14	8 28	2.0	21 5	1.8
0	6 7	18 15	0 22	1 13	8 36	1.9	20 58	1.9
10	5 53	18 29	0 22	1 16	8 45	1.8	20 52	2.0
20	5 36	18 45	0 24	1 21	8 53	1.6	20 44	2.1
30	5 18	19 4	0 26	1 32	9 3	1.5	20 36	2.3
35	5 7	19 15	0 28	1 40	9 9	1.4	20 31	2.4
40	4 54	19 27	0 31	1 53	9 15	1.3	20 26	2.5
45	4 39	19 42	0 35	2 13	9 22	1.2	20 19	2.6
50	4 21	20 0	0 40	2 54	9 31	1.1	20 12	2.8
55	3 57	20 24	0 49	:::	9 42	.9	20 2	2.9
60	3 24	20 57	1 8	:::	9 57	.7	19 50	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	144 57.5 134	12 16.2	-85		251 39.1 -16 38.7	205 28.7 -22 30.2		
2	174 2.2 134	11 59.2	-86		281 43.4 -16 38.8	235 33.0 -22 30.2		
4	203 7.0 134	11 42.0	-87		311 47.7 -16 39.0	265 37.4 -22 30.2		
6	232 11.8 135	11 24.6	-88		341 51.9 -16 39.2	295 41.7 -22 30.2		
8	261 16.7 135	11 7.0	-89		11 56.2 -16 39.3	325 46.0 -22 30.2		
10	290 21.7 135	10 49.1	-90		42 .4 -16 39.5	355 50.4 -22 30.2		
12	319 26.7 135	10 31.0	-91		72 4.7 -16 39.7	25 54.7 -22 30.2		
14	348 31.8 136	10 12.8	-92		102 9.0 -16 39.8	55 59.0 -22 30.1		
16	17 36.9 136	9 54.3	-93		132 13.2 -16 40.0	86 3.4 -22 30.1		
18	46 42.0 136	9 35.6	-94		162 17.5 -16 40.2	116 7.7 -22 30.1		
20	75 47.2 136	9 16.7	-95		192 21.8 -16 40.3	146 12.0 -22 30.1		
22	104 52.4 136	8 57.7	-96		222 26.0 -16 40.5	176 16.4 -22 30.1		
Δ					21 -1	22 0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	-10 52.3	-.7 16.3	T _m	14 47	1.9	54.9	15.0		
12	-11 1.1	T _{m☉} 12 h 11.0 min		Starost	2.9 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♂	12 23	.1	55	-2.9	♃	7 12	.0	132	-1.5
	7 38	.1	126	1.0	♄	10 17	.0	86	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 12.5 -19 57.4		120 18.5	174 2.7 -20 24.8	245 51.0 -18 39.6		
2	207 12.2 -19 56.3		150 23.4	204 1.0 -20 23.5	275 52.7 -18 40.4		
4	237 11.8 -19 55.2		180 28.3	233 59.4 -20 22.1	305 54.5 -18 41.1		
6	267 11.5 -19 54.1		210 33.3	263 57.8 -20 20.7	335 56.3 -18 41.9		
8	297 11.1 -19 53.0		240 38.2	293 56.2 -20 19.4	5 58.0 -18 42.6		
10	327 10.8 -19 51.9		270 43.1	323 54.6 -20 18.0	35 59.8 -18 43.4		
12	357 10.4 -19 50.8		300 48.1	353 53.0 -20 16.6	66 1.6 -18 44.1		
14	27 10.1 -19 49.6		330 53.0	23 51.4 -20 15.2	96 3.3 -18 44.9		
16	57 9.7 -19 48.5		0 57.9	53 49.8 -20 13.9	126 5.1 -18 45.6		
18	87 9.4 -19 47.4		31 2.8	83 48.2 -20 12.5	156 6.9 -18 46.4		
20	117 9.0 -19 46.3		61 7.8	113 46.6 -20 11.1	186 8.6 -18 47.1		
22	147 8.7 -19 45.1		91 12.7	143 45.0 -20 9.7	216 10.4 -18 47.9		
Δ	-2	6		-8	7	9	-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 37	15 46	0 51	2 33	8 30	3.2	22 18	.6
55	8 8	16 15	0 42	2 10	8 39	3.0	22 12	.8
50	7 47	16 36	0 36	1 54	8 46	2.8	22 7	1.0
45	7 31	16 52	0 32	1 43	8 52	2.6	22 3	1.1
40	7 17	17 6	0 29	1 35	8 57	2.5	22 0	1.3
35	7 5	17 17	0 27	1 28	9 1	2.4	21 58	1.4
30	6 55	17 28	0 26	1 23	9 5	2.3	21 55	1.5
20	6 38	17 45	0 23	1 17	9 11	2.2	21 51	1.6
10	6 22	18 0	0 22	1 14	9 16	2.0	21 47	1.8
0	6 8	18 15	0 22	1 13	9 22	1.9	21 43	1.9
10	5 53	18 30	0 22	1 15	9 27	1.8	21 40	2.0
20	5 37	18 45	0 24	1 21	9 32	1.6	21 36	2.2
30	5 19	19 4	0 26	1 32	9 39	1.5	21 31	2.3
35	5 8	19 14	0 28	1 40	9 42	1.4	21 29	2.4
40	4 56	19 27	0 31	1 52	9 46	1.3	21 26	2.5
45	4 41	19 41	0 35	2 12	9 51	1.1	21 22	2.7
50	4 23	19 59	0 40	2 52	9 57	1.0	21 18	2.8
55	3 59	20 22	0 49	:::	10 4	.8	21 13	3.0
60	3 26	20 55	1 7	:::	10 13	.6	21 6	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	133 57.7 136	8 38.4 -97			252 30.3 -16 40.7	206 20.7 -22 30.1		
2	163 2.9 136	8 19.0 -98			282 34.6 -16 40.8	236 25.0 -22 30.1		
4	192 8.2 137	7 59.4 -99			312 38.8 -16 41.0	266 29.4 -22 30.1		
6	221 13.5 137	7 39.7 -100			342 43.1 -16 41.2	296 33.7 -22 30.0		
8	250 18.9 137	7 19.7 -100			12 47.4 -16 41.3	326 38.1 -22 30.0		
10	279 24.2 137	6 59.7 -101			42 51.6 -16 41.5	356 42.4 -22 30.0		
12	308 29.5 137	6 39.4 -102			72 55.9 -16 41.7	26 46.7 -22 30.0		
14	337 34.9 137	6 19.1 -103			103 .2 -16 41.8	56 51.1 -22 30.0		
16	6 40.2 137	5 58.5 -103			133 4.5 -16 42.0	86 55.4 -22 30.0		
18	35 45.5 137	5 37.9 -104			163 8.7 -16 42.1	116 59.7 -22 30.0		
20	64 50.8 136	5 17.1 -105			193 13.0 -16 42.3	147 4.1 -22 30.0		
22	93 56.1 136	4 56.2 -105			223 17.3 -16 42.5	177 8.4 -22 29.9		
Δ					21	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-11 9.9	-.7	16.3	T _m	15 32	1.9	55.4 15.1		
12	-11 18.2	T _{m☉}	12 h 11.3 min	Starost	3.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 24	.1	54	-2.9	♃	7 9	.0	132	-1.5
♂	7 36	.1	126	1.0	♄	10 13	.0	86	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 8.3 -19 44.0		121 17.6	173 43.4 -20 8.3	246 12.2 -18 48.6		
2	207 8.0 -19 42.9		151 22.5	203 41.8 -20 6.9	276 13.9 -18 49.4		
4	237 7.7 -19 41.7		181 27.5	233 40.2 -20 5.5	306 15.7 -18 50.1		
6	267 7.3 -19 40.6		211 32.4	263 38.6 -20 4.0	336 17.5 -18 50.8		
8	297 7.0 -19 39.4		241 37.3	293 37.0 -20 2.6	6 19.2 -18 51.6		
10	327 6.7 -19 38.3		271 42.3	323 35.4 -20 1.2	36 21.0 -18 52.3		
12	357 6.3 -19 37.1		301 47.2	353 33.8 -19 59.8	66 22.8 -18 53.1		
14	27 6.0 -19 36.0		331 52.1	23 32.3 -19 58.3	96 24.5 -18 53.8		
16	57 5.7 -19 34.8		1 57.0	53 30.7 -19 56.9	126 26.3 -18 54.5		
18	87 5.3 -19 33.7		32 2.0	83 29.1 -19 55.5	156 28.1 -18 55.3		
20	117 5.0 -19 32.5		62 6.9	113 27.5 -19 54.0	186 29.8 -18 56.0		
22	147 4.7 -19 31.3		92 11.8	143 25.9 -19 52.6	216 31.6 -18 56.8		
Δ	-2	6		-8	7	9	-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 35	15 48	0 50	2 33	9 47	2.2	22 32	3.0
55	8 7	16 17	0 42	2 10	9 51	2.2	22 31	2.8
50	7 46	16 37	0 36	1 54	9 53	2.1	22 31	2.7
45	7 30	16 54	0 32	1 43	9 55	2.1	22 31	2.5
40	7 16	17 7	0 29	1 35	9 57	2.1	22 30	2.4
35	7 5	17 18	0 27	1 28	9 59	2.0	22 30	2.4
30	6 55	17 28	0 26	1 23	10 0	2.0	22 30	2.3
20	6 38	17 46	0 23	1 17	10 3	2.0	22 29	2.2
10	6 22	18 1	0 22	1 14	10 5	1.9	22 29	2.0
0	6 8	18 15	0 22	1 13	10 7	1.9	22 29	1.9
10	5 53	18 30	0 22	1 15	10 9	1.9	22 28	1.8
20	5 38	18 45	0 24	1 21	10 11	1.8	22 28	1.7
30	5 20	19 3	0 26	1 31	10 14	1.8	22 27	1.6
35	5 9	19 14	0 28	1 40	10 15	1.8	22 27	1.5
40	4 57	19 26	0 31	1 52	10 17	1.8	22 27	1.4
45	4 42	19 40	0 35	2 11	10 18	1.7	22 26	1.3
50	4 24	19 58	0 40	2 49	10 21	1.7	22 26	1.2
55	4 1	20 21	0 49	:::	10 23	1.7	22 25	1.1
60	3 29	20 52	1 6	:::	10 27	1.6	22 24	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	123 1.4 136	4 35.1 -106			253 21.6 -16 42.6	207 12.8 -22 29.9		
2	152 6.6 136	4 14.0 -106			283 25.8 -16 42.8	237 17.1 -22 29.9		
4	181 11.8 136	3 52.7 -107			313 30.1 -16 43.0	267 21.4 -22 29.9		
6	210 16.9 135	3 31.4 -107			343 34.4 -16 43.1	297 25.8 -22 29.9		
8	239 22.0 135	3 9.9 -108			13 38.7 -16 43.3	327 30.1 -22 29.9		
10	268 27.0 135	2 48.4 -108			43 43.0 -16 43.4	357 34.5 -22 29.9		
12	297 32.0 134	2 26.7 -109			73 47.3 -16 43.6	27 38.8 -22 29.9		
14	326 36.9 134	2 5.0 -109			103 51.5 -16 43.7	57 43.1 -22 29.8		
16	355 41.7 134	1 43.2 -109			133 55.8 -16 43.9	87 47.5 -22 29.8		
18	24 46.4 133	1 21.3 -110			164 .1 -16 44.1	117 51.8 -22 29.8		
20	53 51.1 133	0 59.4 -110			194 4.4 -16 44.2	147 56.2 -22 29.8		
22	82 55.7 132	0 37.4 -110			224 8.7 -16 44.4	178 .5 -22 29.8		
Δ					21	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-11 26.6	-.7	16.3	T _m	16 18	1.9	55.9 15.2		
12	-11 34.6	T _{m☉}	12 h 11.6 min	Starost	4.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 26	.1	52	-2.9	♃	7 6	.0	132	-1.5
♂	7 35	.1	125	1.0	♄	10 10	.0	86	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS						
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	177	4.4	-19	30.2	122	16.8	173	24.4	-19	51.1	246	33.3	-18	57.5		
2	207	4.0	-19	29.0	152	21.7	203	22.8	-19	49.7	276	35.1	-18	58.2		
4	237	3.7	-19	27.8	182	26.6	233	21.2	-19	48.2	306	36.9	-18	59.0		
6	267	3.4	-19	26.7	212	31.5	263	19.7	-19	46.7	336	38.6	-18	59.7		
8	297	3.1	-19	25.5	242	36.5	293	18.1	-19	45.3	6	40.4	-19	.4		
10	327	2.7	-19	24.3	272	41.4	323	16.5	-19	43.8	36	42.2	-19	1.1		
12	357	2.4	-19	23.1	302	46.3	353	15.0	-19	42.3	66	43.9	-19	1.9		
14	27	2.1	-19	22.0	332	51.3	23	13.4	-19	40.9	96	45.7	-19	2.6		
16	57	1.8	-19	20.8	2	56.2	53	11.9	-19	39.4	126	47.4	-19	3.3		
18	87	1.5	-19	19.6	33	1.1	83	10.3	-19	37.9	156	49.2	-19	4.1		
20	117	1.2	-19	18.4	63	6.0	113	8.8	-19	36.4	186	51.0	-19	4.8		
22	147	.9	-19	17.2	93	11.0	143	7.2	-19	34.9	216	52.7	-19	5.5		
Δ		-2		6				-8		7				9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 34	15 51	0 50	2 32	10 41	.6	23 44	3.4
55	8 6	16 19	0 42	2 9	10 43	.9	23 39	3.2
50	7 45	16 39	0 36	1 54	10 45	1.0	23 35	3.0
45	7 29	16 55	0 32	1 43	10 46	1.2	23 32	2.8
40	7 16	17 8	0 29	1 34	10 47	1.3	23 29	2.7
35	7 5	17 19	0 27	1 28	10 48	1.4	23 27	2.6
30	6 55	17 29	0 25	1 23	10 49	1.5	23 25	2.5
20	6 38	17 46	0 23	1 17	10 50	1.7	23 21	2.3
10	6 22	18 1	0 22	1 13	10 51	1.8	23 18	2.2
0	6 8	18 15	0 22	1 13	10 53	2.0	23 15	2.0
10	5 54	18 30	0 22	1 15	10 54	2.1	23 12	1.9
20	5 38	18 45	0 24	1 21	10 55	2.3	23 9	1.7
30	5 21	19 3	0 26	1 31	10 57	2.4	23 6	1.6
35	5 10	19 13	0 28	1 39	10 58	2.5	23 3	1.5
40	4 58	19 25	0 31	1 51	10 59	2.6	23 1	1.4
45	4 44	19 39	0 34	2 10	11 0	2.8	22 58	1.2
50	4 26	19 57	0 40	2 47	11 2	2.9	22 55	1.1
55	4 3	20 19	0 48	:::	11 4	3.1	22 51	.9
60	3 32	20 50	1 5	:::	11 6	3.4	22 46	.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	112	.1	132	0	15.4	-44	254	13.0	-16	44.5	208	4.9	-22	29.8		
2	141	4.5	131	0	6.7	111	284	17.3	-16	44.7	238	9.2	-22	29.8		
4	170	8.7	131	0	28.8	111	314	21.6	-16	44.9	268	13.5	-22	29.7		
6	199	12.9	130	0	51.0	111	344	25.8	-16	45.0	298	17.9	-22	29.7		
8	228	16.8	129	1	13.1	111	14	30.1	-16	45.2	328	22.2	-22	29.7		
10	257	20.7	129	1	35.3	111	44	34.4	-16	45.3	358	26.6	-22	29.7		
12	286	24.4	128	1	57.5	111	74	38.7	-16	45.5	28	30.9	-22	29.7		
14	315	28.0	127	2	19.7	111	104	43.0	-16	45.6	58	35.3	-22	29.7		
16	344	31.4	126	2	42.0	111	134	47.3	-16	45.8	88	39.6	-22	29.7		
18	13	34.7	125	3	4.2	111	164	51.6	-16	45.9	118	44.0	-22	29.6		
20	42	37.8	125	3	26.4	111	194	55.9	-16	46.1	148	48.3	-22	29.6		
22	71	40.7	124	3	48.5	111	225	.2	-16	46.3	178	52.6	-22	29.6		
Δ								21		-1				22		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-11 42.6	-.6	16.3	T _m	17 4	2.0	56.5 15.4
12	-11 50.2	T _{m☉}	12 h 11.8 min	Starost	5.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 27	.1	51	-2.9	♄	7 2	.0	132	-1.5
♂	7 33	.1	124	.9	♂	10 6	.0	86	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS						
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	177	.6	-19	16.0	123	15.9	173	5.7	-19	33.4	246	54.5	-19	6.2		
2	207	.3	-19	14.8	153	20.8	203	4.1	-19	31.9	276	56.2	-19	7.0		
4	236	59.9	-19	13.6	183	25.8	233	2.6	-19	30.4	306	58.0	-19	7.7		
6	266	59.6	-19	12.4	213	30.7	263	1.1	-19	28.9	336	59.8	-19	8.4		
8	296	59.3	-19	11.2	243	35.6	292	59.5	-19	27.4	7	1.5	-19	9.1		
10	326	59.0	-19	10.0	273	40.5	322	58.0	-19	25.9	37	3.3	-19	9.8		
12	356	58.7	-19	8.8	303	45.5	352	56.4	-19	24.3	67	5.0	-19	10.6		
14	26	58.4	-19	7.6	333	50.4	22	54.9	-19	22.8	97	6.8	-19	11.3		
16	56	58.1	-19	6.4	3	55.3	52	53.4	-19	21.3	127	8.5	-19	12.0		
18	86	57.8	-19	5.1	34	.3	82	51.9	-19	19.7	157	10.3	-19	12.7		
20	116	57.5	-19	3.9	64	5.2	112	50.3	-19	18.2	187	12.1	-19	13.4		
22	146	57.3	-19	2.7	94	10.1	142	48.8	-19	16.7	217	13.8	-19	14.1		
Δ		-1		6				-8		8				9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 32	15 53	0 50	2 31	10 56	.7	...	.0
55	8 4	16 21	0 41	2 9	11 4	1.0	...	.0
50	7 44	16 41	0 36	1 54	11 10	1.2	...	.0
45	7 28	16 56	0 32	1 43	11 14	1.3	...	.0
40	7 15	17 9	0 29	1 34	11 19	1.4	...	.0
35	7 4	17 20	0 27	1 28	11 22	1.5	...	.0
30	6 54	17 30	0 25	1 23	11 25	1.6	...	.0
20	6 37	17 47	0 23	1 17	11 31	1.8	...	.0
10	6 23	18 2	0 22	1 13	11 36	1.9	...	.0
0	6 8	18 16	0 22	1 13	11 40	2.1	...	.0
10	5 54	18 30	0 22	1 15	11 45	2.2	23 57	2.0
20	5 39	18 45	0 24	1 20	11 50	2.4	23 51	1.9
30	5 21	19 2	0 26	1 31	11 55	2.5	23 43	1.7
35	5 11	19 13	0 28	1 39	11 59	2.6	23 39	1.6
40	4 59	19 24	0 31	1 51	12 3	2.7	23 34	1.5
45	4 45	19 38	0 34	2 9	12 7	2.9	23 28	1.4
50	4 28	19 56	0 40	2 44	12 12	3.0	23 21	1.2
55	4 5	20 18	0 48	:::	12 19	3.2	23 13	1.0
60	3 34	20 48	1 4	:::	12 27	3.5	23 2	.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	100	43.5	123	4	10.7	111	255	4.5	-16	46.4	208	57.0	-22	29.6		
2	129	46.0	122	4	32.8	110	285	8.8	-16	46.6	239	1.3	-22	29.6		
4	158	48.4	121	4	54.8	110	315	13.1	-16	46.7	269	5.7	-22	29.6		
6	187	50.5	120	5	16.8	110	345	17.4	-16	46.9	299	10.0	-22	29.6		
8	216	52.5	119	5	38.8	109	15	21.7	-16	47.0	329	14.4	-22	29.6		
10	245	54.2	118	6	.7	109	45	26.0	-16	47.2	359	18.7	-22	29.5		
12	274	55.7	116	6	22.5	109	75	30.3	-16	47.3	29	23.1	-22	29.5		
14	303	57.0	115	6	44.2	108	105	34.6	-16	47.5	59	27.4	-22	29.5		
16	332	58.0	114	7	5.9	108	135	39.0	-16	47.6	89	31.8	-22	29.5		
18	1	58.8	113	7	27.4	107	165	43.3	-16	47.8	119	36.1	-22	29.5		
20	30	59.4	111	7	48.8	107	195	47.6	-16	47.9	149	40.5	-22	29.5		
22	59	59.7	110	8	10.1	106	225	51.9	-16	48.1	179	44.8	-22	29.5		
Δ								22		-1				22		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-11 57.8	-.6	16.3	T _m	17 52	2.1	57.2 15.6
12	-12 5.0	T _{m☉}	12 h 12.1 min	Starost	6.9 d	Faza	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	57.0	-19	1.5	124	15.0	172	47.3	-19	15.1	247	15.6	-19	14.8	
2	206	56.7	-19	.2	154	20.0	202	45.8	-19	13.6	277	17.3	-19	15.6	
4	236	56.4	-18	59.0	184	24.9	232	44.3	-19	12.0	307	19.1	-19	16.3	
6	266	56.1	-18	57.8	214	29.8	262	42.7	-19	10.5	337	20.8	-19	17.0	
8	296	55.8	-18	56.6	244	34.7	292	41.2	-19	8.9	7	22.6	-19	17.7	
10	326	55.5	-18	55.3	274	39.7	322	39.7	-19	7.3	37	24.4	-19	18.4	
12	356	55.2	-18	54.1	304	44.6	352	38.2	-19	5.8	67	26.1	-19	19.1	
14	26	55.0	-18	52.8	334	49.5	22	36.7	-19	4.2	97	27.9	-19	19.8	
16	56	54.7	-18	51.6	4	54.5	52	35.2	-19	2.6	127	29.6	-19	20.5	
18	86	54.4	-18	50.3	34	59.4	82	33.7	-19	1.0	157	31.4	-19	21.2	
20	116	54.1	-18	49.1	65	4.3	112	32.2	-18	59.4	187	33.1	-19	21.9	
22	146	53.8	-18	47.8	95	9.2	142	30.7	-18	57.9	217	34.9	-19	22.6	
Δ		-1		6				-8		8			9		-4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 29	15 56	0 50	2 31	11 13	.9	1 7	3.5
55	8 3	16 23	0 41	2 9	11 27	1.2	0 55	3.3
50	7 43	16 42	0 36	1 53	11 37	1.3	0 47	3.1
45	7 27	16 58	0 32	1 42	11 46	1.5	0 40	2.9
40	7 14	17 11	0 29	1 34	11 53	1.6	0 34	2.8
35	7 3	17 21	0 27	1 28	11 59	1.7	0 29	2.7
30	6 54	17 31	0 25	1 23	12 4	1.8	0 24	2.6
20	6 37	17 48	0 23	1 16	12 14	2.0	0 17	2.4
10	6 23	18 2	0 22	1 13	12 22	2.1	0 10	2.3
0	6 9	18 16	0 22	1 13	12 30	2.2	0 4	2.1
10	5 55	18 30	0 22	1 15	12 38	2.3	...	.0
20	5 40	18 45	0 24	1 20	12 46	2.5	...	.0
30	5 22	19 2	0 26	1 30	12 56	2.6	...	.0
35	5 12	19 12	0 28	1 39	13 2	2.7	...	.0
40	5 0	19 24	0 31	1 50	13 8	2.8	...	.0
45	4 46	19 37	0 34	2 8	13 16	2.9	...	.0
50	4 29	19 54	0 39	2 42	13 25	3.1	23 51	1.5
55	4 7	20 16	0 47	:::	13 36	3.3	23 38	1.3
60	3 37	20 46	1 3	:::	13 51	3.6	23 21	1.0
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	88	59.7	109	8	31.3	105	255	56.2	-16	48.2	209	49.2	-22	29.4	
2	117	59.5	107	8	52.4	105	286	.5	-16	48.4	239	53.5	-22	29.4	
4	146	59.0	106	9	13.3	104	316	4.8	-16	48.5	269	57.9	-22	29.4	
6	175	58.2	105	9	34.1	103	346	9.1	-16	48.7	300	2.2	-22	29.4	
8	204	57.1	103	9	54.7	102	16	13.4	-16	48.8	330	6.6	-22	29.4	
10	233	55.7	102	10	15.2	101	46	17.8	-16	49.0	0	10.9	-22	29.4	
12	262	54.1	100	10	35.4	100	76	22.1	-16	49.1	30	15.3	-22	29.4	
14	291	52.1	99	10	55.5	99	106	26.4	-16	49.3	60	19.6	-22	29.3	
16	320	49.8	97	11	15.4	98	136	30.7	-16	49.4	90	24.0	-22	29.3	
18	349	47.3	96	11	35.1	97	166	35.0	-16	49.6	120	28.3	-22	29.3	
20	18	44.4	94	11	54.5	96	196	39.4	-16	49.7	150	32.7	-22	29.3	
22	47	41.1	92	12	13.8	95	226	43.7	-16	49.9	180	37.0	-22	29.3	
Δ								22		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	-12	12.1	-.6	16.3	T _m	18 42	2.2	58.0	15.8
12	-12	18.9	T _{m☉}	12 h 12.3 min	Starost	7.9 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 29	.1	49	-2.9	♄	6 55	.0	132	-1.5
♂	7 31	.1	123	.9	♂	9 59	.0	86	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	53.6	-18	46.6	125	14.2	172	29.2	-18	56.3	247	36.6	-19	23.3	
2	206	53.3	-18	45.3	155	19.1	202	27.7	-18	54.7	277	38.4	-19	24.0	
4	236	53.0	-18	44.1	185	24.0	232	26.2	-18	53.1	307	40.1	-19	24.7	
6	266	52.8	-18	42.8	215	29.0	262	24.7	-18	51.5	337	41.9	-19	25.4	
8	296	52.5	-18	41.6	245	33.9	292	23.3	-18	49.9	7	43.6	-19	26.1	
10	326	52.2	-18	40.3	275	38.8	322	21.8	-18	48.3	37	45.4	-19	26.8	
12	356	52.0	-18	39.0	305	43.7	352	20.3	-18	46.6	67	47.1	-19	27.5	
14	26	51.7	-18	37.8	335	48.7	22	18.8	-18	45.0	97	48.9	-19	28.2	
16	56	51.4	-18	36.5	5	53.6	52	17.3	-18	43.4	127	50.7	-19	28.9	
18	86	51.2	-18	35.2	35	58.5	82	15.9	-18	41.8	157	52.4	-19	29.6	
20	116	50.9	-18	33.9	66	3.5	112	14.4	-18	40.1	187	54.2	-19	30.3	
22	146	50.6	-18	32.7	96	8.4	142	12.9	-18	38.5	217	55.9	-19	31.0	
Δ		-1		6				-7		8			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 27	15 58	0 49	2 30	11 35	1.2	2 32	3.6
55	8 1	16 25	0 41	2 8	11 55	1.5	2 14	3.3
50	7 42	16 44	0 36	1 53	12 10	1.6	2 0	3.1
45	7 26	16 59	0 32	1 42	12 22	1.8	1 49	3.0
40	7 14	17 12	0 29	1 34	12 31	1.9	1 40	2.8
35	7 3	17 22	0 27	1 28	12 40	1.9	1 33	2.7
30	6 53	17 32	0 25	1 23	12 48	2.0	1 26	2.7
20	6 37	17 48	0 23	1 16	13 1	2.1	1 14	2.5
10	6 23	18 3	0 22	1 13	13 12	2.3	1 4	2.4
0	6 9	18 16	0 22	1 13	13 23	2.4	0 55	2.3
10	5 55	18 30	0 22	1 15	13 34	2.5	0 45	2.2
20	5 40	18 44	0 24	1 20	13 46	2.6	0 35	2.0
30	5 23	19 1	0 26	1 30	13 59	2.7	0 24	1.9
35	5 13	19 11	0 28	1 38	14 7	2.8	0 17	1.8
40	5 2	19 23	0 31	1 50	14 16	2.9	0 10	1.7
45	4 48	19 36	0 34	2 7	14 26	3.0	0 1	1.6
50	4 31	19 53	0 39	2 40	14 39	3.1	...	.0
55	4 10	20 14	0 47	:::	14 55	3.3	...	.0
60	3 40	20 44	1 2	:::	15 17	3.5	23 45	1.4
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	76	37.6	91	12	32.8	94	256	48.0	-16	50.0	210	41.4	-22	29.3	
2	105	33.7	89	12	51.5	92	286	52.3	-16	50.2	240	45.7	-22	29.2	
4	134	29.5	87	13	10.0	91	316	56.7	-16	50.3	270	50.1	-22	29.2	
6	163	25.0	86	13	28.3	90	347	1.0	-16	50.5	300	54.5	-22	29.2	
8	192	20.1	84	13	46.2	88	17	5.3	-16	50.6	330	58.8	-22	29.2	
10	221	14.9	82	14	3.9	87	47	9.6	-16	50.7	1	3.2	-22	29.2	
12	250	9.4	80	14	21.2	85	77	14.0	-16	50.9	31	7.5	-22	29.2	
14	279	3.5	79	14	38.3	84	107	18.3	-16	51.0	61	11.9	-22	29.2	
16	307	57.2	77	14	55.0	82	137	22.6	-16	51.2	91	16.2	-22	29.1	
18	336	50.6	75	15	11.4	80	167	27.0	-16	51.3	121	20.6	-22	29.1	
20	5	43.7	74	15	27.5	79	197	31.3	-16	51.5	151	24.9	-22	29.1	
22	34	36.4	72	15	43.2	77	227	35.6	-16	51.6	181	29.3	-22	29.1	
Δ								22		-1			22		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	-12	25.7					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	50.4	-18	31.4	126	13.3	172	11.4	-18	36.9	247	57.7	-19	31.7	
2	206	50.1	-18	30.1	156	18.2	202	10.0	-18	35.2	277	59.4	-19	32.4	
4	236	49.9	-18	28.8	186	23.2	232	8.5	-18	33.6	308	1.2	-19	33.0	
6	266	49.6	-18	27.5	216	28.1	262	7.1	-18	31.9	338	2.9	-19	33.7	
8	296	49.4	-18	26.2	246	33.0	292	5.6	-18	30.3	8	4.7	-19	34.4	
10	326	49.1	-18	24.9	276	38.0	322	4.1	-18	28.6	38	6.4	-19	35.1	
12	356	48.9	-18	23.6	306	42.9	352	2.7	-18	27.0	68	8.2	-19	35.8	
14	26	48.6	-18	22.3	336	47.8	22	1.2	-18	25.3	98	9.9	-19	36.5	
16	56	48.4	-18	21.0	6	52.7	51	59.8	-18	23.6	128	11.6	-19	37.2	
18	86	48.1	-18	19.7	36	57.7	81	58.3	-18	22.0	158	13.4	-19	37.8	
20	116	47.9	-18	18.4	67	2.6	111	56.9	-18	20.3	188	15.1	-19	38.5	
22	146	47.6	-18	17.1	97	7.5	141	55.4	-18	18.6	218	16.9	-19	39.2	
Δ		-1		6				-7		8			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 25	16 1	0 49	2 30	12 4	1.7	3 57	3.4
55	7 60	16 27	0 41	2 8	12 29	1.9	3 32	3.2
50	7 40	16 46	0 35	1 53	12 49	2.0	3 14	3.0
45	7 25	17 1	0 32	1 42	13 4	2.1	3 0	2.9
40	7 13	17 13	0 29	1 34	13 16	2.2	2 49	2.9
35	7 2	17 24	0 27	1 27	13 27	2.2	2 39	2.8
30	6 53	17 33	0 25	1 23	13 36	2.3	2 30	2.7
20	6 37	17 49	0 23	1 16	13 52	2.4	2 15	2.6
10	6 23	18 3	0 22	1 13	14 6	2.4	2 2	2.5
0	6 9	18 16	0 22	1 12	14 20	2.5	1 50	2.4
10	5 56	18 30	0 22	1 15	14 33	2.6	1 37	2.3
20	5 41	18 44	0 24	1 20	14 47	2.6	1 24	2.3
30	5 24	19 1	0 26	1 30	15 4	2.7	1 10	2.1
35	5 14	19 11	0 28	1 38	15 14	2.8	1 1	2.1
40	5 3	19 22	0 30	1 49	15 25	2.8	0 51	2.0
45	4 49	19 35	0 34	2 6	15 38	2.9	0 40	1.9
50	4 33	19 52	0 39	2 38	15 54	3.0	0 26	1.8
55	4 12	20 13	0 47	:::	16 14	3.1	0 9	1.6
60	3 42	20 41	1 1	:::	16 42	3.3	...	1.0

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	63	28.8	70	15	58.6	75	257	40.0	-16	51.8	211	33.7	-22	29.1	
2	92	20.8	68	16	13.6	73	287	44.3	-16	51.9	241	38.0	-22	29.1	
4	121	12.5	67	16	28.1	71	317	48.6	-16	52.0	271	42.4	-22	29.1	
6	150	3.8	65	16	42.3	69	347	53.0	-16	52.2	301	46.7	-22	29.0	
8	178	54.8	63	16	56.1	67	17	57.3	-16	52.3	331	51.1	-22	29.0	
10	207	45.5	62	17	9.5	65	48	1.6	-16	52.5	1	55.4	-22	29.0	
12	236	35.8	60	17	22.5	63	78	6.0	-16	52.6	31	59.8	-22	29.0	
14	265	25.8	58	17	35.0	60	108	10.3	-16	52.8	62	4.2	-22	29.0	
16	294	15.5	57	17	47.0	58	138	14.7	-16	52.9	92	8.5	-22	29.0	
18	323	4.9	55	17	58.7	56	168	19.0	-16	53.0	122	12.9	-22	28.9	
20	351	53.9	54	18	9.8	53	198	23.4	-16	53.2	152	17.2	-22	28.9	
22	20	42.7	52	18	20.5	51	228	27.7	-16	53.3	182	21.6	-22	28.9	
Δ								22		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-12	38.4	- .5	16.3	T _m	20 34	2.5	59.6	16.2
12	-12	44.4	T _{m☉}	12 h 12.7 min	Starost	9.9 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	12 32	.1	46	-2.9	♃	6 48	.0	131	-1.5
♂	7 28	.1	122	.9	♄	9 52	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	47.4	-18	15.8	127	12.5	171	54.0	-18	16.9	248	18.6	-19	39.9	
2	206	47.2	-18	14.5	157	17.4	201	52.6	-18	15.3	278	20.4	-19	40.6	
4	236	46.9	-18	13.2	187	22.3	231	51.1	-18	13.6	308	22.1	-19	41.2	
6	266	46.7	-18	11.9	217	27.2	261	49.7	-18	11.9	338	23.9	-19	41.9	
8	296	46.5	-18	10.6	247	32.2	291	48.2	-18	10.2	8	25.6	-19	42.6	
10	326	46.2	-18	9.2	277	37.1	321	46.8	-18	8.5	38	27.4	-19	43.3	
12	356	46.0	-18	7.9	307	42.0	351	45.4	-18	6.8	68	29.1	-19	43.9	
14	26	45.8	-18	6.6	337	47.0	21	44.0	-18	5.1	98	30.9	-19	44.6	
16	56	45.5	-18	5.3	7	51.9	51	42.5	-18	3.4	128	32.6	-19	45.3	
18	86	45.3	-18	3.9	37	56.8	81	41.1	-18	1.7	158	34.4	-19	45.9	
20	116	45.1	-18	2.6	68	1.7	111	39.7	-17	59.9	188	36.1	-19	46.6	
22	146	44.9	-18	1.3	98	6.7	141	38.3	-17	58.2	218	37.8	-19	47.3	
Δ		-1		7				-7		9			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 23	16 4	0 49	2 29	12 44	2.3	5 19	3.0
55	7 58	16 29	0 41	2 8	13 14	2.4	4 49	2.9
50	7 39	16 47	0 35	1 53	13 37	2.4	4 28	2.8
45	7 24	17 2	0 32	1 42	13 54	2.5	4 11	2.8
40	7 12	17 14	0 29	1 34	14 8	2.5	3 57	2.8
35	7 2	17 25	0 27	1 27	14 20	2.5	3 45	2.7
30	6 53	17 34	0 25	1 22	14 31	2.5	3 35	2.7
20	6 37	17 49	0 23	1 16	14 49	2.6	3 17	2.6
10	6 23	18 3	0 22	1 13	15 5	2.6	3 2	2.6
0	6 9	18 16	0 22	1 12	15 20	2.6	2 48	2.6
10	5 56	18 30	0 22	1 14	15 35	2.6	2 34	2.5
20	5 42	18 44	0 23	1 20	15 51	2.6	2 18	2.5
30	5 25	19 1	0 26	1 30	16 9	2.6	2 1	2.4
35	5 15	19 10	0 28	1 37	16 20	2.7	1 51	2.4
40	5 4	19 21	0 30	1 49	16 32	2.7	1 39	2.3
45	4 51	19 34	0 34	2 6	16 47	2.7	1 26	2.3
50	4 35	19 50	0 39	2 36	17 5	2.7	1 9	2.2
55	4 14	20 11	0 46	:::	17 28	2.7	0 48	2.1
60	3 45	20 39	1 0	:::	18 0	2.7	0 19	2.0

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	49	31.2	51	18	30.6	48	258	32.0	-16	53.5	212	26.0	-22	28.9	
2	78	19.3	49	18	40.3	46	288	36.4	-16	53.6	242	30.3	-22	28.9	
4	107	7.2	48	18	49.5	43	318	40.7	-16	53.7	272	34.7	-22	28.9	
6	135	54.8	47	18	58.2	41	348	45.1	-16	53.9	302	39.0	-22	28.9	
8	164	42.2	45	19	6.3	38	18	49.4	-16	54.0	332	43.4	-22	28.8	
10	193	29.3	44	19	13.9	35	48	53.8	-16	54.2	2	47.8	-22	28.8	
12	222	16.1	43	19	21.0	33	78	58.1	-16	54.3	32	52.1	-22	28.8	
14	251	2.7	42	19	27.5	30	109	2.5	-16	54.4	62	56.5	-22	28.8	
16	279	49.1	41	19	33.5	27	139	6.8	-16	54.6	93	.9	-22	28.8	
18	308	35.3	40	19	38.9	24	169	11.2	-16	54.7	123	5.2	-22	28.8	
20	337	21.3	39	19	43.8	21	199	15.6	-16	54.8	153	9.6	-22	28.7	
22	6	7.1	38	19	48.1	19	229	19.9	-16	55.0	183	14.0	-22	28.7	
Δ								22		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-12	50.4	- .5	16.3	T _m	21 34	2.6	60.3	16.4
12	-12	55.9	T _{m☉}	12 h 12.9 min	Starost	10.9 d	Faza ☉		

PLANETE							
Pl.	T _m	π					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	44.6	-17	59.9	128	11.6	171	36.9	-17	56.5	248	39.6	-19	47.9	
2	206	44.4	-17	58.6	158	16.5	201	35.4	-17	54.8	278	41.3	-19	48.6	
4	236	44.2	-17	57.3	188	21.4	231	34.0	-17	53.0	308	43.1	-19	49.3	
6	266	44.0	-17	55.9	218	26.4	261	32.6	-17	51.3	338	44.8	-19	49.9	
8	296	43.8	-17	54.6	248	31.3	291	31.2	-17	49.6	8	46.6	-19	50.6	
10	326	43.5	-17	53.2	278	36.2	321	29.8	-17	47.8	38	48.3	-19	51.3	
12	356	43.3	-17	51.9	308	41.2	351	28.4	-17	46.1	68	50.0	-19	51.9	
14	26	43.1	-17	50.5	338	46.1	21	27.0	-17	44.3	98	51.8	-19	52.6	
16	56	42.9	-17	49.2	8	51.0	51	25.6	-17	42.6	128	53.5	-19	53.3	
18	86	42.7	-17	47.8	38	55.9	81	24.2	-17	40.8	158	55.3	-19	53.9	
20	116	42.5	-17	46.5	69	.9	111	22.8	-17	39.1	188	57.0	-19	54.6	
22	146	42.3	-17	45.1	99	5.8	141	21.4	-17	37.3	218	58.8	-19	55.2	
Δ		-1		7				-7		9			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 21	16 6	0 48	2 28	13 40	3.0	6 31	2.4
55	7 56	16 31	0 40	2 7	14 12	2.9	5 59	2.5
50	7 38	16 49	0 35	1 52	14 35	2.9	5 36	2.5
45	7 23	17 3	0 32	1 42	14 53	2.8	5 18	2.5
40	7 11	17 15	0 29	1 33	15 8	2.8	5 3	2.5
35	7 1	17 26	0 27	1 27	15 21	2.8	4 51	2.6
30	6 52	17 35	0 25	1 22	15 32	2.7	4 40	2.6
20	6 36	17 50	0 23	1 16	15 50	2.7	4 21	2.6
10	6 23	18 4	0 22	1 13	16 7	2.6	4 5	2.6
0	6 10	18 17	0 22	1 12	16 22	2.6	3 49	2.6
10	5 56	18 30	0 22	1 14	16 37	2.6	3 34	2.6
20	5 42	18 44	0 23	1 19	16 54	2.5	3 18	2.6
30	5 26	18 60	0 26	1 29	17 13	2.5	2 59	2.6
35	5 16	19 9	0 28	1 37	17 24	2.4	2 48	2.6
40	5 5	19 20	0 30	1 48	17 37	2.4	2 35	2.7
45	4 52	19 33	0 34	2 5	17 51	2.4	2 20	2.7
50	4 36	19 49	0 38	2 34	18 10	2.3	2 2	2.7
55	4 16	20 9	0 46	:::	18 33	2.2	1 39	2.7
60	3 48	20 37	0 60	:::	19 6	2.1	1 6	2.7

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	34	52.8	37	19	51.8	16	259	24.3	-16	55.1	213	18.3	-22	28.7	
2	63	38.2	37	19	54.9	13	289	28.6	-16	55.2	243	22.7	-22	28.7	
4	92	23.6	36	19	57.5	10	319	33.0	-16	55.4	273	27.0	-22	28.7	
6	121	8.8	36	19	59.4	7	349	37.4	-16	55.5	303	31.4	-22	28.7	
8	149	53.9	35	20	.8	4	19	41.7	-16	55.7	333	35.8	-22	28.6	
10	178	38.9	35	20	1.5	1	49	46.1	-16	55.8	3	40.1	-22	28.6	
12	207	23.8	34	20	1.7	-2	79	50.4	-16	55.9	33	44.5	-22	28.6	
14	236	8.7	34	20	1.3	-5	109	54.8	-16	56.1	63	48.9	-22	28.6	
16	264	53.5	34	20	.2	-8	139	59.2	-16	56.2	93	53.2	-22	28.6	
18	293	38.2	34	19	58.6	-11	170	3.5	-16	56.3	123	57.6	-22	28.6	
20	322	23.0	34	19	56.4	-14	200	7.9	-16	56.5	154	2.0	-22	28.5	
22	351	7.7	34	19	53.5	-17	230	12.3	-16	56.6	184	6.3	-22	28.5	
Δ								22		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-13	1.5	.4	16.3	T _m	22 37	2.6	60.8	16.6
12	-13	6.6	T _{m☉}	12 h 13.3 min	Starost	11.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	12 34	.1	43	-2.9	♃	6 41	.0	131	-1.5
♁	7 25	.1	120	.9	♄	9 45	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	42.1	-17	43.7	129	10.7	171	20.0	-17	35.5	249	.5	-19	55.9	
2	206	41.9	-17	42.4	159	15.7	201	18.6	-17	33.8	279	2.2	-19	56.5	
4	236	41.7	-17	41.0	189	20.6	231	17.3	-17	32.0	309	4.0	-19	57.2	
6	266	41.5	-17	39.6	219	25.5	261	15.9	-17	30.2	339	5.7	-19	57.8	
8	296	41.3	-17	38.3	249	30.4	291	14.5	-17	28.4	9	7.5	-19	58.5	
10	326	41.1	-17	36.9	279	35.4	321	13.1	-17	26.7	39	9.2	-19	59.2	
12	356	40.9	-17	35.5	309	40.3	351	11.7	-17	24.9	69	10.9	-19	59.8	
14	26	40.7	-17	34.1	339	45.2	21	10.4	-17	23.1	99	12.7	-20	.5	
16	56	40.5	-17	32.8	9	50.2	51	9.0	-17	21.3	129	14.4	-20	1.1	
18	86	40.3	-17	31.4	39	55.1	81	7.6	-17	19.5	159	16.2	-20	1.7	
20	116	40.1	-17	30.0	70	.0	111	6.3	-17	17.7	189	17.9	-20	2.4	
22	146	39.9	-17	28.6	100	4.9	141	4.9	-17	15.9	219	19.6	-20	3.0	
Δ		-1		7				-7		9			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 19	16 9	0 48	2 28	14 52	3.5	7 29	1.8
55	7 54	16 33	0 40	2 7	15 22	3.3	6 58	2.0
50	7 36	16 51	0 35	1 52	15 44	3.2	6 36	2.1
45	7 22	17 5	0 31	1 41	16 1	3.0	6 19	2.2
40	7 10	17 17	0 29	1 33	16 15	3.0	6 4	2.3
35	7 0	17 27	0 27	1 27	16 27	2.9	5 52	2.3
30	6 51	17 35	0 25	1 22	16 37	2.8	5 41	2.4
20	6 36	17 51	0 23	1 16	16 55	2.7	5 23	2.5
10	6 23	18 4	0 22	1 13	17 10	2.6	5 7	2.5
0	6 10	18 17	0 22	1 12	17 25	2.5	4 52	2.6
10	5 57	18 30	0 22	1 14	17 39	2.5	4 37	2.6
20	5 43	18 43	0 23	1 19	17 55	2.4	4 21	2.7
30	5 27	18 59	0 26	1 29	18 12	2.3	4 2	2.8
35	5 17	19 9	0 28	1 37	18 23	2.2	3 51	2.8
40	5 6	19 19	0 30	1 48	18 34	2.1	3 39	2.9
45	4 54	19 32	0 33	2 4	18 48	2.0	3 24	3.0
50	4 38	19 48	0 38	2 32	19 5	1.9	3 6	3.0
55	4 18	20 7	0 46	:::	19 27	1.7	2 42	3.1
60	3 51	20 34	0 59	:::	19 56	1.5	2 10	3.3

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	19	52.5	34	19	50.1	-20	260	16.6	-16	56.7	214	10.7	-22	28.5	
2	48	37.2	34	19	46.1	-23	290	21.0	-16	56.9	244	15.1	-22	28.5	
4	77	22.1	34	19	41.4	-26	320	25.4	-16	57.0	274	19.5	-22	28.5	
6	106	6.9	35	19	36.2	-29	350	29.8	-16	57.1	304	23.8	-22	28.5	
8	134	51.9	35	19	30.4	-32	20	34.1	-16	57.3	334	28.2	-22	28.5	
10	163	36.9	36	19	24.0	-35	50	38.5	-16	57.4	4	32.6	-22	28.4	
12	192	22.1	36	19	17.0	-38	80	42.9	-16	57.5	34	36.9	-22	28.4	
14	221	7.3	37	19	9.4	-41	110	47.3	-16	57.6	64	41.3	-22	28.4	
16	249	52.7	38	19	1.3	-43	140	51.6	-16	57.8	94	45.7	-22	28.4	
18	278	38.3	38	18	52.6	-46	170	56.0	-16	57.9	124	50.0	-22	28.4	
20	307	24.0	39	18	43.4	-49	201	.4	-16	58.0	154	54.4	-22	28.4	
22	336	9.8	40	18	33.6	-52	231	4.8	-16	58.2	184	58.8	-22	28.3	
Δ								22		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-13	11.7	.4	16.3	T _m	23 39	2.5	61.0	16.6
12	-13	16.5	T _{m☉}	12 h 13.3 min	Starost	12.9 d	Faza	☉	

PLANETE							
Pl.	T _m	π	360-α				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 39.7	-17 27.2	130 9.9	171 3.5	-17 14.1	249 21.4	-20 3.7
2	206 39.5	-17 25.8	160 14.8	201 2.2	-17 12.3	279 23.1	-20 4.3
4	236 39.3	-17 24.4	190 19.7	231 .8	-17 10.5	309 24.9	-20 5.0
6	266 39.1	-17 23.0	220 24.7	260 59.5	-17 8.7	339 26.6	-20 5.6
8	296 39.0	-17 21.6	250 29.6	290 58.1	-17 6.8	9 28.3	-20 6.3
10	326 38.8	-17 20.2	280 34.5	320 56.8	-17 5.0	39 30.1	-20 6.9
12	356 38.6	-17 18.8	310 39.4	350 55.4	-17 3.2	69 31.8	-20 7.5
14	26 38.4	-17 17.4	340 44.4	20 54.1	-17 1.4	99 33.5	-20 8.2
16	56 38.2	-17 16.0	10 49.3	50 52.7	-16 59.5	129 35.3	-20 8.8
18	86 38.1	-17 14.6	40 54.2	80 51.4	-16 57.7	159 37.0	-20 9.4
20	116 37.9	-17 13.2	70 59.2	110 50.0	-16 55.8	189 38.7	-20 10.1
22	146 37.7	-17 11.8	101 4.1	140 48.7	-16 54.0	219 40.5	-20 10.7
Δ	-1	7		-7	9	9	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 16	16 11	0 48	2 27	16 17	3.7	8 12	1.3
55	7 53	16 35	0 40	2 6	16 41	3.5	7 46	1.5
50	7 35	16 52	0 35	1 52	16 60	3.3	7 27	1.7
45	7 21	17 6	0 31	1 41	17 14	3.1	7 11	1.9
40	7 10	17 18	0 29	1 33	17 26	3.0	6 59	2.0
35	6 60	17 28	0 27	1 27	17 36	2.9	6 48	2.1
30	6 51	17 36	0 25	1 22	17 45	2.8	6 38	2.1
20	6 36	17 51	0 23	1 16	18 0	2.7	6 22	2.3
10	6 22	18 4	0 22	1 13	18 13	2.5	6 8	2.4
0	6 10	18 17	0 22	1 12	18 26	2.4	5 54	2.5
10	5 57	18 30	0 22	1 14	18 38	2.3	5 40	2.6
20	5 43	18 43	0 23	1 19	18 51	2.2	5 26	2.7
30	5 28	18 59	0 26	1 29	19 6	2.0	5 9	2.8
35	5 18	19 8	0 28	1 36	19 15	1.9	4 59	2.9
40	5 8	19 19	0 30	1 47	19 25	1.8	4 48	3.0
45	4 55	19 31	0 33	2 3	19 37	1.7	4 35	3.1
50	4 40	19 46	0 38	2 30	19 51	1.6	4 19	3.2
55	4 20	20 5	0 45	:::	20 8	1.4	3 58	3.4
60	3 53	20 32	0 58	:::	20 32	1.1	3 30	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	4 55.9	41 18 23.2	-54	261 9.2	-16 58.3	215 3.2	-22 28.3	
2	33 42.2	42 18 12.4	-57	291 13.5	-16 58.4	245 7.5	-22 28.3	
4	62 28.6	43 18 .9	-60	321 17.9	-16 58.6	275 11.9	-22 28.3	
6	91 15.3	45 17 49.0	-62	351 22.3	-16 58.7	305 16.3	-22 28.3	
8	120 2.2	46 17 36.6	-65	21 26.7	-16 58.8	335 20.7	-22 28.3	
10	148 49.4	47 17 23.7	-67	51 31.1	-16 58.9	5 25.0	-22 28.2	
12	177 36.8	48 17 10.2	-70	81 35.5	-16 59.1	35 29.4	-22 28.2	
14	206 24.5	50 16 56.3	-72	111 39.9	-16 59.2	65 33.8	-22 28.2	
16	235 12.4	51 16 42.0	-74	141 44.3	-16 59.3	95 38.2	-22 28.2	
18	264 .6	53 16 27.1	-76	171 48.7	-16 59.4	125 42.5	-22 28.2	
20	292 49.1	54 16 11.9	-79	201 53.0	-16 59.6	155 46.9	-22 28.2	
22	321 37.9	55 15 56.2	-81	231 57.4	-16 59.7	185 51.3	-22 28.1	
Δ				22	-1	22	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	-13 21.2	-.4	16.3	T _m	1.0	61.0	16.6		
12	-13 25.5	T _{m☉} 12 h 13.4 min		Starost 13.9 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°		♃	h min	' / "	°	
♁	12 36	.1	41	-2.9	♄	6 34	.0	131	-1.6
♂	7 22	.1	119	.8	♅	9 38	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 37.5	-17 10.4	131 9.0	170 47.3	-16 52.2	249 42.2	-20 11.3
2	206 37.4	-17 9.0	161 13.9	200 46.0	-16 50.3	279 44.0	-20 12.0
4	236 37.2	-17 7.6	191 18.9	230 44.7	-16 48.5	309 45.7	-20 12.6
6	266 37.0	-17 6.1	221 23.8	260 43.3	-16 46.6	339 47.4	-20 13.2
8	296 36.9	-17 4.7	251 28.7	290 42.0	-16 44.7	9 49.2	-20 13.9
10	326 36.7	-17 3.3	281 33.6	320 40.7	-16 42.9	39 50.9	-20 14.5
12	356 36.5	-17 1.9	311 38.6	350 39.4	-16 41.0	69 52.6	-20 15.1
14	26 36.4	-17 .4	341 43.5	20 38.0	-16 39.1	99 54.4	-20 15.8
16	56 36.2	-16 59.0	11 48.4	50 36.7	-16 37.3	129 56.1	-20 16.4
18	86 36.1	-16 57.6	41 53.4	80 35.4	-16 35.4	159 57.8	-20 17.0
20	116 35.9	-16 56.1	71 58.3	110 34.1	-16 33.5	189 59.6	-20 17.6
22	146 35.8	-16 54.7	102 3.2	140 32.8	-16 31.6	220 1.3	-20 18.2
Δ	-1	7		-7	9	9	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 14	16 14	0 47	2 27	17 46	3.7	8 43	1.0
55	7 51	16 37	0 40	2 6	18 4	3.5	8 23	1.2
50	7 34	16 54	0 35	1 52	18 18	3.2	8 8	1.4
45	7 20	17 8	0 31	1 41	18 29	3.1	7 56	1.6
40	7 9	17 19	0 29	1 33	18 38	2.9	7 46	1.7
35	6 59	17 29	0 27	1 27	18 46	2.8	7 37	1.8
30	6 50	17 37	0 25	1 22	18 52	2.7	7 30	1.9
20	6 36	17 52	0 23	1 16	19 4	2.6	7 16	2.1
10	6 22	18 5	0 22	1 12	19 14	2.4	7 5	2.2
0	6 10	18 17	0 22	1 12	19 24	2.3	6 54	2.3
10	5 58	18 29	0 22	1 14	19 33	2.1	6 43	2.5
20	5 44	18 43	0 23	1 19	19 43	2.0	6 31	2.6
30	5 28	18 58	0 26	1 28	19 55	1.8	6 17	2.8
35	5 19	19 7	0 27	1 36	20 1	1.7	6 9	2.9
40	5 9	19 18	0 30	1 46	20 9	1.6	6 0	3.0
45	4 57	19 30	0 33	2 2	20 18	1.5	5 49	3.1
50	4 42	19 45	0 38	2 28	20 28	1.3	5 36	3.3
55	4 22	20 4	0 45	3 51	20 41	1.1	5 20	3.5
60	3 56	20 29	0 57	:::	20 58	.8	4 58	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	350 27.0	57 15 40.0	-83	262 1.8	-16 59.8	215 55.7	-22 28.1	
2	19 16.4	59 15 23.5	-85	292 6.2	-16 59.9	246 .0	-22 28.1	
4	48 6.1	60 15 6.6	-87	322 10.6	-17 .1	276 4.4	-22 28.1	
6	76 56.1	62 14 49.2	-89	352 15.0	-17 .2	306 8.8	-22 28.1	
8	105 46.6	63 14 31.5	-90	22 19.4	-17 .3	336 13.2	-22 28.0	
10	134 37.1	65 14 13.5	-92	52 23.8	-17 .4	6 17.6	-22 28.0	
12	163 28.1	67 13 55.0	-94	82 28.2	-17 .6	36 21.9	-22 28.0	
14	192 19.4	68 13 36.3	-95	112 32.6	-17 .7	66 26.3	-22 28.0	
16	221 11.1	70 13 17.2	-97	142 37.0	-17 .8	96 30.7	-22 28.0	
18	250 3.0	72 12 57.8	-98	172 41.4	-17 .9	126 35.1	-22 28.0	
20	278 55.3	73 12 38.2	-100	202 45.8	-17 1.1	156 39.5	-22 27.9	
22	307 48.0	75 12 18.2	-101	232 50.2	-17 1.2	186 43.8	-22 27.9	
Δ				22	-1	22	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	-13 29.8	-.3	16.3	T _m	0 40	2.4	60.7	16.5	
12	-13 33.7	T _{m☉} 12 h 13.6 min		Starost 14.9 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°		♃	h min	' / "	°	
♁	12 37	.1	40	-2.9	♄	6 31	.0	131	-1.6
♂	7 21	.1	119	.8	♅	9 35	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	176 35.6	-16 53.3	132 8.1	170 31.5	-16 29.8	250 3.0	-20 18.9
2	206 35.4	-16 51.8	162 13.1	200 30.2	-16 27.9	280 4.8	-20 19.5
4	236 35.3	-16 50.4	192 18.0	230 28.9	-16 26.0	310 6.5	-20 20.1
6	266 35.1	-16 48.9	222 22.9	260 27.6	-16 24.1	340 8.2	-20 20.7
8	296 35.0	-16 47.5	252 27.9	290 26.3	-16 22.2	10 10.0	-20 21.3
10	326 34.8	-16 46.0	282 32.8	320 25.0	-16 20.3	40 11.7	-20 22.0
12	356 34.7	-16 44.6	312 37.7	350 23.7	-16 18.4	70 13.4	-20 22.6
14	26 34.6	-16 43.1	342 42.6	20 22.4	-16 16.5	100 15.2	-20 23.2
16	56 34.4	-16 41.7	12 47.6	50 21.1	-16 14.6	130 16.9	-20 23.8
18	86 34.3	-16 40.2	42 52.5	80 19.8	-16 12.6	160 18.6	-20 24.4
20	116 34.1	-16 38.8	72 57.4	110 18.5	-16 10.7	190 20.4	-20 25.0
22	146 34.0	-16 37.3	103 2.4	140 17.2	-16 8.8	220 22.1	-20 25.6
Δ	-1	7		-6	10	9	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 12	16 17	0 47	2 26	19 16	3.6	9 6	.8
55	7 49	16 39	0 40	2 6	19 27	3.4	8 53	1.0
50	7 32	16 56	0 35	1 51	19 36	3.1	8 42	1.2
45	7 19	17 9	0 31	1 41	19 43	3.0	8 34	1.4
40	7 8	17 20	0 29	1 33	19 49	2.8	8 27	1.5
35	6 58	17 30	0 27	1 27	19 54	2.7	8 21	1.6
30	6 50	17 38	0 25	1 22	19 58	2.6	8 15	1.7
20	6 35	17 52	0 23	1 16	20 5	2.4	8 6	1.9
10	6 22	18 5	0 22	1 12	20 12	2.3	7 58	2.1
0	6 10	18 17	0 22	1 12	20 18	2.1	7 50	2.2
10	5 58	18 29	0 22	1 14	20 24	2.0	7 42	2.3
20	5 45	18 42	0 23	1 19	20 31	1.8	7 34	2.5
30	5 29	18 58	0 26	1 28	20 38	1.7	7 24	2.7
35	5 20	19 6	0 27	1 36	20 42	1.6	7 18	2.8
40	5 10	19 17	0 30	1 46	20 47	1.4	7 12	2.9
45	4 58	19 29	0 33	2 1	20 53	1.3	7 4	3.0
50	4 43	19 43	0 38	2 27	20 59	1.1	6 55	3.2
55	4 24	20 2	0 45	3 37	21 7	.9	6 44	3.4
60	3 59	20 27	0 56	: : :	21 18	.7	6 29	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	336 40.9	76	11 57.9	-103	262 54.6	-17 1.3	216 48.2	-22 27.9
2	5 34.2	78	11 37.4	-104	292 59.1	-17 1.4	246 52.6	-22 27.9
4	34 27.9	80	11 16.7	-105	323 3.5	-17 1.5	276 57.0	-22 27.9
6	63 21.8	81	10 55.7	-106	353 7.9	-17 1.7	307 1.4	-22 27.9
8	92 16.1	83	10 34.5	-107	23 12.3	-17 1.8	337 5.8	-22 27.8
10	121 10.7	85	10 13.0	-108	53 16.7	-17 1.9	7 10.1	-22 27.8
12	150 5.6	86	9 51.4	-109	83 21.1	-17 2.0	37 14.5	-22 27.8
14	179 .9	88	9 29.6	-110	113 25.5	-17 2.1	67 18.9	-22 27.8
16	207 56.5	89	9 7.6	-111	143 29.9	-17 2.3	97 23.3	-22 27.8
18	236 52.3	91	8 45.5	-112	173 34.4	-17 2.4	127 27.7	-22 27.8
20	265 48.5	93	8 23.2	-112	203 38.8	-17 2.5	157 32.1	-22 27.7
22	294 45.1	94	8 .7	-113	233 43.2	-17 2.6	187 36.4	-22 27.7
Δ					22	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	-13 37.6	-.3	16.3	T _m	1 37	2.2	60.1 16.4		
12	-13 41.1	T _{m☉}	12 h 13.7 min	Starost	15.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 38	.1	38	-2.9	♃	6 27	.0	131	-1.6
♂	7 19	.1	118	.8	♄	9 31	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	176 33.9	-16 35.8	133 7.3	170 15.9	-16 6.9	250 23.8	-20 26.3
2	206 33.7	-16 34.4	163 12.2	200 14.6	-16 5.0	280 25.5	-20 26.9
4	236 33.6	-16 32.9	193 17.1	230 13.3	-16 3.0	310 27.3	-20 27.5
6	266 33.4	-16 31.4	223 22.1	260 12.1	-16 1.1	340 29.0	-20 28.1
8	296 33.3	-16 30.0	253 27.0	290 10.8	-15 59.2	10 30.7	-20 28.7
10	326 33.2	-16 28.5	283 31.9	320 9.5	-15 57.2	40 32.5	-20 29.3
12	356 33.1	-16 27.0	313 36.9	350 8.2	-15 55.3	70 34.2	-20 29.9
14	26 32.9	-16 25.5	343 41.8	20 7.0	-15 53.3	100 35.9	-20 30.5
16	56 32.8	-16 24.1	13 46.7	50 5.7	-15 51.4	130 37.7	-20 31.1
18	86 32.7	-16 22.6	43 51.6	80 4.4	-15 49.4	160 39.4	-20 31.7
20	116 32.5	-16 21.1	73 56.6	110 3.2	-15 47.5	190 41.1	-20 32.3
22	146 32.4	-16 19.6	104 1.5	140 1.9	-15 45.5	220 42.8	-20 32.9
Δ	-1	7		-6	10	9	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 9	16 19	0 47	2 26	20 43	2.8	9 24	.7
55	7 47	16 41	0 40	2 5	20 48	2.7	9 17	.9
50	7 31	16 57	0 35	1 51	20 51	2.5	9 12	1.1
45	7 18	17 11	0 31	1 41	20 54	2.5	9 7	1.3
40	7 7	17 21	0 29	1 33	20 57	2.4	9 3	1.4
35	6 57	17 31	0 27	1 26	20 59	2.3	8 60	1.5
30	6 49	17 39	0 25	1 22	21 1	2.3	8 57	1.6
20	6 35	17 53	0 23	1 15	21 4	2.2	8 52	1.8
10	6 22	18 5	0 22	1 12	21 7	2.1	8 47	1.9
0	6 10	18 17	0 22	1 12	21 9	2.0	8 43	2.1
10	5 58	18 29	0 22	1 14	21 12	2.0	8 38	2.2
20	5 45	18 42	0 23	1 19	21 15	1.9	8 34	2.4
30	5 30	18 57	0 26	1 28	21 18	1.8	8 28	2.6
35	5 21	19 6	0 27	1 35	21 20	1.7	8 25	2.7
40	5 11	19 16	0 30	1 45	21 22	1.7	8 21	2.8
45	4 60	19 27	0 33	2 0	21 24	1.6	8 17	2.9
50	4 45	19 42	0 37	2 25	21 27	1.6	8 12	3.1
55	4 27	19 60	0 44	3 27	21 30	1.5	8 6	3.3
60	4 2	20 24	0 56	: : :	21 35	1.4	7 58	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	323 41.9	96	7 38.2	-113	263 47.6	-17 2.7	217 40.8	-22 27.7
2	352 39.0	97	7 15.5	-114	293 52.0	-17 2.9	247 45.2	-22 27.7
4	21 36.4	98	6 52.7	-114	323 56.5	-17 3.0	277 49.6	-22 27.7
6	50 34.1	100	6 29.8	-115	354 .9	-17 3.1	307 54.0	-22 27.7
8	79 32.0	101	6 6.8	-115	24 5.3	-17 3.2	337 58.4	-22 27.6
10	108 30.3	103	5 43.8	-116	54 9.7	-17 3.3	8 2.8	-22 27.6
12	137 28.8	104	5 20.6	-116	84 14.2	-17 3.4	38 7.1	-22 27.6
14	166 27.6	105	4 57.5	-116	114 18.6	-17 3.6	68 11.5	-22 27.6
16	195 26.7	107	4 34.3	-116	144 23.0	-17 3.7	98 15.9	-22 27.6
18	224 26.0	108	4 11.0	-116	174 27.4	-17 3.8	128 20.3	-22 27.5
20	253 25.6	109	3 47.7	-116	204 31.9	-17 3.9	158 24.7	-22 27.5
22	282 25.4	110	3 24.5	-116	234 36.3	-17 4.0	188 29.1	-22 27.5
Δ					22	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	-13 44.6	-.3	16.3	T _m	2 30	2.1	59.3 16.1		
12	-13 47.7	T _{m☉}	12 h 13.8 min	Starost	16.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 39	.1	37	-2.9	♃	6 24	.0	131	-1.6
♂	7 18	.1	117	.8	♄	9 28	.0	85	.8

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS				
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	176	32.3	-16	18.1	134	6.4	170	.7	-15	43.6	250	44.6	-20	33.5	
2	206	32.2	-16	16.6	164	11.4	199	59.4	-15	41.6	280	46.3	-20	34.1	
4	236	32.1	-16	15.1	194	16.3	229	58.1	-15	39.6	310	48.0	-20	34.7	
6	266	31.9	-16	13.7	224	21.2	259	56.9	-15	37.7	340	49.8	-20	35.3	
8	296	31.8	-16	12.2	254	26.1	289	55.6	-15	35.7	40	51.5	-20	35.9	
10	326	31.7	-16	10.7	284	31.1	319	54.4	-15	33.7	40	53.2	-20	36.5	
12	356	31.6	-16	9.2	314	36.0	349	53.1	-15	31.8	70	54.9	-20	37.1	
14	26	31.5	-16	7.7	344	40.9	19	51.9	-15	29.8	100	56.7	-20	37.7	
16	56	31.4	-16	6.2	14	45.9	49	50.7	-15	27.8	130	58.4	-20	38.2	
18	86	31.3	-16	4.7	44	50.8	79	49.4	-15	25.8	161	.1	-20	38.8	
20	116	31.2	-16	3.1	74	55.7	109	48.2	-15	23.8	191	1.8	-20	39.4	
22	146	31.1	-16	1.6	105	.6	139	46.9	-15	21.8	221	3.6	-20	40.0	
Δ		-1		7				-6		10			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	8 7	16 22	0 47	2 25	21 50	.6	9 40	2.7
55	7 45	16 43	0 39	2 5	21 52	.8	9 39	2.6
50	7 29	16 59	0 35	1 51	21 53	1.0	9 38	2.5
45	7 16	17 12	0 31	1 40	21 53	1.2	9 37	2.4
40	7 6	17 23	0 28	1 32	21 54	1.3	9 36	2.3
35	6 57	17 32	0 26	1 26	21 55	1.4	9 36	2.3
30	6 48	17 40	0 25	1 22	21 55	1.5	9 35	2.2
20	6 34	17 54	0 23	1 15	21 56	1.7	9 34	2.1
10	6 22	18 6	0 22	1 12	21 57	1.8	9 33	2.1
0	6 10	18 17	0 22	1 12	21 58	2.0	9 33	2.0
10	5 59	18 29	0 22	1 13	21 59	2.1	9 32	1.9
20	5 46	18 42	0 23	1 18	21 60	2.2	9 31	1.8
30	5 31	18 56	0 26	1 28	22 1	2.4	9 30	1.8
35	5 22	19 5	0 27	1 35	22 1	2.5	9 29	1.7
40	5 13	19 15	0 30	1 45	22 2	2.6	9 28	1.7
45	5 1	19 26	0 33	1 60	22 3	2.7	9 27	1.6
50	4 47	19 40	0 37	2 24	22 4	2.9	9 26	1.5
55	4 29	19 58	0 44	3 20	22 6	3.1	9 25	1.4
60	4 4	20 22	0 55	:::	22 8	3.3	9 23	1.3
S								

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{μ}		δ_{μ}	S_{η}		δ_{η}			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	311	25.4	111	3	1.2	-116	264	40.7	-17	4.1	218	33.5	-22	27.5
2	340	25.7	113	2	37.9	-116	294	45.2	-17	4.2	248	37.9	-22	27.5
4	9	26.2	114	2	14.6	-116	324	49.6	-17	4.4	278	42.3	-22	27.5
6	38	27.0	115	1	51.4	-116	354	54.0	-17	4.5	308	46.7	-22	27.4
8	67	27.9	116	1	28.1	-116	24	58.5	-17	4.6	338	51.1	-22	27.4
10	96	29.1	117	1	4.9	-116	55	2.9	-17	4.7	8	55.4	-22	27.4
12	125	30.4	118	0	41.8	-115	85	7.4	-17	4.8	38	59.8	-22	27.4
14	154	32.0	119	0	18.7	-72	115	11.8	-17	4.9	69	4.2	-22	27.4
16	183	33.7	120	0	4.3	115	145	16.2	-17	5.0	99	8.6	-22	27.3
18	212	35.6	120	0	27.3	114	175	20.7	-17	5.1	129	13.0	-22	27.3
20	241	37.7	121	0	50.2	114	205	25.1	-17	5.3	159	17.4	-22	27.3
22	270	40.0	122	1	13.0	114	235	29.6	-17	5.4	189	21.8	-22	27.3
Δ							22		-1		22			0

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	-13 50.8	-.2	16.3	T_m	3 21	2.0	58.3 15.9		
12	-13 53.5	$T_{m\odot}$	12 h 13.9 min	Starost	17.9 d	Faza	☉		
PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
h	min	'	°		h	min	'	°	
♀	12 40	.1	36	-2.9	♃	6 20	.0	131	-1.6
♁	7 17	.1	117	.8	♄	9 24	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS				
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	176	31.0	-16	.1	135	5.6	169	45.7	-15	19.8	251	5.3	-20	40.6	
2	206	30.9	-15	58.6	165	10.5	199	44.5	-15	17.8	281	7.0	-20	41.2	
4	236	30.7	-15	57.1	195	15.4	229	43.2	-15	15.8	311	8.7	-20	41.8	
6	266	30.6	-15	55.6	225	20.3	259	42.0	-15	13.8	341	10.5	-20	42.4	
8	296	30.5	-15	54.1	255	25.3	289	40.8	-15	11.8	40	12.2	-20	42.9	
10	326	30.5	-15	52.5	285	30.2	319	39.6	-15	9.8	41	13.9	-20	43.5	
12	356	30.4	-15	51.0	315	35.1	349	38.3	-15	7.8	71	15.7	-20	44.1	
14	26	30.3	-15	49.5	345	40.1	19	37.1	-15	5.8	101	17.4	-20	44.7	
16	56	30.2	-15	48.0	15	45.0	49	35.9	-15	3.8	131	19.1	-20	45.3	
18	86	30.1	-15	46.4	45	49.9	79	34.7	-15	1.7	161	20.8	-20	45.8	
20	116	30.0	-15	44.9	75	54.8	109	33.5	-14	59.7	191	22.5	-20	46.4	
22	146	29.9	-15	43.4	105	59.8	139	32.3	-14	57.7	221	24.3	-20	47.0	
Δ		0		8				-6		10			9		-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	8 4	16 25	0 46	2 25	22 4	.6	10 46	3.3
55	7 43	16 45	0 39	2 5	22 11	.9	10 41	3.0
50	7 28	17 1	0 34	1 51	22 17	1.1	10 38	2.9
45	7 15	17 13	0 31	1 40	22 21	1.2	10 35	2.7
40	7 5	17 24	0 28	1 32	22 25	1.3	10 33	2.6
35	6 56	17 33	0 26	1 26	22 28	1.4	10 31	2.5
30	6 48	17 40	0 25	1 21	22 31	1.5	10 29	2.4
20	6 34	17 54	0 23	1 15	22 36	1.7	10 26	2.2
10	6 22	18 6	0 22	1 12	22 41	1.8	10 23	2.1
0	6 10	18 17	0 21	1 11	22 45	1.9	10 20	1.9
10	5 59	18 29	0 22	1 13	22 49	2.0	10 18	1.8
20	5 46	18 41	0 23	1 18	22 53	2.2	10 15	1.7
30	5 32	18 56	0 25	1 27	22 59	2.3	10 12	1.5
35	5 24	19 4	0 27	1 35	23 2	2.4	10 10	1.4
40	5 14	19 13	0 29	1 44	23 5	2.5	10 8	1.3
45	5 2	19 25	0 33	1 59	23 9	1.9	10 6	1.2
50	4 49	19 38	0 37	2 22	23 14	2.0	10 3	1.0
55	4 31	19 56	0 44	3 14	23 20	2.0	9 60	.9
60	4 7	20 19	0 54	:::	23 27	2.0	9 55	.6
S								

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{μ}		δ_{μ}	S_{η}		δ_{η}			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	299	42.4	123	1	35.7	113	265	34.0	-17	5.5	219	26.2	-22	27.3
2	328	45.0	124	1	58.3	113	295	38.5	-17	5.6	249	30.6	-22	27.3
4	357	47.8	124	2	20.8	112	325	42.9	-17	5.7	279	35.0	-22	27.2
6	26	50.7	125	2	43.2	111	355	47.4	-17	5.8	309	39.4	-22	27.2
8	55	53.7	126	3	5.5	111	25	51.8	-17	5.9	339	43.8	-22	27.2
10	84	56.8	126	3	27.7	110	55	56.3	-17	6.0	9	48.2	-22	27.2
12	114	.1	127	3	49.7	110	86	.7	-17	6.1	39	52.6	-22	27.2
14	143	3.5	128	4	11.6	109	116	5.2	-17	6.2	69	57.0	-22	27.1
16	172	7.0	128	4	33.4	108	146	9.6	-17	6.4	100	1.4	-22	27.1
18	201	10.6	129	4	55.0	107	176	14.1	-17	6.5	130	5.8	-22	27.1
20	230	14.3	129	5	16.5	107	206	18.5	-17	6.6	160	10.2	-22	27.1
22	259	18.1	129	5	37.8	106	236	23.0	-17	6.7	190	14.6	-22	27.1
Δ							22		-1		22			0

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz			

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}	δ_{\odot}	S_{Υ}	S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}			
h	°	'	°	'	°	'	°	'	°	'
0	176	29.8	-15	41.9	136	4.7	169	31.1	-14	55.7
2	206	29.7	-15	40.3	166	9.6	199	29.9	-14	53.6
4	236	29.6	-15	38.8	196	14.6	229	28.6	-14	51.6
6	266	29.5	-15	37.2	226	19.5	259	27.4	-14	49.5
8	296	29.5	-15	35.7	256	24.4	289	26.2	-14	47.5
10	326	29.4	-15	34.2	286	29.3	319	25.0	-14	45.5
12	356	29.3	-15	32.6	316	34.3	349	23.8	-14	43.4
14	26	29.2	-15	31.1	346	39.2	19	22.7	-14	41.4
16	56	29.1	-15	29.5	16	44.1	49	21.5	-14	39.3
18	86	29.1	-15	28.0	46	49.1	79	20.3	-14	37.3
20	116	29.0	-15	26.4	76	54.0	109	19.1	-14	35.2
22	146	28.9	-15	24.9	106	58.9	139	17.9	-14	33.1
Δ	0	8					-6	10	9	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	8 2	16 27	0 46	2 24	22 20	.7	12 5	3.2
55	7 41	16 47	0 39	2 4	22 32	1.0	11 54	2.9
50	7 26	17 3	0 34	1 50	22 42	1.1	11 46	2.8
45	7 14	17 15	0 31	1 40	22 50	1.3	11 40	2.6
40	7 4	17 25	0 28	1 32	22 56	1.4	11 34	2.5
35	6 55	17 34	0 26	1 26	23 2	1.5	11 30	2.4
30	6 47	17 41	0 25	1 21	23 7	1.5	11 26	2.3
20	6 34	17 55	0 23	1 15	23 16	1.7	11 19	2.2
10	6 22	18 6	0 22	1 12	23 23	1.9	11 13	2.0
0	6 11	18 18	0 21	1 11	23 31	1.9	11 7	1.9
10	5 59	18 29	0 22	1 13	23 38	1.9	11 1	1.8
20	5 47	18 41	0 23	1 18	23 46	1.9	10 55	1.7
30	5 33	18 55	0 25	1 27	23 55	1.9	10 48	1.5
35	5 25	19 3	0 27	1 34	23 60	1.9	10 44	1.4
40	5 15	19 12	0 29	1 44	...	...	10 39	1.3
45	5 4	19 23	0 32	1 58	23 56	2.6	10 34	1.2
50	4 50	19 37	0 37	2 21	...	...	10 28	1.1
55	4 33	19 54	0 43	3 9	...	...	10 20	.9
60	4 10	20 16	0 54	...	...	...	10 10	.7
S								

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	288	22.0	130	5 58.9	105	266	27.4	-17 6.8
2	317	26.0	130	6 19.9	104	296	31.9	-17 6.9
4	346	30.0	131	6 40.7	103	326	36.4	-17 7.0
6	15	34.2	131	7 1.3	102	356	40.8	-17 7.1
8	44	38.4	131	7 21.8	101	26	45.3	-17 7.2
10	73	42.6	132	7 42.0	100	56	49.8	-17 7.3
12	102	46.9	132	8 2.1	99	86	54.2	-17 7.4
14	131	51.3	132	8 22.0	98	116	58.7	-17 7.5
16	160	55.7	132	8 41.6	97	147	3.1	-17 7.6
18	190	.1	132	9 1.1	96	177	7.6	-17 7.7
20	219	4.6	132	9 20.4	95	207	12.1	-17 7.8
22	248	9.1	133	9 39.4	94	237	16.6	-17 7.9
Δ						22	-1	22 0

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	-14	.8	- .2	16.2	T_m	4 56	1.9 56.5 15.4		
12	-14	2.7	$T_{m\odot}$	12 h 14.0 min	Starost	19.9 d	Faza ☉		
PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
♀	12 42	.1	33	-2.9	♃	6 13	.0	130	-1.6
♁	7 14	.1	115	.8	♄	9 17	.0	84	.8

7. FEBRUAR

SREDA

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}	δ_{\odot}	S_{Υ}	S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}			
h	°	'	°	'	°	'	°	'	°	'
0	176	28.8	-15	23.3	137	3.8	169	16.7	-14	31.1
2	206	28.8	-15	21.7	167	8.8	199	15.5	-14	29.0
4	236	28.7	-15	20.2	197	13.7	229	14.3	-14	26.9
6	266	28.6	-15	18.6	227	18.6	259	13.2	-14	24.9
8	296	28.6	-15	17.1	257	23.6	289	12.0	-14	22.8
10	326	28.5	-15	15.5	287	28.5	319	10.8	-14	20.7
12	356	28.4	-15	13.9	317	33.4	349	9.6	-14	18.6
14	26	28.4	-15	12.4	347	38.3	19	8.5	-14	16.6
16	56	28.3	-15	10.8	17	43.3	49	7.3	-14	14.5
18	86	28.3	-15	9.2	47	48.2	79	6.1	-14	12.4
20	116	28.2	-15	7.7	77	53.1	109	5.0	-14	10.3
22	146	28.1	-15	6.1	107	58.1	139	3.8	-14	8.2
Δ	0	8					-6	10	9	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 59	16 30	0 46	2 24	22 37	.9	13 21	3.0
55	7 39	16 49	0 39	2 4	22 55	1.1	13 5	2.8
50	7 24	17 4	0 34	1 50	23 9	1.3	12 52	2.6
45	7 13	17 16	0 31	1 40	23 20	1.4	12 42	2.5
40	7 3	17 26	0 28	1 32	23 29	1.9	12 34	2.4
35	6 54	17 35	0 26	1 26	23 37	1.9	12 27	2.3
30	6 46	17 42	0 25	1 21	23 44	1.9	12 21	2.3
20	6 33	17 55	0 23	1 15	23 56	1.9	12 11	2.1
10	6 22	18 7	0 22	1 12	...	...	12 1	2.0
0	6 11	18 18	0 21	1 11	...	...	11 53	1.9
10	5 60	18 29	0 22	1 13	...	...	11 44	1.8
20	5 48	18 40	0 23	1 18	...	...	11 35	1.7
30	5 34	18 54	0 25	1 27	...	...	11 24	1.6
35	5 26	19 2	0 27	1 34	...	...	11 18	1.5
40	5 16	19 11	0 29	1 43	0 6	2.5	11 11	1.4
45	5 5	19 22	0 32	1 57	...	...	11 3	1.3
50	4 52	19 35	0 37	2 19	0 21	2.7	10 54	1.2
55	4 35	19 52	0 43	3 5	0 32	2.9	10 42	1.0
60	4 13	20 14	0 53	...	0 45	3.1	10 27	.8
S								

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	277	13.6	133	9 58.2	93	267	21.0	-17 8.0
2	306	18.1	133	10 16.8	92	297	25.5	-17 8.2
4	335	22.7	133	10 35.2	91	327	30.0	-17 8.3
6	4	27.2	133	10 53.3	90	357	34.5	-17 8.4
8	33	31.8	133	11 11.2	88	27	38.9	-17 8.5
10	62	36.4	133	11 28.9	87	57	43.4	-17 8.6
12	91	40.9	133	11 46.3	86	87	47.9	-17 8.7
14	120	45.5	133	12 3.5	85	117	52.4	-17 8.8
16	149	50.0	133	12 20.4	83	147	56.8	-17 8.9
18	178	54.6	133	12 37.1	82	178	1.3	-17 9.0
20	207	59.1	132	12 53.5	81	208	5.8	-17 9.1
22	237	3.6	132	13 9.7	79	238	10.3	-17 9.2
Δ						22	-1	22 0

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	-14	4.6	- .1	16.2	T_m	5 42	1.9 55.7 15.2		
12	-14	6.1	$T_{m\odot}$	12 h 14.1 min	Starost	20.9 d	Faza ☉		
PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
♀	12 43	.1	32	-2.9	♃	6 10	.0	130	-1.6
♁	7 12	.1	115	.7	♄	9 14	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{\vee}		δ_{\vee}		S_{\mars}		δ_{\mars}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	176	28.1	-15	4.5	138	3.0	169	2.7	-14	6.1	252	7.3	-21	1.1
2	206	28.0	-15	2.9	168	7.9	199	1.5	-14	4.0	282	9.0	-21	1.6
4	236	28.0	-15	1.3	198	12.8	229	.3	-14	1.9	312	10.8	-21	2.2
6	266	27.9	-14	59.8	228	17.8	258	59.2	-13	59.8	342	12.5	-21	2.7
8	296	27.9	-14	58.2	258	22.7	288	58.0	-13	57.7	12	14.2	-21	3.3
10	326	27.8	-14	56.6	288	27.6	318	56.9	-13	55.6	42	15.9	-21	3.8
12	356	27.8	-14	55.0	318	32.6	348	55.7	-13	53.5	72	17.6	-21	4.3
14	26	27.7	-14	53.4	348	37.5	18	54.6	-13	51.4	102	19.4	-21	4.9
16	56	27.7	-14	51.8	18	42.4	48	53.4	-13	49.2	132	21.1	-21	5.4
18	86	27.6	-14	50.2	48	47.3	78	52.3	-13	47.1	162	22.8	-21	6.0
20	116	27.6	-14	48.6	78	52.3	108	51.2	-13	45.0	192	24.5	-21	6.5
22	146	27.6	-14	47.0	108	57.2	138	50.0	-13	42.9	222	26.2	-21	7.1
Δ	0 8						-6 11				9		-3	

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{\jup}		δ_{\jup}	S_{\sat}		δ_{\sat}			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	266	8.0	132	13	25.6	78	268	14.8	-17	9.3	222	4.7	-22	26.6
2	295	12.5	132	13	41.2	77	298	19.3	-17	9.4	252	9.1	-22	26.6
4	324	16.9	132	13	56.6	75	328	23.7	-17	9.5	282	13.5	-22	26.6
6	353	21.2	132	14	11.6	74	358	28.2	-17	9.6	312	17.9	-22	26.5
8	22	25.6	131	14	26.4	73	28	32.7	-17	9.7	342	22.3	-22	26.5
10	51	29.8	131	14	41.0	71	58	37.2	-17	9.8	12	26.7	-22	26.5
12	80	34.1	131	14	55.2	70	88	41.7	-17	9.9	42	31.1	-22	26.5
14	109	38.3	131	15	9.2	68	118	46.2	-17	10.0	72	35.5	-22	26.5
16	138	42.4	130	15	22.8	67	148	50.7	-17	10.1	102	40.0	-22	26.5
18	167	46.5	130	15	36.2	65	178	55.2	-17	10.1	132	44.4	-22	26.4
20	196	50.6	130	15	49.3	64	208	59.7	-17	10.2	162	48.8	-22	26.4
22	225	54.6	130	16	2.1	62	239	4.2	-17	10.3	192	53.2	-22	26.4
Δ									22 0				22 0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 57	16 32	0 46	2 23	22 59	1.1	14 34	2.9
55	7 37	16 52	0 39	2 4	23 22	1.3	14 12	2.7
50	7 23	17 6	0 34	1 50	23 39	1.9	13 56	2.5
45	7 11	17 18	0 31	1 40	23 53	1.9	13 43	2.4
40	7 1	17 27	0 28	1 32	...	.0	13 32	2.3
35	6 53	17 36	0 26	1 26	...	.0	13 23	2.3
30	6 46	17 43	0 25	1 21	...	.0	13 15	2.2
20	6 33	17 56	0 23	1 15	...	.0	13 2	2.1
10	6 21	18 7	0 22	1 12	0 6	1.8	12 50	2.0
0	6 11	18 18	0 21	1 11	0 16	1.9	12 39	1.9
10	5 60	18 28	0 22	1 13	0 26	2.0	12 27	1.8
20	5 48	18 40	0 23	1 18	0 37	2.1	12 15	1.8
30	5 34	18 53	0 25	1 27	0 49	2.2	12 2	1.7
35	5 27	19 1	0 27	1 33	0 57	2.3	11 54	1.6
40	5 18	19 10	0 29	1 43	1 5	2.4	11 45	1.5
45	5 7	19 21	0 32	1 56	1 14	2.5	11 35	1.4
50	4 54	19 33	0 36	2 18	1 26	2.6	11 22	1.3
55	4 38	19 49	0 43	3 1	1 41	2.7	11 7	1.2
60	4 16	20 11	0 53	:::	2 0	3.0	10 46	1.0
S								

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min	s	s	h min	min	'	'		
00	-14	7.7	-.1	16.2	T_m	6 27	2.0	55.0	15.0
12	-14	8.8	$T_{m\odot}$	12 h 14.1 min	Starost	21.9 d	Faza	☉	
PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min	'	°			h min	'	°	
♀	12 44	.1	31	-2.9	♀	6 6	.0	130	-1.6
♂	7 11	.1	114	.7	♂	9 10	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{\vee}		δ_{\vee}		S_{\mars}		δ_{\mars}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	176	27.5	-14	45.4	139	2.1	168	48.9	-13	40.7	252	28.0	-21	7.6
2	206	27.5	-14	43.8	169	7.0	198	47.7	-13	38.6	282	29.7	-21	8.1
4	236	27.4	-14	42.2	199	12.0	228	46.6	-13	36.5	312	31.4	-21	8.7
6	266	27.4	-14	40.6	229	16.9	258	45.5	-13	34.3	342	33.1	-21	9.2
8	296	27.4	-14	39.0	259	21.8	288	44.4	-13	32.2	12	34.8	-21	9.7
10	326	27.3	-14	37.4	289	26.8	318	43.2	-13	30.1	42	36.6	-21	10.3
12	356	27.3	-14	35.8	319	31.7	348	42.1	-13	27.9	72	38.3	-21	10.8
14	26	27.3	-14	34.2	349	36.6	18	41.0	-13	25.8	102	40.0	-21	11.3
16	56	27.2	-14	32.6	19	41.5	48	39.9	-13	23.6	132	41.7	-21	11.9
18	86	27.2	-14	31.0	49	46.5	78	38.7	-13	21.5	162	43.4	-21	12.4
20	116	27.2	-14	29.4	79	51.4	108	37.6	-13	19.3	192	45.1	-21	12.9
22	146	27.2	-14	27.7	109	56.3	138	36.5	-13	17.2	222	46.9	-21	13.5
Δ	0 8						-6 11				9		-3	

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{\jup}		δ_{\jup}	S_{\sat}		δ_{\sat}			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	254	58.5	129	16	14.5	61	269	8.7	-17	10.4	222	57.6	-22	26.4
2	284	2.4	129	16	26.7	59	299	13.2	-17	10.5	253	2.0	-22	26.4
4	313	6.2	129	16	38.6	58	329	17.7	-17	10.6	283	6.4	-22	26.3
6	342	10.0	128	16	50.1	56	359	22.2	-17	10.7	313	10.9	-22	26.3
8	11	13.7	128	17	1.3	55	29	26.7	-17	10.8	343	15.3	-22	26.3
10	40	17.3	128	17	12.3	53	59	31.2	-17	10.9	13	19.7	-22	26.3
12	69	20.9	128	17	22.9	51	89	35.7	-17	11.0	43	24.1	-22	26.3
14	98	24.4	127	17	33.2	50	119	40.2	-17	11.1	73	28.5	-22	26.2
16	127	27.8	127	17	43.1	48	149	44.7	-17	11.2	103	32.9	-22	26.2
18	156	31.2	127	17	52.7	47	179	49.2	-17	11.3	133	37.4	-22	26.2
20	185	34.5	126	18	2.0	45	209	53.7	-17	11.4	163	41.8	-22	26.2
22	214	37.8	126	18	11.0	43	239	58.2	-17	11.5	193	46.2	-22	26.2
Δ									23 0				22 0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 54	16 35	0 45	2 23	23 25	2.0	15 43	2.6
55	7 35	16 54	0 39	2 4	23 53	2.0	15 16	2.5
50	7 21	17 8	0 34	1 50	...	.0	14 56	2.4
45	7 10	17 19	0 31	1 39	...	.0	14 41	2.3
40	7 0	17 29	0 28	1 32	0 4	1.6	14 28	2.2
35	6 52	17 37	0 26	1 26	0 14	1.7	14 18	2.2
30	6 45	17 44	0 25	1 21	0 22	1.7	14 8	2.1
20	6 32	17 56	0 23	1 15	0 37	1.8	13 52	2.1
10	6 21	18 7	0 22	1 12	0 50	1.9	13 38	2.0
0	6 11	18 18	0 21	1 11	1 2	1.9	13 25	2.0
10	6 0	18 28	0 22	1 13	1 15	2.0	13 12	1.9
20	5 49	18 39	0 23	1 18	1 28	2.1	12 58	1.8
30	5 35	18 53	0 25	1 26	1 43	2.2	12 42	1.8
35	5 28	19 0	0 27	1 33	1 52	2.2	12 32	1.7
40	5 19	19 9	0 29	1 42	2 2	2.3	12 22	1.7
45	5 8	19 19	0 32	1 56	2 14	2.4	12 9	1.6
50	4 56	19 32	0 36	2 17	2 28	2.4	11 54	1.5
55	4 40	19 47	0 42	2 57	2 46	2.6	11 35	1.4
60	4 18	20 8	0 52	:::	3 11	2.8	11 9	1.3
S								

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	s	h min	min	'	'

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	176	27.1	-14	26.1	140	1.3	168	35.4	-13	15.0	252	48.6	-21	14.0
2	206	27.1	-14	24.5	170	6.2	198	34.3	-13	12.8	282	50.3	-21	14.5
4	236	27.1	-14	22.9	200	11.1	228	33.2	-13	10.7	312	52.0	-21	15.0
6	266	27.1	-14	21.3	230	16.0	258	32.1	-13	8.5	342	53.7	-21	15.6
8	296	27.1	-14	19.6	260	21.0	288	31.0	-13	6.4	12	55.4	-21	16.1
10	326	27.0	-14	18.0	290	25.9	318	29.9	-13	4.2	42	57.2	-21	16.6
12	356	27.0	-14	16.4	320	30.8	348	28.8	-13	2.0	72	58.9	-21	17.1
14	26	27.0	-14	14.7	350	35.8	18	27.7	-12	59.8	103	.6	-21	17.6
16	56	27.0	-14	13.1	20	40.7	48	26.6	-12	57.7	133	2.3	-21	18.2
18	86	27.0	-14	11.5	50	45.6	78	25.5	-12	55.5	163	4.0	-21	18.7
20	116	27.0	-14	9.8	80	50.5	108	24.4	-12	53.3	193	5.8	-21	19.2
22	146	27.0	-14	8.2	110	55.5	138	23.3	-12	51.1	223	7.5	-21	19.7
Δ	0	8					-6	11			9			-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 52	16 38	0 45	2 23	.. .	.0	16 46	2.3
55	7 33	16 56	0 38	2 3	.. .	.0	16 15	2.2
50	7 20	17 10	0 34	1 50	0 13	1.6	15 53	2.2
45	7 8	17 21	0 31	1 39	0 29	1.7	15 36	2.1
40	6 59	17 30	0 28	1 32	0 42	1.8	15 22	2.1
35	6 51	17 38	0 26	1 26	0 54	1.8	15 10	2.1
30	6 44	17 45	0 25	1 21	1 3	1.8	14 60	2.1
20	6 32	17 57	0 23	1 15	1 20	1.9	14 42	2.0
10	6 21	18 7	0 22	1 12	1 35	1.9	14 26	2.0
0	6 11	18 18	0 21	1 11	1 49	2.0	14 12	2.0
10	6 0	18 28	0 22	1 13	2 3	2.0	13 57	2.0
20	5 49	18 39	0 23	1 17	2 18	2.1	13 42	1.9
30	5 36	18 52	0 25	1 26	2 35	2.1	13 24	1.9
35	5 29	18 59	0 27	1 33	2 45	2.1	13 14	1.9
40	5 20	19 8	0 29	1 42	2 57	2.2	13 2	1.8
45	5 10	19 18	0 32	1 55	3 10	2.2	12 48	1.8
50	4 57	19 30	0 36	2 15	3 27	2.3	12 31	1.8
55	4 42	19 45	0 42	2 54	3 48	2.3	12 9	1.7
60	4 21	20 6	0 51	:::	4 17	2.5	11 40	1.6

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	243	41.0	126	18	19.6	41	270	2.8	-17	11.6	223	50.6	-22	26.1
2	272	44.1	125	18	27.9	40	300	7.3	-17	11.7	253	55.0	-22	26.1
4	301	47.2	125	18	35.9	38	330	11.8	-17	11.7	283	59.5	-22	26.1
6	330	50.2	125	18	43.5	36	0	16.3	-17	11.8	314	3.9	-22	26.1
8	359	53.1	124	18	50.8	35	30	20.8	-17	11.9	344	8.3	-22	26.1
10	28	56.0	124	18	57.7	33	60	25.3	-17	12.0	14	12.7	-22	26.0
12	57	58.8	124	19	4.3	31	90	29.9	-17	12.1	44	17.1	-22	26.0
14	87	1.5	123	19	10.5	29	120	34.4	-17	12.2	74	21.6	-22	26.0
16	116	4.2	123	19	16.4	28	150	38.9	-17	12.3	104	26.0	-22	26.0
18	145	6.8	123	19	22.0	26	180	43.4	-17	12.4	134	30.4	-22	26.0
20	174	9.4	123	19	27.1	24	210	47.9	-17	12.5	164	34.8	-22	26.0
22	203	11.9	122	19	32.0	22	240	52.5	-17	12.6	194	39.3	-22	25.9
Δ							23	0			22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-14	11.4	.0	16.2	T _m	8 0	2.0	54.2	14.8
12	-14	11.8	T _{m☉}	12 h 14.2 min	Starost	23.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	12 46	.1	29	-2.9	♃	5 59	.0	130	-1.6
♂	7 8	.1	113	.7	♄	9 3	.0	84	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	176	27.0	-14	6.6	141	.4	168	22.2	-12	48.9	253	9.2	-21	20.2
2	206	26.9	-14	4.9	171	5.3	198	21.1	-12	46.7	283	10.9	-21	20.7
4	236	26.9	-14	3.3	201	10.3	228	20.0	-12	44.5	313	12.6	-21	21.3
6	266	26.9	-14	1.6	231	15.2	258	18.9	-12	42.3	343	14.3	-21	21.8
8	296	26.9	-14	.0	261	20.1	288	17.8	-12	40.1	13	16.0	-21	22.3
10	326	26.9	-13	58.4	291	25.0	318	16.8	-12	38.0	43	17.8	-21	22.8
12	356	26.9	-13	56.7	321	30.0	348	15.7	-12	35.7	73	19.5	-21	23.3
14	26	26.9	-13	55.1	351	34.9	18	14.6	-12	33.5	103	21.2	-21	23.8
16	56	26.9	-13	53.4	21	39.8	48	13.5	-12	31.3	133	22.9	-21	24.3
18	86	26.9	-13	51.8	51	44.8	78	12.5	-12	29.1	163	24.6	-21	24.8
20	116	26.9	-13	50.1	81	49.7	108	11.4	-12	26.9	193	26.3	-21	25.3
22	146	26.9	-13	48.4	111	54.6	138	10.3	-12	24.7	223	28.1	-21	25.8
Δ	0	8					-5	11			9			-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 49	16 40	0 45	2 22	0 0	1.8	17 40	1.9
55	7 31	16 58	0 38	2 3	0 30	1.9	17 9	1.9
50	7 18	17 11	0 34	1 49	0 53	1.9	16 45	1.9
45	7 7	17 22	0 30	1 39	1 10	1.9	16 27	2.0
40	6 58	17 31	0 28	1 31	1 25	1.9	16 13	2.0
35	6 50	17 39	0 26	1 25	1 37	1.9	16 0	2.0
30	6 43	17 45	0 25	1 21	1 47	2.0	15 50	2.0
20	6 31	17 57	0 23	1 15	2 6	2.0	15 31	2.0
10	6 21	18 8	0 22	1 11	2 21	2.0	15 15	2.0
0	6 11	18 18	0 21	1 11	2 36	2.0	14 60	2.0
10	6 1	18 28	0 22	1 13	2 51	2.0	14 44	2.0
20	5 50	18 38	0 23	1 17	3 7	2.0	14 28	2.0
30	5 37	18 51	0 25	1 26	3 26	2.0	14 9	2.0
35	5 30	18 58	0 27	1 32	3 37	2.0	13 59	2.0
40	5 21	19 7	0 29	1 41	3 49	2.0	13 46	2.0
45	5 11	19 16	0 32	1 54	4 4	2.0	13 31	2.0
50	4 59	19 28	0 36	2 14	4 21	2.1	13 13	2.0
55	4 44	19 43	0 42	2 51	4 44	2.1	12 50	2.0
60	4 24	20 3	0 51	:::	5 16	2.1	12 18	2.0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	232	14.4	122	19	36.4	21	270	57.0	-17	12.6	224	43.7	-22	25.9
2	261	16.8	122	19	40.5	19	301	1.5	-17	12.7	254	48.1	-22	25.9
4	290	19.2	122	19	44.3	17	331	6.0	-17	12.8	284	52.5	-22	25.9
6	319	21.5	121	19	47.6	15	1	10.6	-17	12.9	314	57.0	-22	25.9
8	348	23.8	121	19	50.6	13	31	15.1	-17	13.0	345	1.4	-22	25.8
10	17	26.1	121	19	53.3	11	61	19.6	-17	13.1	15	5.8	-22	25.8
12	46	28.3	121	19	55.6	10	91	24.2	-17	13.2	45	10.2	-22	25.8
14	75	30.4	121	19	57.5	8	121	28.7	-17	13.3	75	14.7	-22	25.8
16	104	32.6	120	19	59.1	6	151	33.2	-17	13.3	105	19.1	-22	25.8
18	133	34.7	120	20	.2	4	181	37.8	-17	13.4	135	23.5	-22	25.7
20	162	36.7	120	20	1.0	2	211	42.3	-17	13.5	165	27.9	-22	25.7
22	191	38.8	120	20	1.5	0	241	46.9	-17	13.6	195	32.4	-22	25.7
Δ							23	0			22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	-14	12.2	.0	16.2	T _m	8 48	2.0	54.1	14.7
12	-14	12.2	T _{m☉}	12 h 14.2 min	Starost	24.9 d	Faza	☉	

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UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.0	-13	46.8	141	59.5	168	9.2	-12	22.5	253	29.8	-21	26.3
2	206	27.0	-13	45.1	172	4.5	198	8.2	-12	20.3	283	31.5	-21	26.8
4	236	27.0	-13	43.5	202	9.4	228	7.1	-12	18.1	313	33.2	-21	27.3
6	266	27.0	-13	41.8	232	14.3	258	6.0	-12	15.8	343	34.9	-21	27.8
8	296	27.0	-13	40.1	262	19.2	288	5.0	-12	13.6	373	36.6	-21	28.3
10	326	27.0	-13	38.5	292	24.2	318	3.9	-12	11.4	403	38.4	-21	28.8
12	356	27.0	-13	36.8	322	29.1	348	2.9	-12	9.2	433	40.1	-21	29.3
14	26	27.0	-13	35.1	352	34.0	18	1.8	-12	6.9	103	41.8	-21	29.8
16	56	27.1	-13	33.5	22	39.0	48	.8	-12	4.7	133	43.5	-21	30.3
18	86	27.1	-13	31.8	52	43.9	77	59.7	-12	2.5	163	45.2	-21	30.8
20	116	27.1	-13	30.1	82	48.8	107	58.7	-12	.2	193	46.9	-21	31.3
22	146	27.1	-13	28.4	112	53.7	137	57.6	-11	58.0	223	48.6	-21	31.8
Δ	0		8				-5		11		9			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 46	16 43	0 45	2 22	0 43	2.2	18 26	1.5
55	7 29	17 0	0 38	2 3	1 15	2.2	17 55	1.6
50	7 16	17 13	0 34	1 49	1 38	2.1	17 32	1.7
45	7 6	17 23	0 30	1 39	1 56	2.1	17 14	1.8
40	6 57	17 32	0 28	1 31	2 11	2.1	16 60	1.8
35	6 49	17 40	0 26	1 25	2 23	2.1	16 48	1.8
30	6 43	17 46	0 25	1 21	2 34	2.1	16 37	1.9
20	6 31	17 58	0 23	1 15	2 53	2.0	16 19	1.9
10	6 21	18 8	0 22	1 11	3 9	2.0	16 3	2.0
0	6 11	18 18	0 21	1 11	3 24	2.0	15 47	2.0
10	6 1	18 27	0 22	1 12	3 39	2.0	15 32	2.0
20	5 50	18 38	0 23	1 17	3 56	2.0	15 16	2.1
30	5 38	18 50	0 25	1 26	4 14	1.9	14 58	2.1
35	5 31	18 57	0 27	1 32	4 25	1.9	14 47	2.1
40	5 22	19 5	0 29	1 41	4 38	1.9	14 34	2.2
45	5 13	19 15	0 32	1 54	4 53	1.9	14 20	2.2
50	5 1	19 26	0 36	2 13	5 11	1.8	14 2	2.3
55	4 46	19 41	0 41	2 48	5 34	1.8	13 39	2.3
60	4 27	20 0	0 50	3 11	6 6	1.7	13 7	2.4
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	220	40.8	120	20	1.6	-1	271	51.4	-17	13.7	225	36.8	-22	25.7
2	249	42.8	120	20	1.3	-3	301	55.9	-17	13.8	255	41.2	-22	25.7
4	278	44.8	120	20	.6	-5	332	.5	-17	13.9	285	45.7	-22	25.6
6	307	46.8	120	19	59.5	-7	2	5.0	-17	13.9	315	50.1	-22	25.6
8	336	48.7	120	19	58.1	-9	32	9.6	-17	14.0	345	54.5	-22	25.6
10	5	50.7	120	19	56.4	-11	62	14.1	-17	14.1	15	59.0	-22	25.6
12	34	52.6	120	19	54.2	-13	92	18.7	-17	14.2	46	3.4	-22	25.6
14	63	54.5	120	19	51.7	-14	122	23.2	-17	14.3	76	7.8	-22	25.5
16	92	56.5	120	19	48.8	-16	152	27.8	-17	14.3	106	12.3	-22	25.5
18	121	58.4	120	19	45.5	-18	182	32.3	-17	14.4	136	16.7	-22	25.5
20	151	.4	120	19	41.9	-20	212	36.9	-17	14.5	166	21.1	-22	25.5
22	180	2.3	120	19	37.9	-22	242	41.4	-17	14.6	196	25.6	-22	25.5
Δ							23		0		22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	-14	12.2	.0	16.2	T _m	9 36	2.0	54.1	14.7
12	-14	11.8	T _{m☉}	12 h 14.2 min	Starost	25.9 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 48	.1	26	-2.9	♄	5 52	.0	130	-1.6
♂	7 6	.1	111	.7	♃	8 56	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.1	-13	26.8	142	58.7	167	56.6	-11	55.7	253	50.4	-21	32.3
2	206	27.2	-13	25.1	173	3.6	197	55.5	-11	53.5	283	52.1	-21	32.8
4	236	27.2	-13	23.4	203	8.5	227	54.5	-11	51.2	313	53.8	-21	33.3
6	266	27.2	-13	21.7	233	13.5	257	53.4	-11	49.0	343	55.5	-21	33.8
8	296	27.2	-13	20.0	263	18.4	287	52.4	-11	46.7	373	57.2	-21	34.2
10	326	27.3	-13	18.4	293	23.3	317	51.4	-11	44.5	403	58.9	-21	34.7
12	356	27.3	-13	16.7	323	28.2	347	50.3	-11	42.2	433	60.6	-21	35.2
14	26	27.3	-13	15.0	353	33.2	17	49.3	-11	40.0	104	2.4	-21	35.7
16	56	27.4	-13	13.3	23	38.1	47	48.3	-11	37.7	134	4.1	-21	36.2
18	86	27.4	-13	11.6	53	43.0	77	47.2	-11	35.4	164	5.8	-21	36.7
20	116	27.4	-13	9.9	83	48.0	107	46.2	-11	33.2	194	7.5	-21	37.1
22	146	27.5	-13	8.2	113	52.9	137	45.2	-11	30.9	224	9.2	-21	37.6
Δ	0		8				-5		11		9			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 44	16 46	0 44	2 22	1 37	2.6	19 2	1.2
55	7 27	17 2	0 38	2 3	2 7	2.5	18 34	1.4
50	7 14	17 15	0 34	1 49	2 30	2.4	18 13	1.5
45	7 4	17 25	0 30	1 39	2 47	2.3	17 57	1.6
40	6 56	17 33	0 28	1 31	3 1	2.2	17 43	1.6
35	6 48	17 41	0 26	1 25	3 13	2.2	17 32	1.7
30	6 42	17 47	0 25	1 21	3 24	2.2	17 22	1.8
20	6 30	17 58	0 23	1 14	3 42	2.1	17 5	1.8
10	6 20	18 8	0 22	1 11	3 58	2.0	16 49	1.9
0	6 11	18 18	0 21	1 11	4 12	2.0	16 35	2.0
10	6 1	18 27	0 22	1 12	4 27	1.9	16 21	2.0
20	5 51	18 37	0 23	1 17	4 43	1.9	16 6	2.1
30	5 39	18 49	0 25	1 25	5 1	1.8	15 49	2.2
35	5 32	18 56	0 27	1 32	5 11	1.8	15 38	2.3
40	5 24	19 4	0 29	1 41	5 23	1.7	15 27	2.3
45	5 14	19 13	0 32	1 53	5 37	1.7	15 13	2.4
50	5 3	19 25	0 36	2 12	5 55	1.6	14 56	2.5
55	4 48	19 39	0 41	2 45	6 17	1.5	14 34	2.6
60	4 29	19 57	0 50	3 11	6 47	1.3	14 5	2.8
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	209	4.3	120	19	33.5	-24	272	46.0	-17	14.7	226	30.0	-22	25.4
2	238	6.3	120	19	28.8	-26	302	50.5	-17	14.8	256	34.4	-22	25.4
4	267	8.3	120	19	23.7	-27	332	55.1	-17	14.8	286	38.9	-22	25.4
6	296	10.3	120	19	18.2	-29	2	59.6	-17	14.9	316	43.3	-22	25.4
8	325	12.4	120	19	12.3	-31	33	4.2	-17	15.0	346	47.7	-22	25.4
10	354	14.5	121	19	6.2	-33	63	8.8	-17	15.1	16	52.2	-22	25.3
12	23	16.6	121	18	59.6	-35	93	13.3	-17	15.2	46	56.6	-22	25.3
14	52	18.7	121	18	52.7	-36	123	17.9	-17	15.2	77	1.0	-22	25.3
16	81	20.9	121	18	45.4	-38	153	22.4	-17	15.3	107	5.5	-22	25.3
18	110	23.1	121	18	37.8	-40	183	27.0	-17	15.4	137	9.9	-22	25.3
20	139	25.4	122	18	29.8	-42	213	31.6	-17	15.5	167	14.4	-22	25.2
22	168	27.7	122	18	21.5	-43	243	36.1	-17	15.5	197	18.8	-22	25.2
Δ							23		0		22			0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	27.5	-13	6.5	143	57.8	167	44.2	-11	28.7	254	10.9	-21	38.1
2	206	27.6	-13	4.8	174	2.7	197	43.1	-11	26.4	284	12.6	-21	38.6
4	236	27.6	-13	3.1	204	7.7	227	42.1	-11	24.1	314	14.4	-21	39.1
6	266	27.6	-13	1.4	234	12.6	257	41.1	-11	21.8	344	16.1	-21	39.5
8	296	27.7	-12	59.7	264	17.5	287	40.1	-11	19.6	14	17.8	-21	40.0
10	326	27.7	-12	58.0	294	22.5	317	39.1	-11	17.3	44	19.5	-21	40.5
12	356	27.8	-12	56.3	324	27.4	347	38.0	-11	15.0	74	21.2	-21	41.0
14	26	27.8	-12	54.6	354	32.3	17	37.0	-11	12.7	104	22.9	-21	41.4
16	56	27.9	-12	52.9	24	37.2	47	36.0	-11	10.4	134	24.7	-21	41.9
18	86	27.9	-12	51.2	54	42.2	77	35.0	-11	8.1	164	26.4	-21	42.4
20	116	28.0	-12	49.5	84	47.1	107	34.0	-11	5.8	194	28.1	-21	42.8
22	146	28.0	-12	47.8	114	52.0	137	33.0	-11	3.6	224	29.8	-21	43.3
Δ		0		9				-5		11		9		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 41	16 48	0 44	2 21	2 39	2.9	19 30	.9
55	7 25	17 4	0 38	2 2	3 6	2.7	19 6	1.1
50	7 13	17 16	0 34	1 49	3 26	2.5	18 48	1.3
45	7 3	17 26	0 30	1 39	3 42	2.4	18 34	1.4
40	6 54	17 35	0 28	1 31	3 55	2.4	18 23	1.5
35	6 47	17 42	0 26	1 25	4 6	2.3	18 13	1.6
30	6 41	17 48	0 24	1 21	4 16	2.2	18 4	1.6
20	6 30	17 59	0 23	1 14	4 32	2.1	17 49	1.8
10	6 20	18 8	0 21	1 11	4 47	2.0	17 35	1.9
0	6 11	18 18	0 21	1 10	4 60	2.0	17 23	2.0
10	6 1	18 27	0 22	1 12	5 13	1.9	17 10	2.0
20	5 51	18 37	0 23	1 17	5 28	1.8	16 57	2.1
30	5 39	18 48	0 25	1 25	5 44	1.7	16 41	2.3
35	5 33	18 55	0 27	1 31	5 54	1.6	16 32	2.3
40	5 25	19 3	0 29	1 40	6 4	1.6	16 22	2.4
45	5 16	19 12	0 32	1 52	6 17	1.5	16 10	2.5
50	5 5	19 23	0 35	2 11	6 33	1.4	15 55	2.6
55	4 51	19 36	0 41	2 43	6 52	1.2	15 36	2.8
60	4 32	19 55	0 49	:::	7 19	1.0	15 11	3.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	197	30.0	122	18	12.8	-45	273	40.7	-17	15.6	227	23.2	-22	25.2		
2	226	32.4	122	18	3.8	-47	303	45.3	-17	15.7	257	27.7	-22	25.2		
4	255	34.8	122	17	54.4	-49	333	49.9	-17	15.8	287	32.1	-22	25.2		
6	284	37.3	123	17	44.7	-50	3	54.4	-17	15.8	317	36.6	-22	25.1		
8	313	39.9	123	17	34.6	-52	33	59.0	-17	15.9	347	41.0	-22	25.1		
10	342	42.5	123	17	24.2	-54	64	3.6	-17	16.0	17	45.5	-22	25.1		
12	11	45.2	124	17	13.5	-55	94	8.2	-17	16.1	47	49.9	-22	25.1		
14	40	47.9	124	17	2.5	-57	124	12.7	-17	16.2	77	54.3	-22	25.1		
16	69	50.7	124	16	51.1	-59	154	17.3	-17	16.2	107	58.8	-22	25.0		
18	98	53.5	125	16	39.4	-60	184	21.9	-17	16.3	138	3.2	-22	25.0		
20	127	56.4	125	16	27.4	-62	214	26.5	-17	16.4	168	7.7	-22	25.0		
22	156	59.4	125	16	15.0	-63	244	31.0	-17	16.4	198	12.1	-22	25.0		
Δ								23		0		22		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s		h min	min	'	'		
00	-14	9.9	.1	16.2	T _m	11 11	2.0	54.4	14.8
12	-14	8.8	T _{m☉}	12 h 14.1 min	Starost	27.9 d	Faza	●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 49	.1	24	-2.9	♄	5 44	.0	130	-1.6
	7 3	.1	110	.6	♅	8 49	.0	83	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	28.1	-12	46.1	144	57.0	167	32.0	-11	1.3	254	31.5	-21	43.8
2	206	28.1	-12	44.4	175	1.9	197	31.0	-10	59.0	284	33.2	-21	44.2
4	236	28.2	-12	42.6	205	6.8	227	30.0	-10	56.7	314	34.9	-21	44.7
6	266	28.2	-12	40.9	235	11.7	257	29.0	-10	54.4	344	36.7	-21	45.2
8	296	28.3	-12	39.2	265	16.7	287	28.0	-10	52.1	14	38.4	-21	45.6
10	326	28.4	-12	37.5	295	21.6	317	27.0	-10	49.8	44	40.1	-21	46.1
12	356	28.4	-12	35.8	325	26.5	347	26.0	-10	47.5	74	41.8	-21	46.6
14	26	28.5	-12	34.1	355	31.5	17	25.0	-10	45.2	104	43.5	-21	47.0
16	56	28.5	-12	32.3	25	36.4	47	24.0	-10	42.8	134	45.2	-21	47.5
18	86	28.6	-12	30.6	55	41.3	77	23.0	-10	40.5	164	46.9	-21	47.9
20	116	28.7	-12	28.9	85	46.2	107	22.1	-10	38.2	194	48.7	-21	48.4
22	146	28.7	-12	27.1	115	51.2	137	21.1	-10	35.9	224	50.4	-21	48.8
Δ		0		9				-5		12		9		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 38	16 51	0 44	2 21	3 48	3.1	19 52	.8
55	7 23	17 6	0 38	2 2	4 11	2.8	19 34	1.0
50	7 11	17 18	0 33	1 49	4 28	2.7	19 19	1.1
45	7 1	17 28	0 30	1 39	4 41	2.5	19 8	1.3
40	6 53	17 36	0 28	1 31	4 52	2.4	18 59	1.4
35	6 46	17 43	0 26	1 25	5 1	2.4	18 51	1.5
30	6 40	17 49	0 24	1 20	5 9	2.3	18 43	1.6
20	6 29	17 59	0 23	1 14	5 23	2.2	18 31	1.7
10	6 20	18 9	0 21	1 11	5 36	2.0	18 20	1.8
0	6 11	18 18	0 21	1 10	5 47	1.9	18 10	1.9
10	6 2	18 27	0 22	1 12	5 59	1.8	17 59	2.0
20	5 52	18 36	0 23	1 17	6 11	1.7	17 48	2.2
30	5 40	18 47	0 25	1 25	6 25	1.6	17 36	2.3
35	5 34	18 54	0 26	1 31	6 33	1.5	17 28	2.4
40	5 26	19 2	0 29	1 40	6 42	1.4	17 20	2.5
45	5 17	19 10	0 31	1 52	6 53	1.3	17 10	2.6
50	5 6	19 21	0 35	2 10	7 6	1.2	16 58	2.7
55	4 53	19 34	0 41	2 40	7 22	1.1	16 43	2.9
60	4 35	19 52	0 49	:::	7 44	.8	16 22	3.1
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	186	2.4	125	16	2.4	-65	274	35.6	-17	16.5	228	16.6	-22	25.0		
2	215	5.5	126	15	49.4	-66	304	40.2	-17	16.6	258	21.0	-22	24.9		
4	244	8.6	126	15	36.1	-68	334	44.8	-17	16.7	288	25.5	-22	24.9		
6	273	11.9	126	15	22.5	-69	4	49.4	-17	16.7	318	29.9	-22	24.9		
8	302	15.2	127	15	8.7	-71	34	54.0	-17	16.8	348	34.4	-22	24.9		
10	331	18.5	127	14	54.5	-72	64	58.6	-17	16.9	18	38.8	-22	24.9		
12	0	22.0	127	14	40.1	-74	95	3.2	-17	17.0	48	43.3	-22	24.8		
14	29	25.4	128	14	25.3	-75	125	7.7	-17	17.0	78	47.7	-22	24.8		
16	58	29.0	128	14	10.3	-77	155	12.3	-17	17.1	108	52.1	-22	24.8		
18	87	32.6	128	13	55.0	-78	185	16.9	-17	17.2	138	56.6	-22	24.8		
20	116	36.3	129	13	39.4	-79	215	21.5	-17	17.2	169	1.1	-22	24.8		
22	145	40.1	129	13	23.6	-81	245	26.1	-17	17.3	199	5.5	-22	24.7		
Δ								23		0		22		0		

SUNCE				MESEC			
UT							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	28.8	-12	25.4	145	56.1	167	20.1	-10	33.6	254	52.1	-21	49.3
2	206	28.9	-12	23.7	176	1.0	197	19.1	-10	31.3	284	53.8	-21	49.7
4	236	28.9	-12	22.0	206	5.9	227	18.1	-10	28.9	314	55.5	-21	50.2
6	266	29.0	-12	20.2	236	10.9	257	17.1	-10	26.6	344	57.2	-21	50.7
8	296	29.1	-12	18.5	266	15.8	287	16.2	-10	24.3	14	58.9	-21	51.1
10	326	29.2	-12	16.8	296	20.7	317	15.2	-10	22.0	45	7	-21	51.6
12	356	29.2	-12	15.0	326	25.7	347	14.2	-10	19.6	75	2.4	-21	52.0
14	26	29.3	-12	13.3	356	30.6	17	13.2	-10	17.3	105	4.1	-21	52.4
16	56	29.4	-12	11.5	26	35.5	47	12.3	-10	15.0	135	5.8	-21	52.9
18	86	29.5	-12	9.8	56	40.4	77	11.3	-10	12.6	165	7.5	-21	53.3
20	116	29.6	-12	8.1	86	45.4	107	10.3	-10	10.3	195	9.2	-21	53.8
22	146	29.6	-12	6.3	116	50.3	137	9.4	-10	8.0	225	10.9	-21	54.2
Δ	0		9				-5		12		9			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 36	16 54	0 44	2 21	5 2	3.2	20 10	.6
55	7 21	17 8	0 38	2 2	5 19	2.9	19 57	.9
50	7 9	17 20	0 33	1 49	5 32	2.7	19 47	1.1
45	6 60	17 29	0 30	1 39	5 42	2.6	19 39	1.2
40	6 52	17 37	0 28	1 31	5 50	2.5	19 32	1.3
35	6 45	17 44	0 26	1 25	5 58	2.4	19 26	1.4
30	6 39	17 49	0 24	1 20	6 4	2.3	19 21	1.5
20	6 29	17 60	0 22	1 14	6 15	2.2	19 12	1.6
10	6 19	18 9	0 21	1 11	6 25	2.0	19 4	1.8
0	6 11	18 17	0 21	1 10	6 34	1.9	18 56	1.9
10	6 2	18 26	0 22	1 12	6 43	1.8	18 48	2.0
20	5 52	18 36	0 23	1 16	6 52	1.7	18 40	2.2
30	5 41	18 47	0 25	1 25	7 3	1.5	18 31	2.3
35	5 35	18 53	0 26	1 31	7 10	1.4	18 25	2.4
40	5 27	19 0	0 29	1 39	7 17	1.3	18 19	2.5
45	5 19	19 9	0 31	1 51	7 25	1.2	18 12	2.6
50	5 8	19 19	0 35	2 9	7 35	1.1	18 3	2.8
55	4 55	19 32	0 40	2 38	7 47	.9	17 52	3.0
60	4 37	19 49	0 49	:::	8 4	.7	17 37	3.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	174	43.9	129	13	7.4	-82	275	30.7	-17	17.4	229	10.0	-22	24.7		
2	203	47.8	130	12	51.1	-83	305	35.3	-17	17.4	259	14.4	-22	24.7		
4	232	51.7	130	12	34.5	-84	335	39.9	-17	17.5	289	18.9	-22	24.7		
6	261	55.7	130	12	17.6	-86	5	44.5	-17	17.6	319	23.3	-22	24.7		
8	290	59.8	131	12	.5	-87	35	49.1	-17	17.7	349	27.8	-22	24.6		
10	320	3.9	131	11	43.1	-88	65	53.7	-17	17.7	19	32.2	-22	24.6		
12	349	8.0	131	11	25.5	-89	95	58.3	-17	17.8	49	36.7	-22	24.6		
14	18	12.3	131	11	7.7	-90	126	2.9	-17	17.9	79	41.1	-22	24.6		
16	47	16.5	132	10	49.6	-91	156	7.5	-17	17.9	109	45.6	-22	24.6		
18	76	20.9	132	10	31.4	-92	186	12.2	-17	18.0	139	50.0	-22	24.5		
20	105	25.2	132	10	12.9	-93	216	16.8	-17	18.1	169	54.5	-22	24.5		
22	134	29.6	132	9	54.2	-94	246	21.4	-17	18.1	199	59.0	-22	24.5		
Δ							23		0		22			0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	-14	4.8	.2	16.2	T _m	12 45	1.9	55.1	15.0
12	-14	2.9	T _{m☉}	12 h 14.0 min	Starost	.1 d	Faza	●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 51	.1	21	-2.9	♄	5 37	.0	130	-1.7
♂	7 0	.1	109	.6	♂	8 42	.0	83	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	29.7	-12	4.6	146	55.2	167	8.4	-10	5.6	255	12.7	-21	54.7
2	206	29.8	-12	2.8	177	.2	197	7.5	-10	3.3	285	14.4	-21	55.1
4	236	29.9	-12	1.1	207	5.1	227	6.5	-10	.9	315	16.1	-21	55.5
6	266	30.0	-11	59.3	237	10.0	257	5.5	-9	58.6	345	17.8	-21	56.0
8	296	30.1	-11	57.6	267	14.9	287	4.6	-9	56.3	15	19.5	-21	56.4
10	326	30.2	-11	55.8	297	19.9	317	3.6	-9	53.9	45	21.2	-21	56.9
12	356	30.3	-11	54.1	327	24.8	347	2.7	-9	51.6	75	22.9	-21	57.3
14	26	30.3	-11	52.3	357	29.7	17	1.7	-9	49.2	105	24.7	-21	57.7
16	56	30.4	-11	50.6	27	34.7	47	.8	-9	46.8	135	26.4	-21	58.2
18	86	30.5	-11	48.8	57	39.6	76	59.8	-9	44.5	165	28.1	-21	58.6
20	116	30.6	-11	47.0	87	44.5	106	58.9	-9	42.1	195	29.8	-21	59.0
22	146	30.7	-11	45.3	117	49.4	136	57.9	-9	39.8	225	31.5	-21	59.5
Δ	0		9				-5		12		9			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 33	16 56	0 44	2 20	6 18	3.2	20 26	.6
55	7 18	17 11	0 38	2 2	6 29	3.0	20 18	.8
50	7 7	17 22	0 33	1 48	6 38	2.8	20 12	1.0
45	6 58	17 31	0 30	1 38	6 44	2.7	20 7	1.1
40	6 50	17 38	0 28	1 31	6 50	2.5	20 3	1.3
35	6 44	17 44	0 26	1 25	6 55	2.4	19 60	1.4
30	6 38	17 50	0 24	1 20	6 59	2.3	19 57	1.5
20	6 28	18 0	0 22	1 14	7 7	2.2	19 51	1.6
10	6 19	18 9	0 21	1 11	7 14	2.0	19 46	1.8
0	6 11	18 17	0 21	1 10	7 20	1.9	19 42	1.9
10	6 2	18 26	0 22	1 12	7 26	1.8	19 37	2.0
20	5 53	18 35	0 23	1 16	7 32	1.6	19 32	2.2
30	5 42	18 46	0 25	1 24	7 40	1.5	19 26	2.3
35	5 36	18 52	0 26	1 31	7 44	1.4	19 23	2.4
40	5 28	18 59	0 28	1 39	7 49	1.3	19 19	2.6
45	5 20	19 7	0 31	1 50	7 55	1.2	19 15	2.7
50	5 10	19 17	0 35	2 8	8 1	1.0	19 10	2.8
55	4 57	19 30	0 40	2 36	8 10	.8	19 3	3.0
60	4 40	19 46	0 48	3 57	8 20	.6	18 54	3.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	163	34.1	132	9	35.3	-95	276	26.0	-17	18.2	230	3.4	-22	24.5		
2	192	38.6	133	9	16.2	-96	306	30.6	-17	18.2	260	7.9	-22	24.5		
4	221	43.1	133	8	56.9	-97	336	35.2	-17	18.3	290	12.3	-22	24.4		
6	250	47.7	133	8	37.4	-98	6	39.8	-17	18.4	320	16.8	-22	24.4		
8	279	52.3	133	8	17.8	-99	36	44.5	-17	18.4	350	21.2	-22	24.4		
10	308	56.9	133	7	57.9	-100	66	49.1	-17	18.5	20	25.7	-22	24.4		
12	338	1.5	133	7	37.9	-101	96	53.7	-17	18.6	50	30.2	-22	24.4		
14	7	6.2	133	7	17.7	-102	126	58.3	-17	18.6	80	34.6	-22	24.3		
16	36	10.8	133	6	57.4	-102	157	2.9	-17	18.7	110	39.1	-22	24.3		
18	65	15.5	133	6	36.9	-103	187	7.6	-17	18.8	140	43.6	-22	24.3		
20	94	20.2	133	6	16.3	-104	217	12.2	-17	18.8	170	48.0	-22	24.3		
22	123	24.9	133	5	55.5	-105	247	16.8	-17	18.9	200	52.5	-22	24.3		
Δ							23		0		22			0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
0	176	30.8	-11	43.5	147	54.4	166	57.0	-9	37.4	255	33.2	-21	59.9
2	206	30.9	-11	41.8	177	59.3	196	56.0	-9	35.0	285	34.9	-22	.3
4	236	31.0	-11	40.0	208	4.2	226	55.1	-9	32.7	315	36.7	-22	.8
6	266	31.1	-11	38.2	238	9.2	256	54.1	-9	30.3	345	38.4	-22	1.2
8	296	31.2	-11	36.5	268	14.1	286	53.2	-9	27.9	15	40.1	-22	1.6
10	326	31.3	-11	34.7	298	19.0	316	52.3	-9	25.6	45	41.8	-22	2.0
12	356	31.4	-11	32.9	328	23.9	346	51.3	-9	23.2	75	43.5	-22	2.5
14	26	31.5	-11	31.2	358	28.9	16	50.4	-9	20.8	105	45.2	-22	2.9
16	56	31.6	-11	29.4	28	33.8	46	49.5	-9	18.5	135	47.0	-22	3.3
18	86	31.8	-11	27.6	58	38.7	76	48.5	-9	16.1	165	48.7	-22	3.7
20	116	31.9	-11	25.8	88	43.7	106	47.6	-9	13.7	195	50.4	-22	4.1
22	146	32.0	-11	24.1	118	48.6	136	46.7	-9	11.3	225	52.1	-22	4.6
Δ		1		9				-5		12		9		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 30	16 59	0 43	2 20	7 36	3.1	20 40	2.2
55	7 16	17 13	0 37	2 2	7 41	2.9	20 38	2.1
50	7 5	17 23	0 33	1 48	7 45	2.7	20 36	2.1
45	6 56	17 32	0 30	1 38	7 48	2.6	20 35	2.1
40	6 49	17 39	0 28	1 31	7 51	2.5	20 34	2.0
35	6 43	17 45	0 26	1 25	7 53	2.4	20 33	2.0
30	6 37	17 51	0 24	1 20	7 56	2.3	20 32	2.0
20	6 27	18 1	0 22	1 14	7 59	2.2	20 30	2.0
10	6 19	18 9	0 21	1 11	8 2	2.0	20 29	1.9
0	6 11	18 17	0 21	1 10	8 5	1.9	20 27	1.9
10	6 2	18 26	0 21	1 12	8 8	1.8	20 26	1.9
20	5 53	18 34	0 23	1 16	8 12	1.7	20 24	1.9
30	5 43	18 45	0 25	1 24	8 15	1.5	20 23	1.9
35	5 37	18 51	0 26	1 30	8 17	1.5	20 22	1.8
40	5 30	18 58	0 28	1 38	8 20	1.4	20 20	1.8
45	5 21	19 6	0 31	1 50	8 23	1.3	20 19	1.8
50	5 12	19 15	0 35	2 7	8 26	1.2	20 17	1.8
55	4 59	19 27	0 40	2 34	8 30	1.0	20 15	1.8
60	4 43	19 43	0 48	3 44	8 35	.8	20 13	1.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	152	29.6	133	5	34.6	-105	277	21.4	-17	18.9	230	56.9	-22	24.2		
2	181	34.3	133	5	13.6	-106	307	26.1	-17	19.0	261	1.4	-22	24.2		
4	210	39.0	133	4	52.4	-106	337	30.7	-17	19.1	291	5.9	-22	24.2		
6	239	43.7	133	4	31.2	-107	7	35.3	-17	19.1	321	10.3	-22	24.2		
8	268	48.3	133	4	9.8	-107	37	40.0	-17	19.2	351	14.8	-22	24.1		
10	297	52.9	133	3	48.3	-108	67	44.6	-17	19.3	21	19.3	-22	24.1		
12	326	57.5	133	3	26.7	-108	97	49.2	-17	19.3	51	23.7	-22	24.1		
14	356	2.1	133	3	5.0	-109	127	53.9	-17	19.4	81	28.2	-22	24.1		
16	25	6.6	132	2	43.3	-109	157	58.5	-17	19.4	111	32.7	-22	24.1		
18	54	11.1	132	2	21.4	-110	188	3.1	-17	19.5	141	37.1	-22	24.0		
20	83	15.6	132	1	59.5	-110	218	7.8	-17	19.5	171	41.6	-22	24.0		
22	112	20.0	132	1	37.5	-110	248	12.4	-17	19.6	201	46.1	-22	24.0		
Δ								23		0		22		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-13 56.7	.2	16.2	T _m	14 16	1.9	55.9 15.2
12	-13 54.2	T _{m☉}	12 h 13.9 min	Starost	2.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	12 53	.1	19	-2.9	♂	5 30	.0	129	-1.7
♂	6 57	.1	108	.6	♂	8 35	.0	83	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	176	32.1	-11	22.3	148	53.5	166	45.8	-9	8.9	255	53.8	-22	5.0
2	206	32.2	-11	20.5	178	58.4	196	44.8	-9	6.6	285	55.5	-22	5.4
4	236	32.3	-11	18.7	209	3.4	226	43.9	-9	4.2	315	57.2	-22	5.8
6	266	32.4	-11	16.9	239	8.3	256	43.0	-9	1.8	345	59.0	-22	6.2
8	296	32.6	-11	15.2	269	13.2	286	42.1	-8	59.4	16	.7	-22	6.6
10	326	32.7	-11	13.4	299	18.1	316	41.1	-8	57.0	46	2.4	-22	7.0
12	356	32.8	-11	11.6	329	23.1	346	40.2	-8	54.6	76	4.1	-22	7.5
14	26	32.9	-11	9.8	359	28.0	16	39.3	-8	52.2	106	5.8	-22	7.9
16	56	33.0	-11	8.0	29	32.9	46	38.4	-8	49.8	136	7.5	-22	8.3
18	86	33.2	-11	6.2	59	37.9	76	37.5	-8	47.4	166	9.3	-22	8.7
20	116	33.3	-11	4.5	89	42.8	106	36.6	-8	45.0	196	11.0	-22	9.1
22	146	33.4	-11	2.7	119	47.7	136	35.7	-8	42.6	226	12.7	-22	9.5
Δ		1		9				-5		12		9		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 27	17 1	0 43	2 20	8 49	.6	21 32	3.4
55	7 14	17 15	0 37	2 1	8 50	.8	21 29	3.1
50	7 3	17 25	0 33	1 48	8 50	1.0	21 26	2.9
45	6 55	17 33	0 30	1 38	8 50	1.2	21 24	2.8
40	6 48	17 40	0 28	1 31	8 50	1.3	21 23	2.7
35	6 42	17 46	0 26	1 25	8 50	1.4	21 21	2.5
30	6 36	17 52	0 24	1 20	8 51	1.5	21 20	2.4
20	6 27	18 1	0 22	1 14	8 51	1.7	21 18	2.3
10	6 18	18 9	0 21	1 11	8 51	1.8	21 16	2.1
0	6 10	18 17	0 21	1 10	8 51	2.0	21 14	2.0
10	6 2	18 25	0 21	1 12	8 52	2.1	21 12	1.8
20	5 54	18 34	0 23	1 16	8 52	2.2	21 10	1.7
30	5 43	18 44	0 25	1 24	8 52	2.4	21 7	1.5
35	5 38	18 50	0 26	1 30	8 53	2.5	21 6	1.4
40	5 31	18 56	0 28	1 38	8 53	2.6	21 4	1.3
45	5 23	19 4	0 31	1 49	8 53	2.8	21 3	1.2
50	5 13	19 13	0 35	2 6	8 53	2.9	21 0	1.0
55	5 1	19 25	0 40	2 32	8 54	3.1	20 58	.9
60	4 46	19 40	0 47	3 34	8 55	3.4	20 54	.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	141	24.3	131	1	15.5	-110	278	17.1	-17	19.7	231	50.5	-22	24.0		
2	170	28.6	131	0	53.4	-111	308	21.7	-17	19.7	261	55.0	-22	24.0		
4	199	32.8	131	0	31.2	-111	338	26.3	-17	19.8	291	59.5	-22	23.9		
6	228	37.0	130	0	9.1	20	8	31.0	-17	19.8	322	4.0	-22	23.9		
8	257	41.0	130	0	13.1	111	38	35.6	-17	19.9	352	8.4	-22	23.9		
10	286	45.0	129	0	35.4	111	68	40.3	-17	19.9	22	12.9	-22	23.9		
12	315	48.9	129	0	57.6	111	98	44.9	-17	20.0	52	17.4	-22	23.9		
14	344	52.7	128	1	19.9	111	128	49.6	-17	20.1	82	21.8	-22	23.8		
16	13	56.4	128	1	42.2	111	158	54.2	-17	20.1	112	26.3	-22	23.8		
18	43	.0	127	2	4.4	111	188	58.9	-17	20.2	142	30.8	-22	23.8		
20	72	3.4	127	2	26.7	111	219	3.5	-17	20.2	172	35.3	-22	23.8		
22	101	6.8	126	2	48.9	111	249	8.2	-17	20.3	202	39.7	-22	23.8		
Δ								23		0		22		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	-13 51.6	.2	16.2	T _m	15 2	2.0	56.4 15.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	33.5	-11	.9	149	52.6	166	34.8	-8	40.2	256	14.4	-22	9.9
2	206	33.7	-10	59.1	179	57.6	196	33.8	-8	37.8	286	16.1	-22	10.3
4	236	33.8	-10	57.3	210	2.5	226	32.9	-8	35.4	316	17.8	-22	10.7
6	266	33.9	-10	55.5	240	7.4	256	32.0	-8	33.0	346	19.6	-22	11.1
8	296	34.0	-10	53.7	270	12.4	286	31.1	-8	30.6	16	21.3	-22	11.5
10	326	34.2	-10	51.9	300	17.3	316	30.2	-8	28.2	46	23.0	-22	11.9
12	356	34.3	-10	50.1	330	22.2	346	29.3	-8	25.8	76	24.7	-22	12.3
14	26	34.4	-10	48.3	0	27.1	16	28.4	-8	23.4	106	26.4	-22	12.7
16	56	34.6	-10	46.5	30	32.1	46	27.5	-8	20.9	136	28.1	-22	13.1
18	86	34.7	-10	44.7	60	37.0	76	26.6	-8	18.5	166	29.9	-22	13.5
20	116	34.9	-10	42.9	90	41.9	106	25.7	-8	16.1	196	31.6	-22	13.9
22	146	35.0	-10	41.1	120	46.9	136	24.9	-8	13.7	226	33.3	-22	14.3
Δ	1		9				-4		12		9			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 25	17 4	0 43	2 20	9 4	.7	22 54	3.5
55	7 11	17 17	0 37	2 1	9 10	.9	22 44	3.2
50	7 1	17 27	0 33	1 48	9 14	1.1	22 37	3.0
45	6 53	17 35	0 30	1 38	9 18	1.2	22 31	2.8
40	6 46	17 41	0 28	1 30	9 21	1.4	22 26	2.7
35	6 41	17 47	0 26	1 25	9 24	1.5	22 22	2.6
30	6 35	17 52	0 24	1 20	9 26	1.6	22 18	2.5
20	6 26	18 1	0 22	1 14	9 31	1.7	22 12	2.3
10	6 18	18 9	0 21	1 11	9 35	1.9	22 6	2.2
0	6 10	18 17	0 21	1 10	9 38	2.0	22 1	2.1
10	6 2	18 25	0 21	1 12	9 42	2.2	21 56	1.9
20	5 54	18 33	0 23	1 16	9 46	2.3	21 50	1.8
30	5 44	18 43	0 25	1 24	9 50	2.5	21 44	1.6
35	5 38	18 48	0 26	1 30	9 53	2.6	21 40	1.5
40	5 32	18 55	0 28	1 38	9 56	2.7	21 36	1.4
45	5 24	19 2	0 31	1 49	9 59	2.8	21 31	1.3
50	5 15	19 11	0 34	2 5	10 3	3.0	21 25	1.2
55	5 3	19 23	0 39	2 30	10 9	3.2	21 18	1.0
60	4 48	19 37	0 47	3 27	10 15	3.4	21 9	.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	130	10.0	126	3	11.2	111	279	12.9	-17	20.3	232	44.2	-22	23.7		
2	159	13.2	125	3	33.4	111	309	17.5	-17	20.4	262	48.7	-22	23.7		
4	188	16.1	124	3	55.5	111	339	22.2	-17	20.4	292	53.2	-22	23.7		
6	217	19.0	123	4	17.6	110	9	26.8	-17	20.5	322	57.6	-22	23.7		
8	246	21.7	123	4	39.7	110	39	31.5	-17	20.5	353	2.1	-22	23.7		
10	275	24.2	122	5	1.7	110	69	36.2	-17	20.6	23	6.6	-22	23.6		
12	304	26.6	121	5	23.6	109	99	40.8	-17	20.7	53	11.1	-22	23.6		
14	333	28.8	120	5	45.4	109	129	45.5	-17	20.7	83	15.6	-22	23.6		
16	2	30.8	119	6	7.2	108	159	50.2	-17	20.8	113	20.0	-22	23.6		
18	31	32.7	118	6	28.9	108	189	54.8	-17	20.8	143	24.5	-22	23.6		
20	60	34.4	118	6	50.4	107	219	59.5	-17	20.9	173	29.0	-22	23.5		
22	89	35.9	117	7	11.9	107	250	4.2	-17	20.9	203	33.5	-22	23.5		
Δ							23		0		22			0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s		h min	min	'	'
00	-13 45.9	.3	16.2	T _m	15 50	2.0	56.9 15.5
12	-13 42.7	T _{m☉}	12 h 13.7 min	Starost	4.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	12 54	.1	17	-2.9	♂	5 22	.0	129	-1.7
♂	6 55	.1	106	.5	♂	8 28	.0	83	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	35.1	-10	39.3	150	51.8	166	24.0	-8	11.3	256	35.0	-22	14.7
2	206	35.3	-10	37.5	180	56.7	196	23.1	-8	8.9	286	36.7	-22	15.1
4	236	35.4	-10	35.7	211	1.6	226	22.2	-8	6.4	316	38.4	-22	15.5
6	266	35.6	-10	33.9	241	6.6	256	21.3	-8	4.0	346	40.2	-22	15.9
8	296	35.7	-10	32.1	271	11.5	286	20.4	-8	1.6	16	41.9	-22	16.3
10	326	35.9	-10	30.2	301	16.4	316	19.5	-7	59.2	46	43.6	-22	16.6
12	356	36.0	-10	28.4	331	21.4	346	18.6	-7	56.7	76	45.3	-22	17.0
14	26	36.2	-10	26.6	1	26.3	16	17.8	-7	54.3	106	47.0	-22	17.4
16	56	36.3	-10	24.8	31	31.2	46	16.9	-7	51.9	136	48.7	-22	17.8
18	86	36.5	-10	23.0	61	36.1	76	16.0	-7	49.4	166	50.5	-22	18.2
20	116	36.6	-10	21.2	91	41.1	106	15.1	-7	47.0	196	52.2	-22	18.6
22	146	36.8	-10	19.4	121	46.0	136	14.2	-7	44.6	226	53.9	-22	18.9
Δ	1		9				-4		12		9			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 22	17 7	0 43	2 20	9 20	.8	...	.0
55	7 9	17 19	0 37	2 1	9 32	1.1	...	.0
50	6 60	17 28	0 33	1 48	9 41	1.2	23 49	3.0
45	6 52	17 36	0 30	1 38	9 48	1.4	23 39	2.9
40	6 45	17 43	0 27	1 30	9 54	1.5	23 31	2.8
35	6 39	17 48	0 26	1 25	9 60	1.6	23 25	2.7
30	6 34	17 53	0 24	1 20	10 4	1.7	23 19	2.6
20	6 26	18 2	0 22	1 14	10 13	1.9	23 8	2.4
10	6 18	18 10	0 21	1 11	10 20	2.0	22 59	2.3
0	6 10	18 17	0 21	1 10	10 27	2.1	22 51	2.2
10	6 3	18 24	0 21	1 11	10 34	2.2	22 42	2.1
20	5 54	18 32	0 23	1 16	10 41	2.4	22 33	1.9
30	5 45	18 42	0 25	1 23	10 50	2.5	22 23	1.8
35	5 39	18 47	0 26	1 29	10 55	2.6	22 17	1.7
40	5 33	18 53	0 28	1 37	11 0	2.7	22 10	1.6
45	5 26	19 1	0 31	1 48	11 7	2.9	22 3	1.5
50	5 17	19 9	0 34	2 4	11 15	3.0	21 53	1.3
55	5 6	19 20	0 39	2 29	11 25	3.2	21 42	1.2
60	4 51	19 35	0 47	3 21	11 38	3.5	21 27	.9

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	118	37.2	116	7	33.3	106	280	8.8	-17	21.0	233	38.0	-22	23.5		
2	147	38.3	115	7	54.5	105	310	13.5	-17	21.0	263	42.4	-22	23.5		
4	176	39.3	114	8	15.6	105	340	18.2	-17	21.1	293	46.9	-22	23.4		
6	205	40.0	112	8	36.5	104	10	22.9	-17	21.1	323	51.4	-22	23.4		
8	234	40.5	111	8	57.4	103	40	27.5	-17	21.2	353	55.9	-22	23.4		
10	263	40.8	110	9	18.0	102	70	32.2	-17	21.2	24	.4	-22	23.4		
12	292	40.8	109	9	38.5	102	100	36.9	-17	21.3	54	4.9	-22	23.4		
14	321	40.6	108	9	58.8	101	130	41.6	-17	21.3	84	9.3	-22	23.3		
16	350	40.2	107	10	19.0	100	160	46.3	-17	21.3	114	13.8	-22	23.3		
18	19	39.6	106	10	38.9	99	190	50.9	-17	21.4	144	18.3	-22	23.3		
20	48	38.7	104	10	58.7	98	220	55.6	-17	21.4	174	22.8	-22	23.3		
22	77	37.6	103	11	18.2	97	251	.3	-17	21.5	204	27.3	-22	23.3		
Δ							23		0		22			0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s		h min	min	'	'

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 36.9	-10 17.5	151 50.9	166 13.4	-7 42.1	256 55.6	-22 19.3
2	206 37.1	-10 15.7	181 55.9	196 12.5	-7 39.7	286 57.3	-22 19.7
4	236 37.2	-10 13.9	212 58.8	226 11.6	-7 37.2	316 59.1	-22 20.1
6	266 37.4	-10 12.1	242 57.7	256 10.7	-7 34.8	347 58.8	-22 20.5
8	296 37.5	-10 10.3	272 56.6	286 9.9	-7 32.4	377 58.5	-22 20.8
10	326 37.7	-10 8.4	302 55.6	316 9.0	-7 29.9	407 58.2	-22 21.2
12	356 37.9	-10 6.6	332 54.5	346 8.1	-7 27.5	437 57.9	-22 21.6
14	26 38.0	-10 4.8	2 25.4	16 7.3	-7 25.0	107 57.6	-22 22.0
16	56 38.2	-10 3.0	32 30.4	46 6.4	-7 22.6	137 57.3	-22 22.3
18	86 38.3	-10 1.1	62 35.3	76 5.5	-7 20.1	167 57.0	-22 22.7
20	116 38.5	-9 59.3	92 40.2	106 4.7	-7 17.7	197 56.7	-22 23.1
22	146 38.7	-9 57.5	122 45.1	136 3.8	-7 15.2	227 56.4	-22 23.4
Δ	1	9		-4	12	9	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 19	17 9	0 43	2 19	9 40	1.0	0 17	3.5
55	7 7	17 21	0 37	2 1	9 57	1.3	0 1	3.2
50	6 58	17 30	0 33	1 48	10 11	1.5	...	.0
45	6 50	17 38	0 30	1 38	10 21	1.6	...	.0
40	6 44	17 44	0 27	1 30	10 31	1.7	...	.0
35	6 38	17 49	0 26	1 24	10 38	1.8	...	.0
30	6 33	17 54	0 24	1 20	10 45	1.9	...	.0
20	6 25	18 2	0 22	1 14	10 57	2.0	...	.0
10	6 17	18 10	0 21	1 11	11 8	2.1	23 54	2.4
0	6 10	18 17	0 21	1 10	11 18	2.2	23 43	2.3
10	6 3	18 24	0 21	1 11	11 28	2.3	23 32	2.2
20	5 55	18 32	0 22	1 15	11 38	2.5	23 19	2.1
30	5 46	18 41	0 25	1 23	11 51	2.6	23 6	2.0
35	5 40	18 46	0 26	1 29	11 58	2.7	22 58	1.9
40	5 34	18 52	0 28	1 37	12 6	2.8	22 49	1.8
45	5 27	18 59	0 31	1 48	12 15	2.9	22 38	1.7
50	5 19	19 7	0 34	2 3	12 27	3.0	22 25	1.6
55	5 8	19 18	0 39	2 27	12 42	3.2	22 9	1.4
60	4 54	19 32	0 46	3 16	13 1	3.5	21 48	1.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	106 36.2	102	11 37.6	96	281 5.0	-17 21.5	234 31.8	-22 23.2
2	135 34.6	101	11 56.7	94	311 9.7	-17 21.6	264 36.3	-22 23.2
4	164 32.7	99	12 15.5	93	341 14.4	-17 21.6	294 40.8	-22 23.2
6	193 30.6	98	12 34.2	92	371 19.1	-17 21.7	324 45.2	-22 23.2
8	222 28.2	97	12 52.5	91	401 23.8	-17 21.7	354 49.7	-22 23.2
10	251 25.5	95	13 10.7	89	431 28.5	-17 21.8	384 54.2	-22 23.1
12	280 22.5	94	13 28.5	88	461 33.1	-17 21.8	414 58.7	-22 23.1
14	309 19.3	93	13 46.1	86	491 37.8	-17 21.8	444 63.2	-22 23.1
16	338 15.8	91	14 3.4	85	521 42.5	-17 21.9	474 67.7	-22 23.1
18	7 12.1	90	14 20.4	83	551 47.2	-17 21.9	504 72.2	-22 23.1
20	36 8.0	88	14 37.1	82	581 51.9	-17 22.0	534 76.7	-22 23.0
22	65 3.7	87	14 53.5	80	611 56.6	-17 22.0	564 81.2	-22 23.0
Δ					23	0	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-13 32.3	.3	16.2	T _m	17 30	2.3	58.0	15.8	
12	-13 28.5	T _{m☉}	12 h 13.5 min	Starost	6.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 55	.1	14	-2.9	♄	5 15	.0	129	-1.7
	6 52	.1	105	.5	♅	8 21	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 38.8	-9 55.6	152 50.1	166 3.0	-7 12.8	257 16.2	-22 23.8
2	206 39.0	-9 53.8	182 55.0	196 2.1	-7 10.3	287 18.0	-22 24.2
4	236 39.2	-9 52.0	212 59.9	226 1.2	-7 7.8	317 19.7	-22 24.6
6	266 39.4	-9 50.1	243 4.8	256 .4	-7 5.4	347 21.4	-22 24.9
8	296 39.5	-9 48.3	273 9.8	285 59.5	-7 2.9	377 23.1	-22 25.3
10	326 39.7	-9 46.5	303 14.7	315 58.7	-7 .5	407 24.8	-22 25.6
12	356 39.9	-9 44.6	333 19.6	345 57.8	-6 58.0	437 26.6	-22 26.0
14	26 40.1	-9 42.8	3 24.6	15 57.0	-6 55.5	107 28.3	-22 26.4
16	56 40.2	-9 40.9	33 29.5	45 56.1	-6 53.1	137 30.0	-22 26.7
18	86 40.4	-9 39.1	63 34.4	75 55.3	-6 50.6	167 31.7	-22 27.1
20	116 40.6	-9 37.3	93 39.3	105 54.4	-6 48.1	197 33.4	-22 27.4
22	146 40.8	-9 35.4	123 44.3	135 53.6	-6 45.7	227 35.2	-22 27.8
Δ	1	9		-4	12	9	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 16	17 12	0 43	2 19	10 5	1.4	1 40	3.4
55	7 5	17 23	0 37	2 1	10 28	1.6	1 18	3.1
50	6 56	17 32	0 33	1 48	10 46	1.8	1 1	3.0
45	6 48	17 39	0 30	1 38	10 60	1.9	0 48	2.9
40	6 42	17 45	0 27	1 30	11 12	2.0	0 38	2.8
35	6 37	17 50	0 26	1 24	11 22	2.0	0 28	2.7
30	6 32	17 55	0 24	1 20	11 30	2.1	0 20	2.6
20	6 24	18 3	0 22	1 14	11 45	2.2	0 6	2.5
10	6 17	18 10	0 21	1 10	11 59	2.3	...	.0
0	6 10	18 17	0 21	1 10	12 11	2.4	...	.0
10	6 3	18 24	0 21	1 11	12 24	2.4	...	.0
20	5 55	18 31	0 22	1 15	12 37	2.5	...	.0
30	5 46	18 40	0 24	1 23	12 53	2.6	23 53	2.2
35	5 41	18 45	0 26	1 29	13 2	2.7	23 44	2.2
40	5 35	18 51	0 28	1 37	13 12	2.7	23 33	2.1
45	5 29	18 57	0 31	1 47	13 25	2.8	23 20	2.0
50	5 20	19 5	0 34	2 2	13 39	2.9	23 4	2.0
55	5 10	19 16	0 39	2 26	13 58	3.1	22 44	1.8
60	4 56	19 29	0 46	3 12	14 24	3.3	22 17	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	93 59.0	85	15 9.5	79	282 1.3	-17 22.1	235 25.7	-22 23.0
2	122 54.1	84	15 25.2	77	312 6.0	-17 22.1	265 30.2	-22 23.0
4	151 49.0	83	15 40.6	75	342 10.7	-17 22.1	295 34.7	-22 23.0
6	180 43.5	81	15 55.6	73	372 15.5	-17 22.2	325 39.2	-22 22.9
8	209 37.7	80	16 10.3	72	402 20.2	-17 22.2	355 43.7	-22 22.9
10	238 31.7	78	16 24.6	70	432 24.9	-17 22.3	385 48.2	-22 22.9
12	267 25.4	77	16 38.5	68	462 29.6	-17 22.3	415 52.6	-22 22.9
14	296 18.8	76	16 52.1	66	492 34.3	-17 22.4	445 57.1	-22 22.8
16	325 11.9	74	17 5.2	64	522 39.0	-17 22.4	475 61.6	-22 22.8
18	354 4.8	73	17 18.0	62	552 43.7	-17 22.4	505 66.1	-22 22.8
20	22 57.3	71	17 30.3	60	582 48.4	-17 22.5	535 70.6	-22 22.8
22	51 49.6	70	17 42.2	57	612 53.1	-17 22.5	565 75.1	-22 22.8
Δ					24	0	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-13 24.6	.3	16.2	T _m	18 25	2.4	58.6	16.0	
12	-13 20.4	T _{m☉}	12 h 13.3 min	Starost	7.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 56	.1	13	-2.9	♄	5 11	.0	129	-1.7
	6 51	.1	104	.5	♅	8 17	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 40.9 - 9 33.6		153 49.2	165 52.7 - 6 43.2	257 36.9 -22 28.2		
2	206 41.1 - 9 31.7		183 54.1	195 51.9 - 6 40.7	287 38.6 -22 28.5		
4	236 41.3 - 9 29.9		213 59.1	225 51.0 - 6 38.3	317 40.3 -22 28.9		
6	266 41.5 - 9 28.0		244 4.0	255 50.2 - 6 35.8	347 42.0 -22 29.2		
8	296 41.7 - 9 26.2		274 8.9	285 49.4 - 6 33.3	17 43.8 -22 29.6		
10	326 41.9 - 9 24.3		304 13.8	315 48.5 - 6 30.8	47 45.5 -22 29.9		
12	356 42.0 - 9 22.5		334 18.8	345 47.7 - 6 28.4	77 47.2 -22 30.3		
14	26 42.2 - 9 20.6		4 23.7	15 46.9 - 6 25.9	107 48.9 -22 30.6		
16	56 42.4 - 9 18.8		34 28.6	45 46.0 - 6 23.4	137 50.6 -22 31.0		
18	86 42.6 - 9 16.9		64 33.6	75 45.2 - 6 20.9	167 52.4 -22 31.3		
20	116 42.8 - 9 15.1		94 38.5	105 44.3 - 6 18.5	197 54.1 -22 31.7		
22	146 43.0 - 9 13.2		124 43.4	135 43.5 - 6 16.0	227 55.8 -22 32.0		
Δ	1	9		-4	12	9	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 13	17 14	0 43	2 19	10 39	2.0	3 1	3.1
55	7 2	17 25	0 37	2 1	11 7	2.1	2 33	2.9
50	6 54	17 34	0 33	1 48	11 29	2.2	2 13	2.8
45	6 47	17 40	0 30	1 38	11 45	2.2	1 57	2.8
40	6 41	17 46	0 27	1 30	11 59	2.3	1 44	2.7
35	6 36	17 51	0 26	1 24	12 10	2.3	1 33	2.7
30	6 31	17 55	0 24	1 20	12 21	2.3	1 23	2.6
20	6 24	18 3	0 22	1 14	12 38	2.4	1 6	2.5
10	6 17	18 10	0 21	1 10	12 54	2.4	0 52	2.5
0	6 10	18 17	0 21	1 10	13 8	2.5	0 38	2.4
10	6 3	18 23	0 21	1 11	13 23	2.5	0 24	2.4
20	5 56	18 30	0 22	1 15	13 38	2.5	0 10	2.3
30	5 47	18 39	0 24	1 23	13 56	2.6	...	.0
35	5 42	18 44	0 26	1 29	14 6	2.6	...	.0
40	5 37	18 49	0 28	1 36	14 18	2.6	...	.0
45	5 30	18 56	0 30	1 47	14 32	2.7	...	.0
50	5 22	19 3	0 34	2 1	14 50	2.7	23 51	2.4
55	5 12	19 13	0 39	2 24	15 12	2.8	23 28	2.3
60	4 59	19 26	0 46	3 8	15 43	2.9	22 57	2.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	80 41.7 69 17 53.7 55				282 57.9 -17 22.5	236 19.6 -22 22.7		
2	109 33.4 68 18 4.8 53				313 2.6 -17 22.6	266 24.1 -22 22.7		
4	138 24.9 66 18 15.4 51				343 7.3 -17 22.6	296 28.6 -22 22.7		
6	167 16.2 65 18 25.5 48				13 12.0 -17 22.7	326 33.1 -22 22.7		
8	196 7.2 64 18 35.2 46				43 16.7 -17 22.7	356 37.7 -22 22.7		
10	224 57.9 63 18 44.4 44				73 21.5 -17 22.7	26 42.2 -22 22.6		
12	253 48.4 61 18 53.2 41				103 26.2 -17 22.8	56 46.7 -22 22.6		
14	282 38.7 60 19 1.4 39				133 30.9 -17 22.8	86 51.2 -22 22.6		
16	311 28.7 59 19 9.2 36				163 35.7 -17 22.8	116 55.7 -22 22.6		
18	340 18.6 58 19 16.5 34				193 40.4 -17 22.9	147 .2 -22 22.6		
20	9 8.2 57 19 23.3 31				223 45.1 -17 22.9	177 4.7 -22 22.5		
22	37 57.6 56 19 29.5 29				253 49.8 -17 23.0	207 9.2 -22 22.5		
Δ					24	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	-13 16.2	.4	16.2	T _m	19 22	2.5	59.1 16.1		
12	-13 11.7	T _{m☉}	12 h 13.2 min	Starost	8.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 57	.1	12	-2.9	♃	5 7	.0	129	-1.7
♂	6 49	.1	104	.5	♄	8 13	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 43.2 - 9 11.4		154 48.3	165 42.7 - 6 13.5	257 57.5 -22 32.4		
2	206 43.4 - 9 9.5		184 53.3	195 41.9 - 6 11.0	287 59.3 -22 32.7		
4	236 43.6 - 9 7.7		214 58.2	225 41.0 - 6 8.5	318 1.0 -22 33.0		
6	266 43.8 - 9 5.8		245 3.1	255 40.2 - 6 6.0	348 2.7 -22 33.4		
8	296 44.0 - 9 4.0		275 8.1	285 39.4 - 6 3.5	18 4.4 -22 33.7		
10	326 44.2 - 9 2.1		305 13.0	315 38.5 - 6 1.1	48 6.1 -22 34.1		
12	356 44.4 - 9 .2		335 17.9	345 37.7 - 5 58.6	78 7.9 -22 34.4		
14	26 44.6 - 8 58.4		5 22.8	15 36.9 - 5 56.1	108 9.6 -22 34.7		
16	56 44.8 - 8 56.5		35 27.8	45 36.1 - 5 53.6	138 11.3 -22 35.1		
18	86 45.0 - 8 54.6		65 32.7	75 35.2 - 5 51.1	168 13.0 -22 35.4		
20	116 45.2 - 8 52.8		95 37.6	105 34.4 - 5 48.6	198 14.8 -22 35.7		
22	146 45.4 - 8 50.9		125 42.6	135 33.6 - 5 46.1	228 16.5 -22 36.1		
Δ	1	9		-4	12	9	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 10	17 17	0 42	2 19	11 26	2.6	4 15	2.6
55	6 60	17 27	0 37	2 1	11 58	2.6	3 44	2.6
50	6 52	17 35	0 33	1 48	12 21	2.6	3 21	2.6
45	6 45	17 42	0 30	1 38	12 39	2.6	3 3	2.6
40	6 39	17 47	0 27	1 30	12 53	2.6	2 49	2.5
35	6 35	17 52	0 26	1 24	13 6	2.6	2 36	2.5
30	6 30	17 56	0 24	1 20	13 17	2.6	2 26	2.5
20	6 23	18 4	0 22	1 14	13 36	2.5	2 7	2.5
10	6 16	18 10	0 21	1 10	13 52	2.5	1 51	2.5
0	6 10	18 16	0 21	1 10	14 7	2.5	1 36	2.5
10	6 3	18 23	0 21	1 11	14 23	2.5	1 21	2.5
20	5 56	18 30	0 22	1 15	14 39	2.5	1 5	2.5
30	5 48	18 38	0 24	1 23	14 58	2.5	0 46	2.4
35	5 43	18 42	0 26	1 28	15 9	2.5	0 36	2.4
40	5 38	18 48	0 28	1 36	15 22	2.4	0 23	2.4
45	5 31	18 54	0 30	1 46	15 37	2.4	0 9	2.4
50	5 24	19 1	0 34	2 1	15 55	2.4	...	.0
55	5 14	19 11	0 39	2 23	16 19	2.4	...	.0
60	5 2	19 23	0 45	3 4	16 52	2.3	23 52	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	66 46.8 55 19 35.3 26				283 54.6 -17 23.0	237 13.7 -22 22.5		
2	95 35.8 54 19 40.5 24				313 59.3 -17 23.0	267 18.2 -22 22.5		
4	124 24.7 53 19 45.2 21				344 4.0 -17 23.1	297 22.7 -22 22.5		
6	153 13.3 53 19 49.4 18				14 8.8 -17 23.1	327 27.2 -22 22.4		
8	182 1.8 52 19 53.0 15				44 13.5 -17 23.1	357 31.7 -22 22.4		
10	210 50.2 51 19 56.1 13				74 18.3 -17 23.2	27 36.2 -22 22.4		
12	239 38.4 50 19 58.7 10				104 23.0 -17 23.2	57 40.7 -22 22.4		
14	268 26.5 50 20 .7 7				134 27.7 -17 23.2	87 45.3 -22 22.4		
16	297 14.5 49 20 2.1 4				164 32.5 -17 23.3	117 49.8 -22 22.3		
18	326 2.4 49 20 3.0 2				194 37.2 -17 23.3	147 54.3 -22 22.3		
20	354 50.2 48 20 3.4 -1				224 42.0 -17 23.3	177 58.8 -22 22.3		
22	23 37.9 48 20 3.1 -4				254 46.7 -17 23.4	208 3.3 -22 22.3		
Δ					24	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	-13 7.2	.4	16.2	T _m	20 22	2.5	59.6 16.2		
12	-13 2.4	T _{m☉}	12 h 13.0 min	Starost	9.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 58	.1	11	-2.9	♃	5 4	.0	129	-1.7
♂	6 48	.1	103	.5	♄	8 10	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	45.6	- 8	49.0	155	47.5	165	32.8	- 5	43.6	258	18.2	-22	36.4	
2	206	45.8	- 8	47.2	185	52.4	195	32.0	- 5	41.1	288	19.9	-22	36.7	
4	236	46.0	- 8	45.3	215	57.3	225	31.2	- 5	38.6	318	21.7	-22	37.1	
6	266	46.2	- 8	43.4	246	2.3	255	30.3	- 5	36.1	348	23.4	-22	37.4	
8	296	46.4	- 8	41.6	276	7.2	285	29.5	- 5	33.6	18	25.1	-22	37.7	
10	326	46.6	- 8	39.7	306	12.1	315	28.7	- 5	31.1	48	26.8	-22	38.1	
12	356	46.8	- 8	37.8	336	17.0	345	27.9	- 5	28.6	78	28.5	-22	38.4	
14	26	47.1	- 8	36.0	6	22.0	15	27.1	- 5	26.1	108	30.3	-22	38.7	
16	56	47.3	- 8	34.1	36	26.9	45	26.3	- 5	23.6	138	32.0	-22	39.0	
18	86	47.5	- 8	32.2	66	31.8	75	25.5	- 5	21.1	168	33.7	-22	39.4	
20	116	47.7	- 8	30.3	96	36.8	105	24.7	- 5	18.6	198	35.4	-22	39.7	
22	146	47.9	- 8	28.5	126	41.7	135	23.9	- 5	16.1	228	37.2	-22	40.0	
Δ		1		9				-4		13			9		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 7	17 19	0 42	2 19	12 28	3.2	5 17	2.0
55	6 57	17 29	0 37	2 1	12 60	3.0	4 45	2.1
50	6 50	17 37	0 33	1 48	13 23	2.9	4 22	2.2
45	6 43	17 43	0 30	1 38	13 40	2.9	4 4	2.3
40	6 38	17 48	0 27	1 30	13 55	2.8	3 50	2.3
35	6 33	17 53	0 26	1 24	14 7	2.7	3 37	2.4
30	6 29	17 57	0 24	1 20	14 18	2.7	3 26	2.4
20	6 22	18 4	0 22	1 13	14 36	2.6	3 8	2.4
10	6 16	18 10	0 21	1 10	14 53	2.6	2 51	2.5
0	6 10	18 16	0 21	1 9	15 8	2.5	2 36	2.5
10	6 3	18 22	0 21	1 11	15 23	2.4	2 21	2.6
20	5 57	18 29	0 22	1 15	15 39	2.4	2 4	2.6
30	5 49	18 37	0 24	1 22	15 57	2.3	1 45	2.6
35	5 44	18 41	0 26	1 28	16 8	2.2	1 34	2.7
40	5 39	18 46	0 28	1 36	16 20	2.2	1 21	2.7
45	5 33	18 52	0 30	1 46	16 35	2.1	1 6	2.7
50	5 25	18 59	0 34	1 60	16 52	2.0	0 48	2.8
55	5 16	19 8	0 38	2 22	17 15	1.9	0 24	2.8
60	5 4	19 20	0 45	3 1	17 46	1.7	...	...
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	52	25.5	48	20	2.4	-7	284	51.5	-17	23.4	238	7.8	-22	22.2	
2	81	13.0	48	20	1.0	-10	314	56.2	-17	23.4	268	12.3	-22	22.2	
4	110	.6	47	19	59.1	-12	345	1.0	-17	23.4	298	16.8	-22	22.2	
6	138	48.0	47	19	56.7	-15	15	5.7	-17	23.5	328	21.4	-22	22.2	
8	167	35.5	47	19	53.6	-18	45	10.5	-17	23.5	358	25.9	-22	22.2	
10	196	22.9	47	19	50.0	-21	75	15.2	-17	23.5	28	30.4	-22	22.1	
12	225	10.4	47	19	45.9	-24	105	20.0	-17	23.6	58	34.9	-22	22.1	
14	253	57.8	47	19	41.2	-26	135	24.7	-17	23.6	88	39.4	-22	22.1	
16	282	45.3	48	19	35.9	-29	165	29.5	-17	23.6	118	43.9	-22	22.1	
18	311	32.8	48	19	30.1	-32	195	34.3	-17	23.6	148	48.5	-22	22.1	
20	340	20.3	48	19	23.7	-35	225	39.0	-17	23.7	178	53.0	-22	22.0	
22	9	8.0	48	19	16.8	-37	255	43.8	-17	23.7	208	57.5	-22	22.0	
Δ							24			0		23			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	-12 57.6	.4	16.2	T _m	21 22	2.5	60.0	16.3	
12	-12 52.6	T _{m☉}	12 h 12.9 min	Starost	10.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	h min	h min	'	°	h min	'
♀	12 58	.1	10	-2.9	♀	4 60	.0	129	-1.7
♂	6 46	.1	103	.4	♂	8 6	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	48.1	- 8	26.6	156	46.6	165	23.1	- 5	13.6	258	38.9	-22	40.3	
2	206	48.3	- 8	24.7	186	51.5	195	22.2	- 5	11.1	288	40.6	-22	40.6	
4	236	48.6	- 8	22.8	216	56.5	225	21.4	- 5	8.5	318	42.3	-22	41.0	
6	266	48.8	- 8	20.9	247	1.4	255	20.6	- 5	6.0	348	44.1	-22	41.3	
8	296	49.0	- 8	19.1	277	6.3	285	19.8	- 5	3.5	18	45.8	-22	41.6	
10	326	49.2	- 8	17.2	307	11.3	315	19.0	- 5	1.0	48	47.5	-22	41.9	
12	356	49.5	- 8	15.3	337	16.2	345	18.2	- 4	58.5	78	49.3	-22	42.2	
14	26	49.7	- 8	13.4	7	21.1	15	17.4	- 4	56.0	108	51.0	-22	42.5	
16	56	49.9	- 8	11.5	37	26.0	45	16.6	- 4	53.5	138	52.7	-22	42.8	
18	86	50.1	- 8	9.7	67	31.0	75	15.8	- 4	50.9	168	54.4	-22	43.2	
20	116	50.4	- 8	7.8	97	35.9	105	15.0	- 4	48.4	198	56.2	-22	43.5	
22	146	50.6	- 8	5.9	127	40.8	135	14.3	- 4	45.9	228	57.9	-22	43.8	
Δ		1		9				-4		13			9		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 5	17 22	0 42	2 19	13 45	3.6	6 5	1.5
55	6 55	17 31	0 37	2 1	14 13	3.3	5 36	1.7
50	6 48	17 39	0 33	1 48	14 33	3.2	5 15	1.8
45	6 42	17 44	0 30	1 38	14 49	3.0	4 59	2.0
40	6 37	17 49	0 27	1 30	15 2	2.9	4 45	2.1
35	6 32	17 54	0 25	1 24	15 13	2.8	4 34	2.1
30	6 28	17 58	0 24	1 20	15 23	2.8	4 24	2.2
20	6 21	18 4	0 22	1 13	15 40	2.6	4 6	2.3
10	6 15	18 10	0 21	1 10	15 54	2.5	3 51	2.4
0	6 9	18 16	0 21	1 9	16 8	2.4	3 36	2.5
10	6 3	18 22	0 21	1 11	16 21	2.3	3 22	2.6
20	5 57	18 28	0 22	1 15	16 36	2.2	3 6	2.6
30	5 49	18 36	0 24	1 22	16 52	2.1	2 48	2.8
35	5 45	18 40	0 26	1 28	17 2	2.0	2 38	2.8
40	5 40	18 45	0 28	1 35	17 13	1.9	2 26	2.9
45	5 34	18 50	0 30	1 45	17 25	1.8	2 12	3.0
50	5 27	18 57	0 34	1 59	17 41	1.7	1 55	3.1
55	5 18	19 6	0 38	2 20	18 1	1.5	1 32	3.2
60	5 7	19 17	0 45	2 58	18 27	1.2	1 2	3.4
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	37	55.6	49	19	9.3	-40	285	48.5	-17	23.7	239	2.0	-22	22.0	
2	66	43.4	49	19	1.3	-43	315	53.3	-17	23.8	269	6.5	-22	22.0	
4	95	31.3	50	18	52.7	-45	345	58.1	-17	23.8	299	11.1	-22	22.0	
6	124	19.2	50	18	43.7	-48	16	2.8	-17	23.8	329	15.6	-22	21.9	
8	153	7.3	51	18	34.0	-51	46	7.6	-17	23.8	359	20.1	-22	21.9	
10	181	55.5	52	18	23.9	-53	76	12.4	-17	23.9	29	24.6	-22	21.9	
12	210	43.8	52	18	13.3	-56	106	17.1	-17	23.9	59	29.1	-22	21.9	
14	239	32.3	53	18	2.1	-58	136	21.9	-17	23.9	89	33.7	-22	21.9	
16	268	20.9	54	17	50.4	-61	166	26.7	-17	23.9	119	38.2	-22	21.8	
18	297	9.7	55	17	38.3	-63	196	31.5	-17	24.0	149	42.7	-22	21.8	
20	325	58.7	56	17	25.6	-66	226	36.2	-17	24.0	179	47.2	-22	21.8	
22	354	47.9	57	17	12.5	-68	256	41.0	-17	24.0	209	51.8	-22	21.8	
Δ							24			0		23			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	-12 47.5	.4	16.2	T _m	22 22	2.4	60.2	16.4
12	-12 42.1	T _{m☉}	12 h 12.7 min	Starost	11.1 d	Faza	☉	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	50.8	- 8	4.0	157	45.8	165	13.5	- 4	43.4	258	59.6	-22	44.1
2	206	51.0	- 8	2.1	187	50.7	195	12.7	- 4	40.9	289	1.3	-22	44.4
4	236	51.3	- 8	.2	217	55.6	225	11.9	- 4	38.3	319	3.1	-22	44.7
6	266	51.5	- 7	58.3	248	.5	255	11.1	- 4	35.8	349	4.8	-22	45.0
8	296	51.7	- 7	56.4	278	5.5	285	10.3	- 4	33.3	19	6.5	-22	45.3
10	326	52.0	- 7	54.6	308	10.4	315	9.5	- 4	30.8	49	8.2	-22	45.6
12	356	52.2	- 7	52.7	338	15.3	345	8.7	- 4	28.2	79	10.0	-22	45.9
14	26	52.4	- 7	50.8	8	20.3	15	7.9	- 4	25.7	109	11.7	-22	46.2
16	56	52.7	- 7	48.9	38	25.2	45	7.1	- 4	23.2	139	13.4	-22	46.5
18	86	52.9	- 7	47.0	68	30.1	75	6.3	- 4	20.7	169	15.2	-22	46.8
20	116	53.2	- 7	45.1	98	35.0	105	5.6	- 4	18.1	199	16.9	-22	47.1
22	146	53.4	- 7	43.2	128	40.0	135	4.8	- 4	15.6	229	18.6	-22	47.4
Δ	1		9				-4		13		9		-2	

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	23	37.2	58	16	58.9	-70	286	45.8	-17	24.0	239	56.3	-22	21.8		
2	52	26.7	59	16	44.9	-73	316	50.6	-17	24.1	270	.8	-22	21.7		
4	81	16.4	60	16	30.4	-75	346	55.4	-17	24.1	300	5.4	-22	21.7		
6	110	6.4	61	16	15.4	-77	17	.1	-17	24.1	330	9.9	-22	21.7		
8	138	56.5	62	16	.0	-79	47	4.9	-17	24.1	0	14.4	-22	21.7		
10	167	46.9	63	15	44.2	-81	77	9.7	-17	24.1	30	18.9	-22	21.7		
12	196	37.5	64	15	28.0	-83	107	14.5	-17	24.2	60	23.5	-22	21.6		
14	225	28.4	65	15	11.4	-85	137	19.3	-17	24.2	90	28.0	-22	21.6		
16	254	19.4	67	14	54.4	-87	167	24.1	-17	24.2	120	32.5	-22	21.6		
18	283	10.7	68	14	36.9	-89	197	28.9	-17	24.2	150	37.1	-22	21.6		
20	312	2.3	69	14	19.2	-91	227	33.7	-17	24.2	180	41.6	-22	21.6		
22	340	54.1	70	14	1.0	-92	257	38.5	-17	24.3	210	46.1	-22	21.5		
Δ							24		0		23		0			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 2	17 25	0 42	2 19	15 12	3.7	6 40	1.1
55	6 53	17 33	0 37	2 1	15 33	3.4	6 17	1.4
50	6 46	17 40	0 33	1 48	15 49	3.2	5 60	1.5
45	6 40	17 46	0 30	1 38	16 2	3.1	5 46	1.7
40	6 35	17 51	0 27	1 30	16 13	3.0	5 35	1.8
35	6 31	17 55	0 25	1 24	16 22	2.8	5 25	1.9
30	6 27	17 58	0 24	1 20	16 29	2.8	5 16	2.0
20	6 21	18 5	0 22	1 13	16 43	2.6	5 1	2.1
10	6 15	18 10	0 21	1 10	16 55	2.5	4 48	2.3
0	6 9	18 16	0 21	1 9	17 6	2.3	4 36	2.4
10	6 3	18 21	0 21	1 11	17 17	2.2	4 23	2.5
20	5 57	18 27	0 22	1 15	17 29	2.1	4 10	2.6
30	5 50	18 34	0 24	1 22	17 42	1.9	3 54	2.8
35	5 46	18 39	0 26	1 28	17 50	1.8	3 46	2.9
40	5 41	18 43	0 28	1 35	17 59	1.7	3 35	3.0
45	5 36	18 49	0 30	1 45	18 9	1.6	3 23	3.1
50	5 29	18 55	0 33	1 59	18 21	1.4	3 9	3.2
55	5 20	19 3	0 38	2 19	18 37	1.2	2 50	3.4
60	5 9	19 14	0 45	2 55	18 57	.9	2 25	3.7
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-12 36.7	.5	16.2	T _m	23 19	2.3	60.2 16.4		
12	-12 31.1	T _{m☉}	12 h 12.5 min	Starost	12.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	12 59	.1	7	-2.9	♄	4 52	.0	129	-1.7
♂	6 44	.1	101	.4	♅	7 59	.0	82	.8

1. MART

ČETVRTAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	176	53.6	- 7	41.3	158	44.9	165	4.0	- 4	13.1	259	20.3	-22	47.7
2	206	53.9	- 7	39.4	188	49.8	195	3.2	- 4	10.6	289	22.1	-22	48.0
4	236	54.1	- 7	37.5	218	54.8	225	2.4	- 4	8.0	319	23.8	-22	48.3
6	266	54.4	- 7	35.6	248	59.7	255	1.6	- 4	5.5	349	25.5	-22	48.6
8	296	54.6	- 7	33.7	279	4.6	285	.9	- 4	3.0	19	27.3	-22	48.9
10	326	54.8	- 7	31.8	309	9.5	315	.1	- 4	.4	49	29.0	-22	49.2
12	356	55.1	- 7	29.9	339	14.5	344	59.3	- 3	57.9	79	30.7	-22	49.5
14	26	55.3	- 7	28.0	9	19.4	14	58.5	- 3	55.4	109	32.5	-22	49.7
16	56	55.6	- 7	26.1	39	24.3	44	57.8	- 3	52.8	139	34.2	-22	50.0
18	86	55.8	- 7	24.2	69	29.3	74	57.0	- 3	50.3	169	35.9	-22	50.3
20	116	56.1	- 7	22.3	99	34.2	104	56.2	- 3	47.7	199	37.7	-22	50.6
22	146	56.3	- 7	20.4	129	39.1	134	55.4	- 3	45.2	229	39.4	-22	50.9
Δ	1		10				-4		13		9		-1	

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	9	46.1	72	13	42.5	-94	287	43.3	-17	24.3	240	50.7	-22	21.5		
2	38	38.4	73	13	23.7	-96	317	48.1	-17	24.3	270	55.2	-22	21.5		
4	67	31.0	74	13	4.5	-97	347	52.8	-17	24.3	300	59.7	-22	21.5		
6	96	23.8	75	12	45.0	-99	17	57.6	-17	24.3	331	4.3	-22	21.5		
8	125	16.9	77	12	25.3	-100	48	2.4	-17	24.4	1	8.8	-22	21.4		
10	154	10.2	78	12	5.2	-102	78	7.2	-17	24.4	31	13.3	-22	21.4		
12	183	3.8	79	11	44.8	-103	108	12.1	-17	24.4	61	17.9	-22	21.4		
14	211	57.6	81	11	24.2	-104	138	16.9	-17	24.4	91	22.4	-22	21.4		
16	240	51.7	82	11	3.3	-106	168	21.7	-17	24.4	121	27.0	-22	21.4		
18	269	46.1	83	10	42.2	-107	198	26.5	-17	24.4	151	31.5	-22	21.3		
20	298	40.7	84	10	20.8	-108	228	31.3	-17	24.5	181	36.0	-22	21.3		
22	327	35.6	86	9	59.2	-109	258	36.1	-17	24.5	211	40.6	-22	21.3		
Δ							24		0		23		0			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 59	17 27	0 42	2 19	16 41	3.7	7 6	.8
55	6 50	17 35	0 36	2 1	16 56	3.4	6 50	1.1
50	6 44	17 42	0 32	1 48	17 7	3.2	6 37	1.3
45	6 38	17 47	0 29	1 38	17 16	3.1	6 26	1.5
40	6 34	17 52	0 27	1 30	17 24	2.9	6 18	1.6
35	6 30	17 56	0 25	1 24	17 30	2.8	6 10	1.7
30	6 26	17 59	0 24	1 20	17 36	2.7	6 4	1.8
20	6 20	18 5	0 22	1 13	17 45	2.5	5 52	2.0
10	6 14	18 10	0 21	1 10	17 54	2.4	5 42	2.1
0	6 9	18 16	0 21	1 9	18 2	2.2	5 33	2.3
10	6 4	18 21	0 21	1 11	18 10	2.1	5 23	2.4
20	5 58	18 27	0 22	1 15	18 18	1.9	5 13	2.6
30	5 51	18 33	0 24	1 22	18 28	1.7	5 1	2.7
35	5 47	18 37	0 26	1 27	18 33	1.6	4 54	2.8
40	5 42	18 42	0 28	1 35	18 39	1.5	4 46	2.9
45	5 37	18 47	0 30	1 44	18 46	1.4	4 37	3.1
50	5 30	18 53	0 33	1 58	18 55	1.2	4 26	3.2
55	5 22	19 1	0 38	2 18	19 6	1.0	4 12	3.5
60	5 12	19 11	0 44	2 52	19 20	.8	3 53	3.8
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz</			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 56.6 - 7 18.5		159 44.0	164 54.6 - 3 42.7	259 41.1 -22 51.2		
2	206 56.8 - 7 16.6		189 49.0	194 53.9 - 3 40.1	289 42.8 -22 51.5		
4	236 57.1 - 7 14.7		219 53.9	224 53.1 - 3 37.6	319 44.6 -22 51.7		
6	266 57.3 - 7 12.8		249 58.8	254 52.3 - 3 35.0	349 46.3 -22 52.0		
8	296 57.6 - 7 10.9		280 3.7	284 51.6 - 3 32.5	19 48.0 -22 52.3		
10	326 57.9 - 7 8.9		310 8.7	314 50.8 - 3 30.0	49 49.8 -22 52.6		
12	356 58.1 - 7 7.0		340 13.6	344 50.0 - 3 27.4	79 51.5 -22 52.9		
14	26 58.4 - 7 5.1		10 18.5	14 49.3 - 3 24.9	109 53.2 -22 53.1		
16	56 58.6 - 7 3.2		40 23.5	44 48.5 - 3 22.3	139 55.0 -22 53.4		
18	86 58.9 - 7 1.3		70 28.4	74 47.7 - 3 19.8	169 56.7 -22 53.7		
20	116 59.1 - 6 59.4		100 33.3	104 46.9 - 3 17.2	199 58.4 -22 54.0		
22	146 59.4 - 6 57.5		130 38.2	134 46.2 - 3 14.7	230 .2 -22 54.2		
Δ	1	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 56	17 30	0 42	2 19	18 10	3.6	7 27	.7
55	6 48	17 37	0 36	2 1	18 18	3.3	7 16	1.0
50	6 42	17 44	0 32	1 48	18 24	3.1	7 8	1.2
45	6 36	17 49	0 29	1 38	18 29	3.0	7 2	1.3
40	6 32	17 53	0 27	1 30	18 33	2.8	6 56	1.5
35	6 28	17 56	0 25	1 24	18 37	2.7	6 52	1.6
30	6 25	17 60	0 24	1 20	18 40	2.6	6 47	1.7
20	6 19	18 5	0 22	1 13	18 45	2.4	6 40	1.9
10	6 14	18 11	0 21	1 10	18 50	2.3	6 33	2.0
0	6 9	18 15	0 21	1 9	18 55	2.1	6 27	2.2
10	6 4	18 20	0 21	1 11	18 59	2.0	6 21	2.3
20	5 58	18 26	0 22	1 14	19 4	1.8	6 14	2.5
30	5 52	18 32	0 24	1 22	19 9	1.6	6 7	2.6
35	5 48	18 36	0 26	1 27	19 12	1.5	6 2	2.8
40	5 43	18 40	0 28	1 34	19 16	1.4	5 57	2.9
45	5 38	18 45	0 30	1 44	19 20	1.3	5 51	3.0
50	5 32	18 51	0 33	1 57	19 24	1.1	5 44	3.2
55	5 25	18 58	0 38	2 17	19 30	.9	5 35	3.4
60	5 15	19 8	0 44	2 50	19 38	.7	5 23	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	356 30.8 87	9 37.4 -110			288 40.9 -17 24.5	241 45.1 -22 21.3		
2	25 26.2 88	9 15.4 -111			318 45.7 -17 24.5	271 49.7 -22 21.2		
4	54 21.8 90	8 53.1 -112			348 50.5 -17 24.5	301 54.2 -22 21.2		
6	83 17.7 91	8 30.8 -113			18 55.3 -17 24.5	331 58.7 -22 21.2		
8	112 13.9 92	8 8.2 -114			49 .1 -17 24.6	2 3.3 -22 21.2		
10	141 10.3 93	7 45.5 -114			79 5.0 -17 24.6	32 7.8 -22 21.2		
12	170 6.9 94	7 22.7 -115			109 9.8 -17 24.6	62 12.4 -22 21.1		
14	199 3.8 96	6 59.7 -115			139 14.6 -17 24.6	92 16.9 -22 21.1		
16	228 .9 97	6 36.6 -116			169 19.4 -17 24.6	122 21.5 -22 21.1		
18	256 58.3 98	6 13.4 -117			199 24.2 -17 24.6	152 26.0 -22 21.1		
20	285 55.8 99	5 50.1 -117			229 29.1 -17 24.6	182 30.5 -22 21.1		
22	314 53.6 100	5 26.7 -117			259 33.9 -17 24.6	212 35.1 -22 21.0		
Δ					24	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	-12 13.7	.5	16.2	T _m	0 14	2.2	59.6 16.2		
12	-12 7.5	T _{m☉}	12 h 12.1 min	Starost	14.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♀	h min	'	°	'
♂	13 1	.1	5	-2.9	♃	4 45	.0	129	-1.8
♄	6 41	.1	100	.4	♄	7 52	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 59.7 - 6 55.6		160 43.2	164 45.4 - 3 12.2	260 1.9 -22 54.5		
2	206 59.9 - 6 53.7		190 48.1	194 44.7 - 3 9.6	290 3.6 -22 54.8		
4	237 .2 - 6 51.7		220 53.0	224 43.9 - 3 7.1	320 5.4 -22 55.0		
6	267 .4 - 6 49.8		250 58.0	254 43.1 - 3 4.5	350 7.1 -22 55.3		
8	297 .7 - 6 47.9		281 2.9	284 42.4 - 3 2.0	20 8.8 -22 55.6		
10	327 1.0 - 6 46.0		311 7.8	314 41.6 - 2 59.4	50 10.6 -22 55.8		
12	357 1.2 - 6 44.1		341 12.7	344 40.8 - 2 56.9	80 12.3 -22 56.1		
14	27 1.5 - 6 42.2		11 17.7	14 40.1 - 2 54.3	110 14.0 -22 56.4		
16	57 1.8 - 6 40.2		41 22.6	44 39.3 - 2 51.8	140 15.8 -22 56.6		
18	87 2.0 - 6 38.3		71 27.5	74 38.6 - 2 49.2	170 17.5 -22 56.9		
20	117 2.3 - 6 36.4		101 32.5	104 37.8 - 2 46.7	200 19.3 -22 57.2		
22	147 2.6 - 6 34.5		131 37.4	134 37.0 - 2 44.1	230 21.0 -22 57.4		
Δ	1	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 53	17 32	0 42	2 19	19 37	1.3	7 44	1.4
55	6 45	17 39	0 36	2 1	19 39	1.4	7 40	1.5
50	6 39	17 45	0 32	1 48	19 40	1.5	7 36	1.6
45	6 35	17 50	0 29	1 38	19 41	1.6	7 34	1.7
40	6 31	17 54	0 27	1 30	19 41	1.7	7 31	1.7
35	6 27	17 57	0 25	1 24	19 42	1.7	7 29	1.8
30	6 24	18 0	0 24	1 19	19 42	1.8	7 27	1.8
20	6 18	18 6	0 22	1 13	19 43	1.9	7 24	1.9
10	6 13	18 11	0 21	1 10	19 44	2.0	7 22	2.0
0	6 9	18 15	0 21	1 9	19 45	2.0	7 19	2.1
10	6 4	18 20	0 21	1 10	19 46	2.1	7 16	2.1
20	5 58	18 25	0 22	1 14	19 47	2.2	7 13	2.2
30	5 52	18 31	0 24	1 22	19 48	2.3	7 10	2.3
35	5 49	18 35	0 26	1 27	19 49	2.3	7 8	2.4
40	5 44	18 39	0 28	1 34	19 49	2.4	7 6	2.4
45	5 40	18 43	0 30	1 44	19 50	2.5	7 4	2.5
50	5 34	18 49	0 33	1 57	19 51	2.6	7 1	2.6
55	5 27	18 56	0 38	2 16	19 52	2.7	6 57	2.7
60	5 17	19 5	0 44	2 48	19 54	2.8	6 52	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	343 51.7 101	5 3.2 -118			289 38.7 -17 24.7	242 39.6 -22 21.0		
2	12 49.9 102	4 39.7 -118			319 43.5 -17 24.7	272 44.2 -22 21.0		
4	41 48.4 103	4 16.1 -118			349 48.4 -17 24.7	302 48.7 -22 21.0		
6	70 47.1 104	3 52.5 -118			19 53.2 -17 24.7	332 53.3 -22 21.0		
8	99 45.9 105	3 28.8 -118			49 58.0 -17 24.7	2 57.8 -22 20.9		
10	128 45.0 106	3 5.1 -119			80 2.9 -17 24.7	33 2.4 -22 20.9		
12	157 44.3 107	2 41.4 -119			110 7.7 -17 24.7	63 6.9 -22 20.9		
14	186 43.8 108	2 17.7 -119			140 12.5 -17 24.7	93 11.5 -22 20.9		
16	215 43.4 109	1 54.0 -119			170 17.4 -17 24.7	123 16.0 -22 20.9		
18	244 43.2 110	1 30.3 -118			200 22.2 -17 24.7	153 20.6 -22 20.8		
20	273 43.3 111	1 6.6 -118			230 27.1 -17 24.8	183 25.1 -22 20.8		
22	302 43.4 112	0 42.9 -118			260 31.9 -17 24.8	213 29.7 -22 20.8		
Δ					24	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	-12 1.4	.5	16.2	T _m	1 7	2.1	59.0 16.1		
12	-11 55.0	T _{m☉}	12 h 11.9 min	Starost	15.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♀	h min	'	°	'
♂	13 1	.1	4	-2.9	♃	4 41	.0	129	-1.8
♄	6 39	.1	99	.4	♄	7 48	.0	82	.8

4. MART

2018.

NEDELJA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	2.9	-6	32.6	161	42.3	164	36.3	-2	41.5	260	22.7	-22	57.7	
2	207	3.1	-6	30.6	191	47.2	194	35.5	-2	39.0	290	24.5	-22	57.9	
4	237	3.4	-6	28.7	221	52.2	224	34.8	-2	36.4	320	26.2	-22	58.2	
6	267	3.7	-6	26.8	251	57.1	254	34.0	-2	33.9	350	27.9	-22	58.5	
8	297	3.9	-6	24.9	282	2.0	284	33.3	-2	31.3	20	29.7	-22	58.7	
10	327	4.2	-6	22.9	312	7.0	314	32.5	-2	28.8	50	31.4	-22	59.0	
12	357	4.5	-6	21.0	342	11.9	344	31.7	-2	26.2	80	33.2	-22	59.2	
14	27	4.8	-6	19.1	12	16.8	14	31.0	-2	23.7	110	34.9	-22	59.5	
16	57	5.0	-6	17.2	42	21.7	44	30.2	-2	21.1	140	36.6	-22	59.7	
18	87	5.3	-6	15.2	72	26.7	74	29.5	-2	18.5	170	38.4	-22	60.0	
20	117	5.6	-6	13.3	102	31.6	104	28.7	-2	16.0	200	40.1	-23	.2	
22	147	5.9	-6	11.4	132	36.5	134	28.0	-2	13.4	230	41.8	-23	.5	
Δ		1		10				-4		13			9		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 50	17 35	0 42	2 20	20 9	.6	8 17	3.4
55	6 43	17 42	0 36	2 1	20 13	.9	8 16	3.2
50	6 37	17 47	0 32	1 48	20 16	1.1	8 15	3.0
45	6 33	17 51	0 29	1 38	20 19	1.2	8 14	2.8
40	6 29	17 55	0 27	1 30	20 22	1.3	8 13	2.7
35	6 26	17 58	0 25	1 24	20 24	1.4	8 12	2.6
30	6 23	18 1	0 24	1 19	20 25	1.5	8 12	2.5
20	6 18	18 6	0 22	1 13	20 29	1.7	8 10	2.3
10	6 13	18 11	0 21	1 10	20 31	1.8	8 10	2.1
0	6 8	18 15	0 21	1 9	20 34	2.0	8 9	2.0
10	6 4	18 19	0 21	1 10	20 37	2.1	8 8	1.9
20	5 59	18 24	0 22	1 14	20 40	2.3	8 7	1.7
30	5 53	18 30	0 24	1 21	20 43	2.4	8 6	1.5
35	5 49	18 33	0 26	1 27	20 45	2.5	8 5	1.4
40	5 46	18 37	0 27	1 34	20 47	2.6	8 4	1.3
45	5 41	18 42	0 30	1 43	20 49	2.8	8 3	1.2
50	5 36	18 47	0 33	1 56	20 52	2.9	8 2	1.1
55	5 29	18 54	0 37	2 15	20 56	3.1	8 1	.9
60	5 20	19 2	0 44	2 46	21 1	3.4	7 59	.6

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	331	43.8	113	0	19.3	-75	290	36.7	-17	24.8	243	34.3	-22	20.8	
2	0	44.3	113	0	4.2	117	320	41.6	-17	24.8	273	38.8	-22	20.8	
4	29	45.0	114	0	27.7	117	350	46.4	-17	24.8	303	43.4	-22	20.7	
6	58	45.8	115	0	51.2	117	20	51.3	-17	24.8	333	47.9	-22	20.7	
8	87	46.8	116	1	14.5	116	50	56.1	-17	24.8	3	52.5	-22	20.7	
10	116	47.9	116	1	37.8	116	81	1.0	-17	24.8	33	57.0	-22	20.7	
12	145	49.1	117	2	1.0	115	111	5.8	-17	24.8	64	1.6	-22	20.7	
14	174	50.5	118	2	24.0	115	141	10.7	-17	24.8	94	6.2	-22	20.6	
16	203	52.0	118	2	47.0	114	171	15.5	-17	24.8	124	10.7	-22	20.6	
18	232	53.6	119	3	9.9	114	201	20.4	-17	24.8	154	15.3	-22	20.6	
20	261	55.4	119	3	32.6	113	231	25.2	-17	24.8	184	19.8	-22	20.6	
22	290	57.2	120	3	55.2	112	261	30.1	-17	24.8	214	24.4	-22	20.6	
Δ							24			0			23		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s		h min	min	'	'
00	-11 48.6	.6	16.2	T _m	1 57	2.0	58.2 15.9
12	-11 42.0	T _{m☉}	12 h 11.7 min	Starost	16.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	13 2	.1	3	-2.9	♃	4 37	.0	129	-1.8
♂	6 38	.1	99	.3	♄	7 45	.0	82	.8

5. MART

PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	6.2	-6	9.4	162	41.5	164	27.2	-2	10.9	260	43.6	-23	.7	
2	207	6.4	-6	7.5	192	46.4	194	26.5	-2	8.3	290	45.3	-23	1.0	
4	237	6.7	-6	5.6	222	51.3	224	25.7	-2	5.7	320	47.1	-23	1.2	
6	267	7.0	-6	3.7	252	56.2	254	25.0	-2	3.2	350	48.8	-23	1.5	
8	297	7.3	-6	1.7	283	1.2	284	24.2	-2	.6	20	50.5	-23	1.7	
10	327	7.6	-5	59.8	313	6.1	314	23.5	-1	58.1	50	52.3	-23	2.0	
12	357	7.8	-5	57.9	343	11.0	344	22.7	-1	55.5	80	54.0	-23	2.2	
14	27	8.1	-5	55.9	13	15.9	14	22.0	-1	52.9	110	55.8	-23	2.4	
16	57	8.4	-5	54.0	43	20.9	44	21.2	-1	50.4	140	57.5	-23	2.7	
18	87	8.7	-5	52.1	73	25.8	74	20.5	-1	47.8	170	59.3	-23	2.9	
20	117	9.0	-5	50.1	103	30.7	104	19.8	-1	45.2	201	1.0	-23	3.2	
22	147	9.3	-5	48.2	133	35.7	134	19.0	-1	42.7	231	2.7	-23	3.4	
Δ		1		10				-4		13			9		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 47	17 37	0 42	2 20	20 24	.7	9 40	3.3
55	6 40	17 44	0 36	2 1	20 34	.9	9 32	3.1
50	6 35	17 49	0 32	1 48	20 42	1.1	9 26	2.9
45	6 31	17 53	0 29	1 38	20 48	1.3	9 22	2.7
40	6 28	17 56	0 27	1 30	20 54	1.4	9 18	2.6
35	6 24	17 59	0 25	1 24	20 58	1.5	9 14	2.5
30	6 22	18 2	0 24	1 19	21 2	1.6	9 11	2.4
20	6 17	18 6	0 22	1 13	21 9	1.7	9 6	2.2
10	6 12	18 11	0 21	1 10	21 16	1.8	9 1	2.1
0	6 8	18 15	0 21	1 9	21 22	2.0	8 57	2.0
10	6 4	18 19	0 21	1 10	21 28	2.1	8 52	1.8
20	5 59	18 24	0 22	1 14	21 34	2.2	8 48	1.7
30	5 54	18 29	0 24	1 21	21 41	2.4	8 43	1.5
35	5 50	18 32	0 26	1 27	21 46	2.5	8 40	1.5
40	5 47	18 36	0 27	1 34	21 50	2.6	8 36	1.3
45	5 42	18 40	0 30	1 43	21 56	2.7	8 32	1.2
50	5 37	18 45	0 33	1 55	22 3	2.8	8 28	1.1
55	5 31	18 51	0 37	2 14	22 11	3.0	8 22	.9
60	5 22	18 59	0 43	2 44	22 22	3.3	8 14	.7

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	319	59.2	120	4	17.7	112	291	34.9	-17	24.8	244	29.0	-22	20.5	
2	349	1.3	121	4	40.0	111	321	39.8	-17	24.8	274	33.5	-22	20.5	
4	18	3.4	121	5	2.2	110	351	44.7	-17	24.8	304	38.1	-22	20.5	
6	47	5.7	122	5	24.2	109	21	49.5	-17	24.9	334	42.6	-22	20.5	
8	76	8.0	122	5	46.1	108	51	54.4	-17	24.9	4	47.2	-22	20.5	
10	105	10.4	122	6	7.8	108	81	59.2	-17	24.9	34	51.8	-22	20.4	
12	134	12.9	123	6	29.3	107	112	4.1	-17	24.9	64	56.3	-22	20.4	
14	163	15.5	123	6	50.6	106	142	9.0	-17	24.9	95	.9	-22	20.4	
16	192	18.1	124	7	11.8	105	172	13.8	-17	24.9	125	5.5	-22	20.4	
18	221	20.8	124	7	32.7	104	202	18.7	-17	24.9	155	10.0	-22	20.4	
20	250	23.6	124	7	53.5	103	232	23.6	-17	24.9	185	14.6	-22	20.3	
22	279	26.4	124	8	14.0	102	262	28.5	-17	24.9	215	19.2	-22	20.3	
Δ							24			0			23		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s		h min	min	'	'
00	-11 35.4	.6	16.2	T _m	2 45	2.0	57.4 15.6
12	-11 28.6	T _{m☉}	12 h 11.5 min	Starost	17.1 d	Faza	☉

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 9.6 - 5 46.3		163 40.6	164 18.3 - 1 40.1	261 4.5 -23 3.6		
2	207 9.9 - 5 44.3		193 45.5	194 17.5 - 1 37.6	291 6.2 -23 3.9		
4	237 10.1 - 5 42.4		223 50.4	224 16.8 - 1 35.0	321 8.0 -23 4.1		
6	267 10.4 - 5 40.4		253 55.4	254 16.0 - 1 32.4	351 9.7 -23 4.3		
8	297 10.7 - 5 38.5		284 .3	284 15.3 - 1 29.9	21 11.5 -23 4.6		
10	327 11.0 - 5 36.6		314 5.2	314 14.5 - 1 27.3	51 13.2 -23 4.8		
12	357 11.3 - 5 34.6		344 10.2	344 13.8 - 1 24.7	81 14.9 -23 5.0		
14	27 11.6 - 5 32.7		14 15.1	14 13.1 - 1 22.2	111 16.7 -23 5.3		
16	57 11.9 - 5 30.7		44 20.0	44 12.3 - 1 19.6	141 18.4 -23 5.5		
18	87 12.2 - 5 28.8		74 24.9	74 11.6 - 1 17.0	171 20.2 -23 5.7		
20	117 12.5 - 5 26.9		104 29.9	104 10.8 - 1 14.5	201 21.9 -23 5.9		
22	147 12.8 - 5 24.9		134 34.8	134 10.1 - 1 11.9	231 23.7 -23 6.2		
Δ	1	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 44	17 40	0 42	2 20	20 41	.8	10 60	3.2
55	6 38	17 46	0 36	2 1	20 57	1.1	10 46	2.9
50	6 33	17 50	0 32	1 48	21 9	1.2	10 35	2.8
45	6 29	17 54	0 29	1 38	21 18	1.3	10 27	2.6
40	6 26	17 57	0 27	1 30	21 26	1.4	10 20	2.5
35	6 23	17 60	0 25	1 24	21 33	1.5	10 14	2.4
30	6 21	18 2	0 24	1 19	21 40	1.6	10 9	2.3
20	6 16	18 7	0 22	1 13	21 50	1.7	9 60	2.2
10	6 12	18 11	0 21	1 10	21 60	1.9	9 52	2.1
0	6 8	18 15	0 21	1 9	22 9	2.0	9 44	2.0
10	6 4	18 18	0 21	1 10	22 18	2.1	9 37	1.8
20	5 59	18 23	0 22	1 14	22 27	2.2	9 29	1.7
30	5 54	18 28	0 24	1 21	22 38	2.3	9 20	1.6
35	5 51	18 31	0 26	1 26	22 44	2.4	9 14	1.5
40	5 48	18 34	0 27	1 33	22 52	2.5	9 9	1.4
45	5 44	18 38	0 30	1 42	23 0	2.6	9 2	1.3
50	5 39	18 43	0 33	1 55	23 11	2.0	8 54	1.2
55	5 33	18 49	0 37	2 13	23 23	2.0	8 43	1.0
60	5 25	18 56	0 43	2 42	23 40	2.0	8 30	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	308 29.3 125	8 34.4	101	292 33.3 -17 24.9	245 23.7 -22 20.3			
2	337 32.2 125	8 54.5	100	322 38.2 -17 24.9	275 28.3 -22 20.3			
4	6 35.1 125	9 14.4	98	352 43.1 -17 24.9	305 32.9 -22 20.3			
6	35 38.1 125	9 34.1	97	22 48.0 -17 24.9	335 37.4 -22 20.2			
8	64 41.2 125	9 53.5	96	52 52.8 -17 24.9	5 42.0 -22 20.2			
10	93 44.2 125	10 12.7	95	82 57.7 -17 24.9	35 46.6 -22 20.2			
12	122 47.3 126	10 31.7	94	113 2.6 -17 24.9	65 51.2 -22 20.2			
14	151 50.4 126	10 50.4	92	143 7.5 -17 24.9	95 55.7 -22 20.2			
16	180 53.5 126	11 8.9	91	173 12.4 -17 24.9	126 .3 -22 20.2			
18	209 56.7 126	11 27.1	90	203 17.3 -17 24.9	156 4.9 -22 20.1			
20	238 59.8 126	11 45.1	89	233 22.1 -17 24.9	186 9.5 -22 20.1			
22	268 3.0 126	12 2.8	87	263 27.0 -17 24.8	216 14.0 -22 20.1			
Δ				24	0	23	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-11 21.7	.6	16.1	T _m	3 33	2.0	56.6 15.4		
12	-11 14.7	T _{m☉}	12 h 11.2 min	Starost	18.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 3	.1	97	-2.9	♃	4 29	.0	129	-1.8
♂	6 35	.1	97	.3	♄	7 37	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 13.1 - 5 23.0		164 39.7	164 9.4 - 1 9.3	261 25.4 -23 6.4		
2	207 13.4 - 5 21.0		194 44.7	194 8.6 - 1 6.8	291 27.2 -23 6.6		
4	237 13.7 - 5 19.1		224 49.6	224 7.9 - 1 4.2	321 28.9 -23 6.8		
6	267 14.0 - 5 17.2		254 54.5	254 7.1 - 1 1.6	351 30.6 -23 7.1		
8	297 14.3 - 5 15.2		284 59.4	284 6.4 - 0 59.0	21 32.4 -23 7.3		
10	327 14.6 - 5 13.3		315 4.4	314 5.7 - 0 56.5	51 34.1 -23 7.5		
12	357 14.9 - 5 11.3		345 9.3	344 4.9 - 0 53.9	81 35.9 -23 7.7		
14	27 15.2 - 5 9.4		15 14.2	14 4.2 - 0 51.3	111 37.6 -23 7.9		
16	57 15.5 - 5 7.4		45 19.2	44 3.5 - 0 48.8	141 39.4 -23 8.1		
18	87 15.8 - 5 5.5		75 24.1	74 2.7 - 0 46.2	171 41.1 -23 8.4		
20	117 16.1 - 5 3.5		105 29.0	104 2.0 - 0 43.6	201 42.9 -23 8.6		
22	147 16.4 - 5 1.6		135 33.9	134 1.2 - 0 41.0	231 44.6 -23 8.8		
Δ	2	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 41	17 42	0 42	2 20	21 1	1.0	12 16	3.0
55	6 35	17 48	0 36	2 1	21 22	1.2	11 57	2.8
50	6 31	17 52	0 32	1 48	21 38	1.4	11 42	2.6
45	6 28	17 55	0 29	1 38	21 51	1.5	11 30	2.5
40	6 24	17 58	0 27	1 30	22 1	1.6	11 20	2.4
35	6 22	18 1	0 25	1 24	22 10	1.6	11 12	2.3
30	6 19	18 3	0 24	1 19	22 18	1.7	11 5	2.3
20	6 15	18 7	0 22	1 13	22 32	1.8	10 52	2.2
10	6 11	18 11	0 21	1 10	22 44	1.9	10 41	2.1
0	6 8	18 14	0 21	1 9	22 56	2.0	10 31	2.0
10	6 4	18 18	0 21	1 10	23 7	2.0	10 21	1.9
20	5 60	18 22	0 22	1 14	23 19	2.0	10 10	1.8
30	5 55	18 27	0 24	1 21	23 33	2.0	9 58	1.7
35	5 52	18 29	0 25	1 26	23 42	2.0	9 50	1.6
40	5 49	18 32	0 27	1 33	23 51	2.0	9 42	1.5
45	5 45	18 36	0 30	1 42	...	.0	9 33	1.4
50	5 40	18 41	0 33	1 54	23 58	2.7	9 21	1.3
55	5 35	18 46	0 37	2 12	...	.0	9 7	1.1
60	5 27	18 53	0 43	2 40	...	.0	8 49	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	297 6.2 126	12 20.2	86	293 31.9 -17 24.8	246 18.6 -22 20.1			
2	326 9.4 126	12 37.4	84	323 36.8 -17 24.8	276 23.2 -22 20.1			
4	355 12.5 126	12 54.3	83	353 41.7 -17 24.8	306 27.8 -22 20.0			
6	24 15.7 126	13 10.9	82	23 46.6 -17 24.8	336 32.3 -22 20.0			
8	53 18.9 126	13 27.2	80	53 51.5 -17 24.8	6 36.9 -22 20.0			
10	82 22.0 126	13 43.3	79	83 56.4 -17 24.8	36 41.5 -22 20.0			
12	111 25.2 126	13 59.0	77	114 1.3 -17 24.8	66 46.1 -22 20.0			
14	140 28.3 126	14 14.5	76	144 6.2 -17 24.8	96 50.7 -22 19.9			
16	169 31.4 126	14 29.7	74	174 11.1 -17 24.8	126 55.2 -22 19.9			
18	198 34.5 125	14 44.5	73	204 16.0 -17 24.8	156 59.8 -22 19.9			
20	227 37.6 125	14 59.1	71	234 20.9 -17 24.8	187 4.4 -22 19.9			
22	256 40.7 125	15 13.4	70	264 25.8 -17 24.8	217 9.0 -22 19.9			
Δ				24	0	23	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	-11 7.7	.6	16.1	T _m	4 20	2.0	55.8 15.2		
12	-11 .5	T _{m☉}	12 h 11.0 min	Starost	19.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 4	.1	359	-2.9	♃	4 25	.0	129	-1.8
♂	6 34	.1	97	.3	♄	7 34	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 16.7 - 4	59.6	165 38.9	164 .5 - 0	38.5	261 46.4 -23	9.0
2	207 17.0 - 4	57.7	195 43.8	193 59.8 - 0	35.9	291 48.1 -23	9.2
4	237 17.3 - 4	55.7	225 48.7	223 59.0 - 0	33.3	321 49.9 -23	9.4
6	267 17.6 - 4	53.8	255 53.7	253 58.3 - 0	30.8	351 51.6 -23	9.6
8	297 17.9 - 4	51.8	285 58.6	283 57.6 - 0	28.2	21 53.4 -23	9.8
10	327 18.2 - 4	49.9	316 3.5	313 56.8 - 0	25.6	51 55.1 -23	10.0
12	357 18.5 - 4	47.9	346 8.4	343 56.1 - 0	23.0	81 56.9 -23	10.3
14	27 18.8 - 4	46.0	16 13.4	13 55.4 - 0	20.5	111 58.6 -23	10.5
16	57 19.1 - 4	44.0	46 18.3	43 54.6 - 0	17.9	142 .4 -23	10.7
18	87 19.4 - 4	42.1	76 23.2	73 53.9 - 0	15.3	172 2.1 -23	10.9
20	117 19.7 - 4	40.1	106 28.2	103 53.2 - 0	12.8	202 3.9 -23	11.1
22	147 20.1 - 4	38.2	136 33.1	133 52.4 - 0	10.2	232 5.6 -23	11.3
Δ	2	10		-4	13	9	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	285 43.7 125	15 27.3	68	294 30.7 -17	24.8	247 13.6 -22	19.8	
2	314 46.7 125	15 41.0	67	324 35.6 -17	24.8	277 18.1 -22	19.8	
4	343 49.7 125	15 54.3	65	354 40.5 -17	24.8	307 22.7 -22	19.8	
6	12 52.7 125	16 7.3	63	24 45.4 -17	24.8	337 27.3 -22	19.8	
8	41 55.6 125	16 20.0	62	54 50.3 -17	24.7	7 31.9 -22	19.8	
10	70 58.5 124	16 32.4	60	84 55.2 -17	24.7	37 36.5 -22	19.7	
12	100 1.4 124	16 44.5	59	115 .2 -17	24.7	67 41.1 -22	19.7	
14	129 4.2 124	16 56.2	57	145 5.1 -17	24.7	97 45.7 -22	19.7	
16	158 7.0 124	17 7.6	55	175 10.0 -17	24.7	127 50.2 -22	19.7	
18	187 9.8 124	17 18.6	54	205 14.9 -17	24.7	157 54.8 -22	19.7	
20	216 12.5 124	17 29.4	52	235 19.8 -17	24.7	187 59.4 -22	19.6	
22	245 15.2 123	17 39.8	50	265 24.7 -17	24.7	218 4.0 -22	19.6	
Δ				25	0	23	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 38	17 45	0 42	2 20	21 25	1.3	13 29	2.8
55	6 33	17 50	0 36	2 1	21 51	1.5	13 4	2.6
50	6 29	17 53	0 32	1 48	22 11	1.6	12 45	2.5
45	6 26	17 57	0 29	1 38	22 26	1.6	12 30	2.4
40	6 23	17 59	0 27	1 30	22 39	1.7	12 19	2.3
35	6 20	18 2	0 25	1 24	22 49	1.8	12 8	2.3
30	6 18	18 4	0 24	1 19	22 59	1.8	11 59	2.2
20	6 14	18 7	0 22	1 13	23 15	2.0	11 44	2.1
10	6 11	18 11	0 21	1 10	23 29	2.0	11 31	2.0
0	6 7	18 14	0 21	1 9	23 43	2.0	11 18	2.0
10	6 4	18 17	0 21	1 10	23 56	2.0	11 6	1.9
20	6 0	18 21	0 22	1 14	...	0	10 52	1.8
30	5 56	18 25	0 24	1 21	...	0	10 37	1.7
35	5 53	18 28	0 25	1 26	...	0	10 28	1.7
40	5 50	18 31	0 27	1 33	...	0	10 18	1.6
45	5 46	18 34	0 30	1 42	0 2	2.4	10 7	1.6
50	5 42	18 38	0 33	1 54	...	0	9 52	1.5
55	5 37	18 43	0 37	2 11	0 32	2.7	9 34	1.3
60	5 30	18 50	0 43	2 39	0 55	2.9	9 10	1.1

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	-10 53.3	.6	16.1	T _m	5 7	2.0	55.2 15.0
12	-10 45.9	T _{m☉}	12 h 10.8 min	Starost	20.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	13 4	.1	358	-2.9	♃	4 21	.0	129	-1.8
♂	6 33	.1	96	.3	♄	7 30	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 20.4 - 4	36.2	166 38.0	163 51.7 - 0	7.6	262 7.4 -23	11.5
2	207 20.7 - 4	34.3	196 42.9	193 51.0 - 0	5.0	292 9.2 -23	11.7
4	237 21.0 - 4	32.3	226 47.9	223 50.2 - 0	2.5	322 10.9 -23	11.9
6	267 21.3 - 4	30.4	256 52.8	253 49.5 0	.1	352 12.7 -23	12.1
8	297 21.6 - 4	28.4	286 57.7	283 48.8 0	2.7	22 14.4 -23	12.3
10	327 21.9 - 4	26.4	317 2.6	313 48.0 0	5.3	52 16.2 -23	12.5
12	357 22.3 - 4	24.5	347 7.6	343 47.3 0	7.8	82 17.9 -23	12.7
14	27 22.6 - 4	22.5	17 12.5	13 46.6 0	10.4	112 19.7 -23	12.9
16	57 22.9 - 4	20.6	47 17.4	43 45.8 0	13.0	142 21.4 -23	13.0
18	87 23.2 - 4	18.6	77 22.4	73 45.1 0	15.6	172 23.2 -23	13.2
20	117 23.5 - 4	16.7	107 27.3	103 44.4 0	18.1	202 25.0 -23	13.4
22	147 23.8 - 4	14.7	137 32.2	133 43.7 0	20.7	232 26.7 -23	13.6
Δ	2	10		-4	13	9	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	274 17.9 123	17 49.8	49	295 29.7 -17	24.7	248 8.6 -22	19.6	
2	303 20.5 123	17 59.5	47	325 34.6 -17	24.6	278 13.2 -22	19.6	
4	332 23.1 123	18 8.9	45	355 39.5 -17	24.6	308 17.8 -22	19.6	
6	1 25.7 123	18 17.9	43	25 44.4 -17	24.6	338 22.4 -22	19.5	
8	30 28.2 122	18 26.6	42	55 49.4 -17	24.6	8 27.0 -22	19.5	
10	59 30.7 122	18 34.9	40	85 54.3 -17	24.6	38 31.6 -22	19.5	
12	88 33.2 122	18 42.9	38	115 59.2 -17	24.6	68 36.2 -22	19.5	
14	117 35.6 122	18 50.5	36	146 4.1 -17	24.6	98 40.8 -22	19.5	
16	146 38.0 122	18 57.7	35	176 9.1 -17	24.6	128 45.3 -22	19.5	
18	175 40.4 122	19 4.6	33	206 14.0 -17	24.5	158 49.9 -22	19.4	
20	204 42.7 121	19 11.2	31	236 18.9 -17	24.5	188 54.5 -22	19.4	
22	233 45.0 121	19 17.4	29	266 23.9 -17	24.5	218 59.1 -22	19.4	
Δ				25	0	23	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 35	17 47	0 42	2 21	21 57	1.7	14 35	2.4
55	6 31	17 52	0 36	2 2	22 27	1.7	14 6	2.3
50	6 27	17 55	0 32	1 48	22 48	1.8	13 44	2.3
45	6 24	17 58	0 29	1 38	23 5	1.8	13 28	2.2
40	6 21	18 0	0 27	1 30	23 20	2.0	13 14	2.2
35	6 19	18 2	0 25	1 24	23 31	2.0	13 2	2.1
30	6 17	18 4	0 24	1 19	23 42	2.0	12 52	2.1
20	6 14	18 8	0 22	1 13	...	0	12 35	2.1
10	6 10	18 11	0 21	1 10	...	0	12 20	2.0
0	6 7	18 14	0 21	1 9	...	0	12 6	2.0
10	6 4	18 17	0 21	1 10	...	0	11 51	1.9
20	6 0	18 20	0 22	1 14	0 10	2.1	11 36	1.9
30	5 56	18 24	0 24	1 21	0 27	2.2	11 19	1.9
35	5 54	18 27	0 25	1 26	0 37	2.2	11 9	1.8
40	5 51	18 29	0 27	1 33	0 48	2.2	10 57	1.8
45	5 48	18 32	0 30	1 41	1 1	2.3	10 44	1.7
50	5 44	18 36	0 33	1 53	1 17	2.4	10 27	1.7
55	5 39	18 41	0 37	2 11	1 37	2.5	10 7	1.6
60	5 32	18 47	0 43	2 37	2 5	2.6	9 38	1.5

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	-10 38.5	.6	16.1	T _m	5 54	2.0	54.7 14.9
12	-10 31.0	T _{m☉}	12 h 10.5 min	Starost	21.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	13 5	.1	357	-2.9	♃	4 17	.0	129	-1.8
♂	6 31	.1	95	.3	♄	7 26	.0	82	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 24.2 - 4	12.8	167 37.1	163 42.9	0 23.3	262 28.5 -23	13.8
2	207 24.5 - 4	10.8	197 42.1	193 42.2	0 25.8	292 30.2 -23	14.0
4	237 24.8 - 4	8.8	227 47.0	223 41.5	0 28.4	322 32.0 -23	14.2
6	267 25.1 - 4	6.9	257 51.9	253 40.7	0 31.0	352 33.7 -23	14.4
8	297 25.4 - 4	4.9	287 56.9	283 40.0	0 33.6	22 35.5 -23	14.6
10	327 25.8 - 4	3.0	318 1.8	313 39.3	0 36.1	52 37.3 -23	14.7
12	357 26.1 - 4	1.0	348 6.7	343 38.5	0 38.7	82 39.0 -23	14.9
14	27 26.4 - 3	59.0	18 11.6	13 37.8	0 41.3	112 40.8 -23	15.1
16	57 26.7 - 3	57.1	48 16.6	43 37.1	0 43.9	142 42.5 -23	15.3
18	87 27.0 - 3	55.1	78 21.5	73 36.4	0 46.4	172 44.3 -23	15.5
20	117 27.4 - 3	53.1	108 26.4	103 35.6	0 49.0	202 46.1 -23	15.7
22	147 27.7 - 3	51.2	138 31.4	133 34.9	0 51.6	232 47.8 -23	15.8
Δ	2	10		-4	13	9	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	262 47.3 121	19 23.2	27	296 28.8 -17	24.5	249 3.7 -22	19.4	
2	291 49.5 121	19 28.7	26	326 33.8 -17	24.5	279 8.3 -22	19.4	
4	320 51.7 121	19 33.8	24	356 38.7 -17	24.5	309 12.9 -22	19.3	
6	349 53.9 121	19 38.5	22	26 43.6 -17	24.5	339 17.5 -22	19.3	
8	18 56.0 121	19 42.9	20	56 48.6 -17	24.4	9 22.1 -22	19.3	
10	47 58.2 121	19 46.9	18	86 53.5 -17	24.4	39 26.7 -22	19.3	
12	77 .3 120	19 50.5	16	116 58.5 -17	24.4	69 31.3 -22	19.3	
14	106 2.4 120	19 53.8	15	147 3.4 -17	24.4	99 35.9 -22	19.2	
16	135 4.5 120	19 56.7	13	177 8.4 -17	24.4	129 40.5 -22	19.2	
18	164 6.5 120	19 59.3	11	207 13.3 -17	24.3	159 45.1 -22	19.2	
20	193 8.6 120	20 1.4	9	237 18.3 -17	24.3	189 49.7 -22	19.2	
22	222 10.6 120	20 3.2	7	267 23.2 -17	24.3	219 54.3 -22	19.2	
Δ				25	0	23	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 32	17 50	0 41	2 21	22 37	2.1	15 34	2.0
55	6 28	17 54	0 36	2 2	23 9	2.1	15 2	2.0
50	6 25	17 57	0 32	1 48	23 32	2.0	14 39	2.0
45	6 22	17 59	0 29	1 38	23 50	2.0	14 21	2.0
40	6 20	18 1	0 27	1 30	...	...	14 6	2.0
35	6 18	18 3	0 25	1 24	...	...	13 54	2.0
30	6 16	18 5	0 24	1 19	...	...	13 43	2.0
20	6 13	18 8	0 22	1 13	0 0	1.9	13 25	2.0
10	6 10	18 11	0 21	1 10	0 16	2.0	13 8	2.0
0	6 7	18 14	0 21	1 9	0 30	2.0	12 53	2.0
10	6 4	18 16	0 21	1 10	0 45	2.0	12 38	2.0
20	6 1	18 19	0 22	1 14	1 1	2.0	12 22	2.0
30	5 57	18 23	0 24	1 21	1 19	2.1	12 4	2.0
35	5 55	18 25	0 25	1 26	1 29	2.1	11 53	2.0
40	5 52	18 28	0 27	1 32	1 42	2.1	11 40	2.0
45	5 49	18 31	0 30	1 41	1 56	2.1	11 26	1.9
50	5 45	18 34	0 33	1 53	2 14	2.2	11 8	1.9
55	5 41	18 38	0 37	2 10	3 6	2.2	10 45	1.9
60	5 35	18 44	0 43	2 36	3 7	2.2	10 13	1.9
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	-10 23.4	.6	16.1	T _m	6 42	2.0	54.3 14.8
12	-10 15.7	T _{m☉}	12 h 10.3 min	Starost	22.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 5	.1	356	-2.9	♃	4 13	.0	129	-1.8
♁	6 30	.1	95	.2	♄	7 23	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 28.0 - 3	49.2	168 36.3	163 34.2	0 54.2	262 49.6 -23	16.0
2	207 28.3 - 3	47.3	198 41.2	193 33.4	0 56.7	292 51.4 -23	16.2
4	237 28.7 - 3	45.3	228 46.1	223 32.7	0 59.3	322 53.1 -23	16.4
6	267 29.0 - 3	43.3	258 51.1	253 32.0	1 1.9	352 54.9 -23	16.5
8	297 29.3 - 3	41.4	288 56.0	283 31.3	1 4.5	22 56.7 -23	16.7
10	327 29.6 - 3	39.4	319 .9	313 30.5	1 7.0	52 58.4 -23	16.9
12	357 30.0 - 3	37.4	349 5.9	343 29.8	1 9.6	83 .2 -23	17.1
14	27 30.3 - 3	35.5	19 10.8	13 29.1	1 12.2	113 1.9 -23	17.2
16	57 30.6 - 3	33.5	49 15.7	43 28.3	1 14.8	143 3.7 -23	17.4
18	87 31.0 - 3	31.5	79 20.6	73 27.6	1 17.3	173 5.5 -23	17.6
20	117 31.3 - 3	29.6	109 25.6	103 26.9	1 19.9	203 7.2 -23	17.7
22	147 31.6 - 3	27.6	139 30.5	133 26.2	1 22.5	233 9.0 -23	17.9
Δ	2	10		-4	13	9	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	251 12.6 120	20 4.6	5	297 28.2 -17	24.3	249 59.0 -22	19.2	
2	280 14.6 120	20 5.7	3	327 33.1 -17	24.3	280 3.6 -22	19.1	
4	309 16.6 120	20 6.4	2	357 38.1 -17	24.3	310 8.2 -22	19.1	
6	338 18.6 120	20 6.7	0	27 43.0 -17	24.2	340 12.8 -22	19.1	
8	7 20.6 120	20 6.6	-2	57 48.0 -17	24.2	10 17.4 -22	19.1	
10	36 22.5 120	20 6.2	-4	87 52.9 -17	24.2	40 22.0 -22	19.1	
12	65 24.5 120	20 5.4	-6	117 57.9 -17	24.2	70 26.6 -22	19.0	
14	94 26.5 120	20 4.2	-8	148 2.9 -17	24.2	100 31.2 -22	19.0	
16	123 28.5 120	20 2.6	-10	178 7.8 -17	24.1	130 35.8 -22	19.0	
18	152 30.5 120	20 .7	-12	208 12.8 -17	24.1	160 40.4 -22	19.0	
20	181 32.5 120	19 58.4	-13	238 17.8 -17	24.1	190 45.0 -22	19.0	
22	210 34.5 120	19 55.7	-15	268 22.7 -17	24.1	220 49.7 -22	18.9	
Δ				25	0	23	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 29	17 52	0 41	2 21	23 26	2.0	16 23	1.6
55	6 25	17 56	0 36	2 2	23 58	2.0	15 51	1.7
50	6 23	17 58	0 32	1 48	...	...	15 28	1.8
45	6 20	18 1	0 29	1 38	...	...	15 10	1.8
40	6 18	18 2	0 27	1 30	0 4	2.0	14 55	1.9
35	6 16	18 4	0 25	1 24	0 17	2.0	14 42	1.9
30	6 15	18 6	0 24	1 19	0 28	2.0	14 31	1.9
20	6 12	18 8	0 22	1 13	0 46	2.0	14 13	1.9
10	6 9	18 11	0 21	1 10	1 3	2.0	13 57	2.0
0	6 7	18 13	0 21	1 9	1 18	2.0	13 41	2.0
10	6 4	18 16	0 21	1 10	1 33	2.0	13 26	2.0
20	6 1	18 19	0 22	1 14	1 50	2.0	13 10	2.0
30	5 58	18 22	0 24	1 20	2 9	2.0	12 51	2.1
35	5 56	18 24	0 25	1 26	2 20	2.0	12 40	2.1
40	5 53	18 26	0 27	1 32	2 32	1.9	12 27	2.1
45	5 50	18 29	0 30	1 41	2 47	1.9	12 12	2.1
50	5 47	18 32	0 33	1 53	3 5	1.9	11 54	2.2
55	5 43	18 36	0 37	2 9	3 29	1.9	11 31	2.2
60	5 37	18 41	0 42	2 34	4 1	1.8	10 58	2.3
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	-10 7.9	.7	16.1	T _m	7 30	2.0	54.2 14.8
12	-10 .1	T _{m☉}	12 h 10.0 min	Starost	23.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 6	.1	355	-2.9	♃	4 9	.0	129	-1.8
♁	6 28	.1	94	.2	♄	7 19	.0	81	.8

12. MART

2018.

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 31.9 - 3	25.6	169 35.4	163 25.4	1 25.0	263 10.8	-23 18.1
2	207 32.3 - 3	23.7	199 40.4	193 24.7	1 27.6	293 12.5	-23 18.2
4	237 32.6 - 3	21.7	229 45.3	223 24.0	1 30.2	323 14.3	-23 18.4
6	267 32.9 - 3	19.7	259 50.2	253 23.2	1 32.8	353 16.1	-23 18.6
8	297 33.3 - 3	17.8	289 55.1	283 22.5	1 35.3	383 17.9	-23 18.7
10	327 33.6 - 3	15.8	320 .1	313 21.8	1 37.9	413 19.6	-23 18.9
12	357 33.9 - 3	13.8	350 5.0	343 21.1	1 40.5	443 21.4	-23 19.0
14	27 34.3 - 3	11.9	20 9.9	13 20.3	1 43.1	113 23.2	-23 19.2
16	57 34.6 - 3	9.9	50 14.8	43 19.6	1 45.6	143 24.9	-23 19.4
18	87 34.9 - 3	7.9	80 19.8	73 18.9	1 48.2	173 26.7	-23 19.5
20	117 35.3 - 3	6.0	110 24.7	103 18.1	1 50.8	203 28.5	-23 19.7
22	147 35.6 - 3	4.0	140 29.6	133 17.4	1 53.3	233 30.3	-23 19.8
Δ	2	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 26	17 55	0 41	2 22	. . .	.0	17 2	1.3
55	6 23	17 58	0 36	2 2	. . .	.0	16 32	1.4
50	6 20	17 60	0 32	1 48	0 21	2.3	16 10	1.6
45	6 18	18 2	0 29	1 38	0 39	2.2	15 53	1.6
40	6 17	18 4	0 27	1 30	0 53	2.2	15 39	1.7
35	6 15	18 5	0 25	1 24	1 6	2.2	15 28	1.7
30	6 14	18 6	0 24	1 19	1 16	2.1	15 17	1.8
20	6 11	18 9	0 22	1 13	1 35	2.1	14 59	1.9
10	6 9	18 11	0 21	1 10	1 51	2.0	14 44	1.9
0	6 6	18 13	0 21	1 9	2 6	2.0	14 29	2.0
10	6 4	18 15	0 21	1 10	2 21	1.9	14 14	2.0
20	6 1	18 18	0 22	1 14	2 37	1.9	13 59	2.1
30	5 58	18 21	0 24	1 20	2 56	1.8	13 41	2.2
35	5 56	18 23	0 25	1 25	3 6	1.8	13 30	2.2
40	5 54	18 25	0 27	1 32	3 19	1.8	13 18	2.3
45	5 52	18 27	0 29	1 41	3 33	1.7	13 4	2.3
50	5 49	18 30	0 33	1 52	3 51	1.7	12 46	2.4
55	5 45	18 33	0 37	2 9	4 14	1.6	12 24	2.5
60	5 40	18 38	0 42	2 33	4 45	1.4	11 53	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	239 36.5	120	19 52.7	-17	298 27.7	-17 24.0	250 54.3	-22 18.9
2	268 38.5	120	19 49.3	-19	328 32.7	-17 24.0	280 58.9	-22 18.9
4	297 40.6	120	19 45.5	-21	358 37.6	-17 24.0	311 3.5	-22 18.9
6	326 42.7	120	19 41.3	-23	28 42.6	-17 24.0	341 8.1	-22 18.9
8	355 44.8	121	19 36.8	-24	58 47.6	-17 23.9	11 12.7	-22 18.9
10	24 46.9	121	19 31.9	-26	88 52.6	-17 23.9	41 17.3	-22 18.8
12	53 49.0	121	19 26.7	-28	118 57.5	-17 23.9	71 22.0	-22 18.8
14	82 51.2	121	19 21.1	-30	149 2.5	-17 23.9	101 26.6	-22 18.8
16	111 53.4	121	19 15.1	-32	179 7.5	-17 23.8	131 31.2	-22 18.8
18	140 55.6	121	19 8.8	-33	209 12.5	-17 23.8	161 35.8	-22 18.8
20	169 57.8	121	19 2.1	-35	239 17.5	-17 23.8	191 40.4	-22 18.7
22	199 .1	122	18 55.0	-37	269 22.5	-17 23.8	221 45.0	-22 18.7
Δ					25	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 9 52.2	.7	16.1	T _m	8 18	2.0	54.2 14.8		
12	- 9 44.2	T _{m☉}	12 h 9.7 min	Starost	24.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 7	.1	354	-2.9	♄	4 5	.0	129	-1.8
♂	6 27	.1	94	.2	♂	7 15	.0	81	.8

13. MART

UTORAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 36.0 - 3	2.0	170 34.6	163 16.7	1 55.9	263 32.0	-23 20.0
2	207 36.3 - 3	.1	200 39.5	193 16.0	1 58.5	293 33.8	-23 20.1
4	237 36.6 - 2	58.1	230 44.4	223 15.2	2 1.0	323 35.6	-23 20.3
6	267 37.0 - 2	56.1	260 49.3	253 14.5	2 3.6	353 37.3	-23 20.5
8	297 37.3 - 2	54.2	290 54.3	283 13.8	2 6.2	383 39.1	-23 20.6
10	327 37.6 - 2	52.2	320 59.2	313 13.0	2 8.8	413 40.9	-23 20.8
12	357 38.0 - 2	50.2	351 4.1	343 12.3	2 11.3	443 42.7	-23 20.9
14	27 38.3 - 2	48.2	21 9.1	13 11.6	2 13.9	113 44.4	-23 21.1
16	57 38.7 - 2	46.3	51 14.0	43 10.9	2 16.5	143 46.2	-23 21.2
18	87 39.0 - 2	44.3	81 18.9	73 10.1	2 19.0	173 48.0	-23 21.3
20	117 39.3 - 2	42.3	111 23.8	103 9.4	2 21.6	203 49.8	-23 21.5
22	147 39.7 - 2	40.4	141 28.8	133 8.7	2 24.2	233 51.6	-23 21.6
Δ	2	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 23	17 57	0 41	2 22	0 26	2.8	17 32	1.0
55	6 20	17 60	0 36	2 2	0 55	2.6	17 7	1.2
50	6 18	18 2	0 32	1 48	1 16	2.5	16 48	1.4
45	6 17	18 3	0 29	1 38	1 32	2.4	16 33	1.5
40	6 15	18 5	0 27	1 30	1 46	2.3	16 20	1.5
35	6 14	18 6	0 25	1 24	1 57	2.3	16 10	1.6
30	6 12	18 7	0 24	1 19	2 7	2.2	16 0	1.7
20	6 10	18 9	0 22	1 13	2 25	2.1	15 44	1.8
10	6 8	18 11	0 21	1 10	2 40	2.0	15 30	1.9
0	6 6	18 13	0 21	1 9	2 54	2.0	15 17	2.0
10	6 4	18 15	0 21	1 10	3 8	1.9	15 3	2.0
20	6 2	18 17	0 22	1 14	3 23	1.8	14 49	2.1
30	5 59	18 20	0 24	1 20	3 40	1.7	14 33	2.2
35	5 57	18 21	0 25	1 25	3 50	1.7	14 23	2.3
40	5 55	18 23	0 27	1 32	4 1	1.6	14 12	2.4
45	5 53	18 25	0 29	1 40	4 15	1.5	13 59	2.5
50	5 50	18 28	0 32	1 52	4 31	1.5	13 44	2.6
55	5 47	18 31	0 37	2 8	4 52	1.3	13 23	2.7
60	5 42	18 35	0 42	2 32	5 20	1.1	12 56	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	228 2.4	122	18 47.6	-39	299 27.4	-17 23.7	251 49.7	-22 18.7
2	257 4.8	122	18 39.8	-41	329 32.4	-17 23.7	281 54.3	-22 18.7
4	286 7.2	122	18 31.7	-42	359 37.4	-17 23.7	311 58.9	-22 18.7
6	315 9.6	122	18 23.2	-44	29 42.4	-17 23.7	342 3.5	-22 18.7
8	344 12.1	123	18 14.4	-46	59 47.4	-17 23.6	12 8.2	-22 18.6
10	13 14.6	123	18 5.2	-48	89 52.4	-17 23.6	42 12.8	-22 18.6
12	42 17.2	123	17 55.7	-49	119 57.4	-17 23.6	72 17.4	-22 18.6
14	71 19.8	123	17 45.8	-51	150 2.4	-17 23.5	102 22.0	-22 18.6
16	100 22.4	123	17 35.6	-53	180 7.4	-17 23.5	132 26.7	-22 18.6
18	129 25.1	124	17 25.1	-54	210 12.4	-17 23.5	162 31.3	-22 18.6
20	158 27.8	124	17 14.2	-56	240 17.4	-17 23.5	192 35.9	-22 18.5
22	187 30.6	124	17 3.0	-58	270 22.4	-17 23.4	222 40.5	-22 18.5
Δ					25	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 9 36.2	.7	16.1	T _m	9 5	2.0	54.4 14.8		
12	- 9 28.0	T _{m☉}	12 h 9.5 min	Starost	25.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 7	.1	353	-2.9	♄	4 2	.0	129	-1.8
♂	6 25	.1	93	.2	♂	7 12	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 40.0 - 2 38.4		171 33.7	163 7.9 2 26.7	263 53.3 -23 21.8		
2	207 40.4 - 2 36.4		201 38.6	193 7.2 2 29.3	293 55.1 -23 21.9		
4	237 40.7 - 2 34.4		231 43.6	223 6.5 2 31.9	323 56.9 -23 22.1		
6	267 41.1 - 2 32.5		261 48.5	253 5.7 2 34.4	353 58.7 -23 22.2		
8	297 41.4 - 2 30.5		291 53.4	283 5.0 2 37.0	24 .5 -23 22.3		
10	327 41.7 - 2 28.5		321 58.3	313 4.3 2 39.6	54 2.2 -23 22.5		
12	357 42.1 - 2 26.5		352 3.3	343 3.6 2 42.1	84 4.0 -23 22.6		
14	27 42.4 - 2 24.6		22 8.2	13 2.8 2 44.7	114 5.8 -23 22.8		
16	57 42.8 - 2 22.6		52 13.1	43 2.1 2 47.3	144 7.6 -23 22.9		
18	87 43.1 - 2 20.6		82 18.1	73 1.4 2 49.8	174 9.4 -23 23.0		
20	117 43.5 - 2 18.7		112 23.0	103 .6 2 52.4	204 11.1 -23 23.2		
22	147 43.8 - 2 16.7		142 27.9	132 59.9 2 55.0	234 12.9 -23 23.3		
Δ	2	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 20	17 60	0 41	2 23	1 33	3.0	17 57	.8
55	6 18	18 2	0 36	2 3	1 57	2.8	17 36	1.0
50	6 16	18 3	0 32	1 49	2 15	2.6	17 20	1.2
45	6 15	18 4	0 29	1 38	2 30	2.5	17 8	1.3
40	6 13	18 6	0 27	1 30	2 42	2.4	16 57	1.4
35	6 12	18 7	0 25	1 24	2 52	2.3	16 49	1.5
30	6 11	18 8	0 24	1 20	3 0	2.3	16 41	1.6
20	6 9	18 9	0 22	1 13	3 16	2.2	16 27	1.7
10	6 8	18 11	0 21	1 10	3 29	2.1	16 15	1.8
0	6 6	18 12	0 21	1 9	3 41	2.0	16 4	1.9
10	6 4	18 14	0 21	1 10	3 54	1.9	15 53	2.0
20	6 2	18 16	0 22	1 13	4 7	1.8	15 40	2.2
30	5 60	18 18	0 24	1 20	4 22	1.6	15 27	2.3
35	5 58	18 20	0 25	1 25	4 30	1.6	15 18	2.4
40	5 56	18 21	0 27	1 32	4 40	1.5	15 9	2.5
45	5 54	18 23	0 29	1 40	4 52	1.4	14 58	2.6
50	5 52	18 25	0 32	1 51	5 6	1.3	14 45	2.7
55	5 49	18 28	0 36	2 7	5 24	1.1	14 28	2.9
60	5 45	18 32	0 42	2 31	5 47	.9	14 6	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	216 33.4 124	16 51.5	-59		300 27.4 -17 23.4		252 45.2 -22 18.5	
2	245 36.3 125	16 39.6	-61		330 32.4 -17 23.4		282 49.8 -22 18.5	
4	274 39.2 125	16 27.4	-63		0 37.4 -17 23.3		312 54.4 -22 18.5	
6	303 42.2 125	16 14.9	-64		30 42.4 -17 23.3		342 59.1 -22 18.4	
8	332 45.2 125	16 2.1	-66		60 47.4 -17 23.3		13 3.7 -22 18.4	
10	1 48.3 126	15 49.0	-67		90 52.4 -17 23.2		43 8.3 -22 18.4	
12	30 51.4 126	15 35.5	-69		120 57.4 -17 23.2		73 13.0 -22 18.4	
14	59 54.6 126	15 21.7	-70		151 2.4 -17 23.2		103 17.6 -22 18.4	
16	88 57.8 126	15 7.7	-72		181 7.4 -17 23.1		133 22.2 -22 18.4	
18	118 1.1 127	14 53.3	-73		211 12.4 -17 23.1		163 26.9 -22 18.3	
20	147 4.4 127	14 38.6	-75		241 17.5 -17 23.1		193 31.5 -22 18.3	
22	176 7.8 127	14 23.7	-76		271 22.5 -17 23.0		223 36.1 -22 18.3	
Δ					25	0	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 9 19.9	.7	16.1	T _m	9 53	1.9	54.7 14.9
12	- 9 11.6	T _{m☉}	12 h 9.2 min	Starost	26.1 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	13 8	.1	352	-3.0	♃	3 58	.0	129	-1.8
♂	6 24	.1	92	.2	♄	7 8	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 44.2 - 2 14.7		172 32.8	162 59.2 2 57.5	264 14.7 -23 23.4		
2	207 44.5 - 2 12.7		202 37.8	192 58.4 3 .1	294 16.5 -23 23.6		
4	237 44.9 - 2 10.8		232 42.7	222 57.7 3 2.6	324 18.3 -23 23.7		
6	267 45.2 - 2 8.8		262 47.6	252 57.0 3 5.2	354 20.1 -23 23.8		
8	297 45.6 - 2 6.8		292 52.6	282 56.2 3 7.8	24 21.9 -23 24.0		
10	327 45.9 - 2 4.8		322 57.5	312 55.5 3 10.3	54 23.6 -23 24.1		
12	357 46.3 - 2 2.9		353 2.4	342 54.8 3 12.9	84 25.4 -23 24.2		
14	27 46.6 - 2 .9		23 7.3	12 54.0 3 15.4	114 27.2 -23 24.3		
16	57 47.0 - 1 58.9		53 12.3	42 53.3 3 18.0	144 29.0 -23 24.5		
18	87 47.3 - 1 56.9		83 17.2	72 52.6 3 20.6	174 30.8 -23 24.6		
20	117 47.7 - 1 55.0		113 22.1	102 51.8 3 23.1	204 32.6 -23 24.7		
22	147 48.0 - 1 53.0		143 27.1	132 51.1 3 25.7	234 34.4 -23 24.8		
Δ	2	10		-4	13	9	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 17	18 2	0 41	2 23	2 45	3.2	18 16	.7
55	6 15	18 4	0 36	2 3	3 4	2.9	18 1	.9
50	6 14	18 5	0 32	1 49	3 19	2.7	17 49	1.1
45	6 13	18 6	0 29	1 38	3 30	2.6	17 40	1.2
40	6 12	18 7	0 27	1 30	3 40	2.5	17 32	1.3
35	6 11	18 7	0 25	1 24	3 48	2.4	17 25	1.4
30	6 10	18 8	0 24	1 20	3 55	2.3	17 19	1.5
20	6 9	18 10	0 22	1 13	4 7	2.2	17 8	1.7
10	6 7	18 11	0 21	1 10	4 18	2.1	16 59	1.8
0	6 6	18 12	0 21	1 9	4 28	1.9	16 51	1.9
10	6 4	18 14	0 21	1 10	4 38	1.8	16 42	2.1
20	6 2	18 15	0 22	1 13	4 49	1.7	16 32	2.2
30	6 0	18 17	0 24	1 20	5 1	1.6	16 22	2.3
35	5 59	18 18	0 25	1 25	5 8	1.5	16 15	2.4
40	5 57	18 20	0 27	1 31	5 16	1.4	16 8	2.5
45	5 56	18 21	0 29	1 40	5 25	1.3	15 60	2.6
50	5 54	18 23	0 32	1 51	5 37	1.1	15 50	2.8
55	5 51	18 26	0 36	2 7	5 50	1.0	15 37	3.0
60	5 47	18 29	0 42	2 30	6 9	.7	15 20	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	205 11.2 127	14 8.4	-78		301 27.5 -17 23.0		253 40.8 -22 18.3	
2	234 14.6 127	13 52.9	-79		331 32.5 -17 23.0		283 45.4 -22 18.3	
4	263 18.1 128	13 37.1	-80		1 37.5 -17 22.9		313 50.0 -22 18.2	
6	292 21.6 128	13 21.0	-82		31 42.5 -17 22.9		343 54.7 -22 18.2	
8	321 25.2 128	13 4.7	-83		61 47.6 -17 22.9		13 59.3 -22 18.2	
10	350 28.8 128	12 48.0	-84		91 52.6 -17 22.8		44 3.9 -22 18.2	
12	19 32.5 128	12 31.1	-86		121 57.6 -17 22.8		74 8.6 -22 18.2	
14	48 36.2 129	12 14.0	-87		152 2.6 -17 22.8		104 13.2 -22 18.2	
16	77 39.9 129	11 56.6	-88		182 7.7 -17 22.7		134 17.9 -22 18.1	
18	106 43.6 129	11 38.9	-90		212 12.7 -17 22.7		164 22.5 -22 18.1	
20	135 47.4 129	11 21.0	-91		242 17.7 -17 22.6		194 27.2 -22 18.1	
22	164 51.2 129	11 2.9	-92		272 22.8 -17 22.6		224 31.8 -22 18.1	
Δ					25	0	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 9 3.3	.7	16.1	T _m	10 39	2.0	55.1 15.0
12	- 8 54.9	T _{m☉}	12 h 8.9 min	Starost	27.1 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	13 8	.1	350	-3.0	♃	3 54	.0	129	-1.8
♂	6 23	.1	92	.2	♄	7 4	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 48.4 - 1 51.0		173 32.0	162 50.4 3 28.2	264 36.2 -23 25.0		
2	207 48.7 - 1 49.0		203 36.9	192 49.6 3 30.8	294 38.0 -23 25.1		
4	237 49.1 - 1 47.0		233 41.8	222 48.9 3 33.4	324 39.7 -23 25.2		
6	267 49.4 - 1 45.1		263 46.8	252 48.2 3 35.9	354 41.5 -23 25.3		
8	297 49.8 - 1 43.1		293 51.7	282 47.4 3 38.5	24 43.3 -23 25.4		
10	327 50.1 - 1 41.1		323 56.6	312 46.7 3 41.0	54 45.1 -23 25.5		
12	357 50.5 - 1 39.1		354 1.5	342 46.0 3 43.6	84 46.9 -23 25.7		
14	27 50.8 - 1 37.2		24 6.5	12 45.2 3 46.1	114 48.7 -23 25.8		
16	57 51.2 - 1 35.2		54 11.4	42 44.5 3 48.7	144 50.5 -23 25.9		
18	87 51.5 - 1 33.2		84 16.3	72 43.7 3 51.2	174 52.3 -23 26.0		
20	117 51.9 - 1 31.2		114 21.3	102 43.0 3 53.8	204 54.1 -23 26.1		
22	147 52.3 - 1 29.3		144 26.2	132 42.3 3 56.3	234 55.9 -23 26.2		
Δ	2	10		-4 13	9	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 14	18 4	0 42	2 24	4 1	3.3	18 32	.6
55	6 13	18 5	0 36	2 3	4 14	3.0	18 23	.8
50	6 12	18 6	0 32	1 49	4 25	2.8	18 15	1.0
45	6 11	18 7	0 29	1 38	4 33	2.7	18 9	1.2
40	6 10	18 8	0 27	1 30	4 40	2.6	18 4	1.3
35	6 10	18 8	0 25	1 24	4 45	2.4	17 59	1.4
30	6 9	18 9	0 24	1 20	4 51	2.4	17 56	1.5
20	6 8	18 10	0 22	1 13	4 59	2.2	17 49	1.7
10	6 7	18 11	0 21	1 10	5 7	2.1	17 43	1.8
0	6 5	18 12	0 21	1 9	5 15	1.9	17 37	1.9
10	6 4	18 13	0 21	1 10	5 22	1.8	17 31	2.1
20	6 3	18 14	0 22	1 13	5 30	1.7	17 25	2.2
30	6 1	18 16	0 24	1 20	5 38	1.5	17 18	2.4
35	5 60	18 17	0 25	1 25	5 44	1.4	17 14	2.5
40	5 58	18 18	0 27	1 31	5 49	1.3	17 9	2.6
45	5 57	18 19	0 29	1 40	5 56	1.2	17 3	2.7
50	5 55	18 21	0 32	1 51	6 4	1.1	16 57	2.9
55	5 53	18 23	0 36	2 6	6 14	.9	16 48	3.0
60	5 50	18 26	0 42	2 29	6 27	.6	16 38	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	193 55.1 129	10 44.5 -93			302 27.8 -17 22.6		254 36.4 -22 18.1	
2	222 58.9 129	10 25.9 -94			332 32.8 -17 22.5		284 41.1 -22 18.1	
4	252 2.8 130	10 7.0 -95			2 37.9 -17 22.5		314 45.7 -22 18.0	
6	281 6.7 130	9 48.0 -96			32 42.9 -17 22.5		344 50.4 -22 18.0	
8	310 10.7 130	9 28.7 -97			62 47.9 -17 22.4		14 55.0 -22 18.0	
10	339 14.6 130	9 9.2 -98			92 53.0 -17 22.4		44 59.7 -22 18.0	
12	8 18.5 130	8 49.5 -99			122 58.0 -17 22.3		75 4.3 -22 18.0	
14	37 22.5 130	8 29.7 -100			153 3.1 -17 22.3		105 9.0 -22 18.0	
16	66 26.5 130	8 9.6 -101			183 8.1 -17 22.3		135 13.6 -22 17.9	
18	95 30.4 130	7 49.3 -102			213 13.2 -17 22.2		165 18.3 -22 17.9	
20	124 34.4 130	7 28.9 -103			243 18.2 -17 22.2		195 22.9 -22 17.9	
22	153 38.3 130	7 8.3 -104			273 23.2 -17 22.1		225 27.6 -22 17.9	
Δ					25	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 8 46.5	.7	16.1	T _m	11 26	1.9	55.6 15.1		
12	- 8 38.0	T _{m☉}	12 h 8.6 min	Starost	28.1 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 9	.1	349	-3.0	♄	3 50	.0	129	-1.8
♂	6 21	.1	91	.1	♂	7 0	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 52.6 - 1 27.3		174 31.1	162 41.5 3 58.9	264 57.7 -23 26.3		
2	207 53.0 - 1 25.3		204 36.0	192 40.8 4 1.4	294 59.5 -23 26.4		
4	237 53.3 - 1 23.3		234 41.0	222 40.0 4 4.0	325 1.3 -23 26.6		
6	267 53.7 - 1 21.4		264 45.9	252 39.3 4 6.5	355 3.1 -23 26.7		
8	297 54.0 - 1 19.4		294 50.8	282 38.6 4 9.1	25 4.9 -23 26.8		
10	327 54.4 - 1 17.4		324 55.8	312 37.8 4 11.6	55 6.7 -23 26.9		
12	357 54.8 - 1 15.4		355 .7	342 37.1 4 14.2	85 8.5 -23 27.0		
14	27 55.1 - 1 13.4		25 5.6	12 36.3 4 16.7	115 10.3 -23 27.1		
16	57 55.5 - 1 11.5		55 10.5	42 35.6 4 19.3	145 12.1 -23 27.2		
18	87 55.8 - 1 9.5		85 15.5	72 34.9 4 21.8	175 13.9 -23 27.3		
20	117 56.2 - 1 7.5		115 20.4	102 34.1 4 24.4	205 15.7 -23 27.4		
22	147 56.6 - 1 5.5		145 25.3	132 33.4 4 26.9	235 17.5 -23 27.5		
Δ	2	10		-4 13	9	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 11	18 7	0 42	2 24	5 19	3.3	18 47	1.3
55	6 10	18 7	0 36	2 4	5 27	3.1	18 43	1.4
50	6 10	18 8	0 32	1 49	5 32	2.9	18 40	1.5
45	6 9	18 8	0 29	1 39	5 37	2.7	18 37	1.6
40	6 9	18 9	0 27	1 31	5 41	2.6	18 35	1.6
35	6 8	18 9	0 25	1 24	5 44	2.5	18 33	1.7
30	6 8	18 9	0 24	1 20	5 47	2.4	18 31	1.7
20	6 7	18 10	0 22	1 13	5 52	2.2	18 28	1.8
10	6 6	18 11	0 21	1 10	5 57	2.1	18 26	1.9
0	6 5	18 12	0 21	1 9	6 1	1.9	18 23	2.0
10	6 4	18 12	0 21	1 10	6 5	1.8	18 21	2.0
20	6 3	18 14	0 22	1 13	6 10	1.7	18 18	2.1
30	6 1	18 15	0 24	1 20	6 15	1.5	18 15	2.2
35	6 1	18 16	0 25	1 25	6 18	1.4	18 13	2.2
40	5 60	18 17	0 27	1 31	6 21	1.3	18 11	2.3
45	5 58	18 18	0 29	1 39	6 25	1.2	18 8	2.4
50	5 57	18 19	0 32	1 50	6 29	1.0	18 5	2.5
55	5 55	18 21	0 36	2 6	6 35	.8	18 2	2.6
60	5 52	18 23	0 42	2 28	6 42	.6	17 57	2.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 42.3 130	6 47.5 -105			303 28.3 -17 22.1		255 32.2 -22 17.9	
2	211 46.2 130	6 26.5 -106			333 33.3 -17 22.0		285 36.9 -22 17.9	
4	240 50.2 130	6 5.4 -106			3 38.4 -17 22.0		315 41.5 -22 17.8	
6	269 54.1 129	5 44.2 -107			33 43.5 -17 22.0		345 46.2 -22 17.8	
8	298 57.9 129	5 22.8 -108			63 48.5 -17 21.9		15 50.8 -22 17.8	
10	328 1.8 129	5 1.2 -108			93 53.6 -17 21.9		45 55.5 -22 17.8	
12	357 5.6 129	4 39.6 -109			123 58.6 -17 21.8		76 .2 -22 17.8	
14	26 9.4 129	4 17.8 -110			154 3.7 -17 21.8		106 4.8 -22 17.8	
16	55 13.2 129	3 55.9 -110			184 8.7 -17 21.7		136 9.5 -22 17.7	
18	84 16.9 128	3 33.9 -111			214 13.8 -17 21.7		166 14.1 -22 17.7	
20	113 20.5 128	3 11.7 -111			244 18.9 -17 21.7		196 18.8 -22 17.7	
22	142 24.1 128	2 49.5 -112			274 23.9 -17 21.6		226 23.4 -22 17.7	
Δ					25	0	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 8 29.5	.7	16.1	T _m	12 12	2.0	56.1 15.3		
12	- 8 20.9	T _{m☉}	12 h 8.3 min	Starost	29.1 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 10	.1	348	-3.0	♄	3 45	.0	129	-1.9
♂	6 20	.1	90	.1	♂	6 57	.0	81	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	56.9	-1	3.6	175	30.3	162	32.6	4	29.5	265	19.3	-23	27.6
2	207	57.3	-1	1.6	205	35.2	192	31.9	4	32.0	295	21.1	-23	27.7
4	237	57.6	-0	59.6	235	40.1	222	31.1	4	34.6	325	22.9	-23	27.8
6	267	58.0	-0	57.6	265	45.0	252	30.4	4	37.1	355	24.7	-23	27.9
8	297	58.4	-0	55.6	295	50.0	282	29.7	4	39.6	25	26.5	-23	28.0
10	327	58.7	-0	53.7	325	54.9	312	28.9	4	42.2	55	28.3	-23	28.1
12	357	59.1	-0	51.7	355	59.8	342	28.2	4	44.7	85	30.1	-23	28.2
14	27	59.4	-0	49.7	26	4.8	12	27.4	4	47.3	115	32.0	-23	28.3
16	57	59.8	-0	47.7	56	9.7	42	26.7	4	49.8	145	33.8	-23	28.3
18	88	.2	-0	45.8	86	14.6	72	25.9	4	52.3	175	35.6	-23	28.4
20	118	.5	-0	43.8	116	19.5	102	25.2	4	54.9	205	37.4	-23	28.5
22	148	.9	-0	41.8	146	24.5	132	24.4	4	57.4	235	39.2	-23	28.6
Δ		2		10				-4		13		9		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 8	18 9	0 42	2 25	6 40	1.3	19 18	3.4
55	6 8	18 9	0 36	2 4	6 41	1.4	19 16	3.2
50	6 8	18 10	0 32	1 49	6 42	1.5	19 15	3.0
45	6 7	18 10	0 29	1 39	6 43	1.6	19 14	2.8
40	6 7	18 10	0 27	1 31	6 44	1.6	19 14	2.7
35	6 7	18 10	0 25	1 24	6 44	1.7	19 13	2.6
30	6 6	18 10	0 24	1 20	6 45	1.7	19 13	2.5
20	6 6	18 10	0 22	1 13	6 46	1.8	19 12	2.3
10	6 5	18 11	0 21	1 10	6 47	1.9	19 11	2.1
0	6 5	18 11	0 21	1 9	6 47	2.0	19 10	2.0
10	6 4	18 12	0 21	1 10	6 48	2.0	19 9	1.9
20	6 3	18 13	0 22	1 13	6 49	2.1	19 8	1.7
30	6 2	18 14	0 24	1 20	6 50	2.2	19 7	1.5
35	6 1	18 14	0 25	1 25	6 51	2.3	19 7	1.4
40	6 1	18 15	0 27	1 31	6 52	2.3	19 6	1.3
45	5 60	18 16	0 29	1 39	6 52	2.4	19 5	1.2
50	5 58	18 17	0 32	1 50	6 53	2.5	19 4	1.0
55	5 57	18 18	0 36	2 5	6 55	2.6	19 3	.8
60	5 55	18 20	0 42	2 27	6 56	2.7	19 1	.6
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	171	27.7	127	2	27.2	-112	304	29.0	-17	21.6	256	28.1	-22	17.7
2	200	31.2	127	2	4.8	-112	334	34.1	-17	21.5	286	32.8	-22	17.7
4	229	34.6	127	1	42.4	-113	4	39.1	-17	21.5	316	37.4	-22	17.6
6	258	38.0	126	1	19.8	-113	34	44.2	-17	21.4	346	42.1	-22	17.6
8	287	41.3	126	0	57.2	-113	64	49.3	-17	21.4	16	46.8	-22	17.6
10	316	44.5	126	0	34.6	-113	94	54.3	-17	21.3	46	51.4	-22	17.6
12	345	47.6	125	0	11.9	-5	124	59.4	-17	21.3	76	56.1	-22	17.6
14	14	50.6	125	0	10.8	114	155	4.5	-17	21.2	107	.7	-22	17.6
16	43	53.6	124	0	33.6	114	185	9.6	-17	21.2	137	5.4	-22	17.5
18	72	56.4	124	0	56.4	114	215	14.6	-17	21.1	167	10.1	-22	17.5
20	101	59.2	123	1	19.2	114	245	19.7	-17	21.1	197	14.7	-22	17.5
22	131	1.8	123	1	42.0	114	275	24.8	-17	21.0	227	19.4	-22	17.5
Δ								25		0		23		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	- 8 12.3	.7	16.1	T _m	12 59	2.0	56.7 15.4
12	- 8 3.7	T _{m☉}	12 h 8.1 min	Starost	.5 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	13 10	.1	347	-3.0	♃	3 41	.0	129	-1.9
♂	6 18	.1	90	.1	♄	6 53	.0	81	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	1.3	-0	39.8	176	29.4	162	23.7	4	59.9	265	41.0	-23	28.7
2	208	1.6	-0	37.8	206	34.3	192	22.9	5	2.5	295	42.8	-23	28.8
4	238	2.0	-0	35.9	236	39.3	222	22.2	5	5.0	325	44.6	-23	28.9
6	268	2.4	-0	33.9	266	44.2	252	21.4	5	7.5	355	46.4	-23	29.0
8	298	2.7	-0	31.9	296	49.1	282	20.7	5	10.1	25	48.3	-23	29.1
10	328	3.1	-0	29.9	326	54.0	312	19.9	5	12.6	55	50.1	-23	29.1
12	358	3.4	-0	28.0	356	59.0	342	19.2	5	15.1	85	51.9	-23	29.2
14	28	3.8	-0	26.0	27	3.9	12	18.4	5	17.7	115	53.7	-23	29.3
16	58	4.2	-0	24.0	57	8.8	42	17.7	5	20.2	145	55.5	-23	29.4
18	88	4.5	-0	22.0	87	13.7	72	16.9	5	22.7	175	57.3	-23	29.5
20	118	4.9	-0	20.1	117	18.7	102	16.2	5	25.3	205	59.1	-23	29.5
22	148	5.3	-0	18.1	147	23.6	132	15.4	5	27.8	236	1.0	-23	29.6
Δ		2		10				-4		13		9		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 5	18 12	0 42	2 26	7 11	.7	20 40	3.5
55	6 5	18 11	0 36	2 4	7 15	.9	20 33	3.2
50	6 5	18 11	0 32	1 50	7 18	1.1	20 27	3.0
45	6 5	18 11	0 29	1 39	7 21	1.2	20 22	2.9
40	6 5	18 11	0 27	1 31	7 23	1.4	20 18	2.7
35	6 5	18 11	0 25	1 25	7 25	1.5	20 15	2.6
30	6 5	18 11	0 24	1 20	7 27	1.6	20 12	2.5
20	6 5	18 11	0 22	1 13	7 30	1.7	20 7	2.4
10	6 5	18 11	0 21	1 10	7 32	1.9	20 2	2.2
0	6 5	18 11	0 21	1 9	7 35	2.0	19 58	2.1
10	6 4	18 11	0 21	1 10	7 37	2.2	19 54	1.9
20	6 3	18 12	0 22	1 13	7 40	2.3	19 49	1.8
30	6 3	18 12	0 24	1 20	7 43	2.5	19 44	1.6
35	6 2	18 13	0 25	1 25	7 45	2.6	19 41	1.5
40	6 2	18 13	0 27	1 31	7 47	2.7	19 38	1.4
45	6 1	18 14	0 29	1 39	7 50	2.9	19 34	1.3
50	5 60	18 15	0 32	1 50	7 53	3.0	19 29	1.1
55	5 59	18 16	0 36	2 5	7 57	3.2	19 23	.9
60	5 57	18 17	0 42	2 26	8 1	3.5	19 16	.7
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	160	4.4	122	2	4.8	114	305	29.9	-17	21.0	257	24.1	-22	17.5
2	189	6.8	121	2	27.6	114	335	35.0	-17	20.9	287	28.7	-22	17.5
4	218	9.1	121	2	50.4	114	5	40.0	-17	20.9	317	33.4	-22	17.4
6	247	11.3	120	3	13.1	114	35	45.1	-17	20.8	347	38.1	-22	17.4
8	276	13.3	120	3	35.9	113	65	50.2	-17	20.8	17	42.8	-22	17.4
10	305	15.2	119	3	58.5	113	95	55.3	-17	20.7	47	47.4	-22	17.4
12	334	17.0	118	4	21.2	113	126	.4	-17	20.7	77	52.1	-22	17.4
14	3	18.6	117	4	43.7	113	156	5.5	-17	20.6	107	56.8	-22	17.4
16	32	20.1	117	5	6.3	112	186	10.6	-17	20.6	138	1.5	-22	17.3
18	61	21.4	116	5	28.7	112	216	15.7	-17	20.5	168	6.1	-22	17.3
20	90	22.6	115	5	51.0	111	246	20.7	-17	20.5	198	10.8	-22	17.3
22	119	23.6	114	6	13.3	111	276	25.8	-17	20.4	228	15.5	-22	17.3
Δ								25		0		23		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min			

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	5.6	-0	16.1	177	28.5	162	14.7	5	30.3	266	2.8	-23	29.7
2	208	6.0	-0	14.1	207	33.5	192	13.9	5	32.8	296	4.6	-23	29.8
4	238	6.4	-0	12.1	237	38.4	222	13.2	5	35.4	326	6.4	-23	29.9
6	268	6.7	-0	10.2	267	43.3	252	12.4	5	37.9	356	8.2	-23	29.9
8	298	7.1	-0	8.2	297	48.2	282	11.6	5	40.4	26	10.1	-23	30.0
10	328	7.5	-0	6.2	327	53.2	312	10.9	5	42.9	56	11.9	-23	30.1
12	358	7.8	-0	4.2	357	58.1	342	10.1	5	45.5	86	13.7	-23	30.1
14	28	8.2	-0	2.3	28	3.0	12	9.4	5	48.0	116	15.5	-23	30.2
16	58	8.6	-0	.3	58	8.0	42	8.6	5	50.5	146	17.4	-23	30.3
18	88	9.0	0	1.7	88	12.9	72	7.8	5	53.0	176	19.2	-23	30.4
20	118	9.3	0	3.7	118	17.8	102	7.1	5	55.5	206	21.0	-23	30.4
22	148	9.7	0	5.6	148	22.7	132	6.3	5	58.0	236	22.8	-23	30.5
Δ		2		10				-4		13		9		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 2	18 14	0 42	2 26	7 26	.8	22 4	3.5
55	6 3	18 13	0 36	2 5	7 36	1.0	21 50	3.2
50	6 3	18 13	0 32	1 50	7 44	1.2	21 40	3.1
45	6 4	18 12	0 29	1 39	7 50	1.4	21 31	2.9
40	6 4	18 12	0 27	1 31	7 56	1.5	21 24	2.8
35	6 4	18 12	0 25	1 25	8 0	1.6	21 18	2.7
30	6 4	18 11	0 24	1 20	8 4	1.7	21 13	2.6
20	6 4	18 11	0 22	1 13	8 11	1.8	21 3	2.4
10	6 4	18 11	0 21	1 10	8 18	2.0	20 55	2.3
0	6 4	18 11	0 21	1 9	8 24	2.1	20 48	2.2
10	6 4	18 11	0 21	1 10	8 30	2.2	20 40	2.0
20	6 4	18 11	0 22	1 13	8 36	2.4	20 32	1.9
30	6 3	18 11	0 24	1 20	8 43	2.6	20 23	1.7
35	6 3	18 11	0 25	1 24	8 48	2.7	20 17	1.7
40	6 3	18 12	0 27	1 31	8 53	2.8	20 11	1.6
45	6 2	18 12	0 29	1 39	8 58	2.9	20 4	1.4
50	6 2	18 12	0 32	1 50	9 5	3.1	19 56	1.3
55	6 1	18 13	0 36	2 4	9 14	3.3	19 46	1.1
60	5 60	18 14	0 41	2 26	9 25	3.5	19 32	.8
S								

UT	MESEC				JUPITER			SATURN						
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	148	24.4	113	6	35.5	110	306	30.9	-17	20.4	258	20.2	-22	17.3
2	177	25.0	112	6	57.5	110	336	36.0	-17	20.3	288	24.8	-22	17.3
4	206	25.5	112	7	19.4	109	6	41.1	-17	20.3	318	29.5	-22	17.3
6	235	25.8	111	7	41.2	108	36	46.2	-17	20.2	348	34.2	-22	17.2
8	264	26.0	110	8	2.9	108	66	51.3	-17	20.2	18	38.9	-22	17.2
10	293	25.9	109	8	24.4	107	96	56.4	-17	20.1	48	43.5	-22	17.2
12	322	25.6	108	8	45.8	106	127	1.5	-17	20.0	78	48.2	-22	17.2
14	351	25.2	107	9	7.0	105	157	6.6	-17	20.0	108	52.9	-22	17.2
16	20	24.5	106	9	28.1	104	187	11.8	-17	19.9	138	57.6	-22	17.2
18	49	23.7	105	9	48.9	103	217	16.9	-17	19.9	169	2.3	-22	17.1
20	78	22.6	104	10	9.6	102	247	22.0	-17	19.8	199	7.0	-22	17.1
22	107	21.4	103	10	30.1	101	277	27.1	-17	19.8	229	11.6	-22	17.1
Δ								26		0		23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♄	r		
h	min	s	'	h min	min	'	'		
00	- 7 37.4	.7	16.1	T _m	14 36	2.1	57.7	15.7	
12	- 7 28.6	T _{m☉}	12 h 7.5 min	Starost	2.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 11	.1	345	-3.0	♄	3 33	.0	129	-1.9
	6 15	.1	89	.1	♄	6 46	.0	81	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	10.1	0	7.6	178	27.7	162	5.6	6	.6	266	24.7	-23	30.6
2	208	10.4	0	9.6	208	32.6	192	4.8	6	3.1	296	26.5	-23	30.6
4	238	10.8	0	11.6	238	37.5	222	4.0	6	5.6	326	28.3	-23	30.7
6	268	11.2	0	13.5	268	42.5	252	3.3	6	8.1	356	30.1	-23	30.8
8	298	11.5	0	15.5	298	47.4	282	2.5	6	10.6	26	32.0	-23	30.8
10	328	11.9	0	17.5	328	52.3	312	1.7	6	13.1	56	33.8	-23	30.9
12	358	12.3	0	19.5	358	57.2	342	1.0	6	15.6	86	35.6	-23	30.9
14	28	12.7	0	21.5	29	2.2	12	.2	6	18.1	116	37.5	-23	31.0
16	58	13.0	0	23.4	59	7.1	41	59.4	6	20.7	146	39.3	-23	31.1
18	88	13.4	0	25.4	89	12.0	71	58.7	6	23.2	176	41.1	-23	31.1
20	118	13.8	0	27.4	119	17.0	101	57.9	6	25.7	206	43.0	-23	31.2
22	148	14.1	0	29.3	149	21.9	131	57.1	6	28.2	236	44.8	-23	31.2
Δ		2		10				-4		13		9		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 59	18 17	0 42	2 27	7 45	1.0	23 29	3.4
55	6 0	18 15	0 36	2 5	8 1	1.2	23 8	3.2
50	6 1	18 14	0 32	1 50	8 13	1.4	22 53	3.0
45	6 2	18 14	0 29	1 39	8 23	1.5	22 41	2.9
40	6 2	18 13	0 27	1 31	8 31	1.7	22 31	2.8
35	6 3	18 12	0 25	1 25	8 38	1.7	22 22	2.7
30	6 3	18 12	0 24	1 20	8 45	1.8	22 14	2.6
20	6 3	18 11	0 22	1 13	8 56	2.0	22 1	2.5
10	6 4	18 11	0 21	1 10	9 5	2.1	21 50	2.4
0	6 4	18 10	0 21	1 9	9 14	2.2	21 39	2.3
10	6 4	18 10	0 21	1 10	9 24	2.3	21 29	2.2
20	6 4	18 10	0 22	1 13	9 33	2.5	21 18	2.0
30	6 4	18 10	0 24	1 20	9 45	2.6	21 5	1.9
35	6 4	18 10	0 25	1 24	9 51	2.7	20 57	1.8
40	6 4	18 10	0 27	1 31	9 59	2.8	20 49	1.8
45	6 3	18 10	0 29	1 39	10 8	2.9	20 39	1.6
50	6 3	18 10	0 32	1 49	10 18	3.0	20 27	1.5
55	6 3	18 10	0 36	2 4	10 32	3.2	20 12	1.3
60	6 2	18 11	0 41	2 25	10 49	3.5	19 53	1.1
S								

UT	MESEC				JUPITER			SATURN						
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	136	19.9	102	10	50.3	100	307	32.2	-17	19.7	259	16.3	-22	17.1
2	165	18.2	100	11	10.4	99	337	37.3	-17	19.7	289	21.0	-22	17.1
4	194	16.3	99	11	30.2	98	7	42.4	-17	19.6	319	25.7	-22	17.1
6	223	14.1	98	11	49.8	97	37	47.5	-17	19.5	349	30.4	-22	17.0
8	252	11.8	97	12	9.1	95	67	52.7	-17	19.5	19	35.1	-22	17.0
10	281	9.2	96	12	28.2	94	97	57.8	-17	19.4	49	39.8	-22	17.0
12	310	6.4	95	12	47.0	93	128	2.9	-17	19.4	79	44.4	-22	17.0
14	339	3.3	94	13	5.6	91	158	8.0	-17	19.3	109	49.1	-22	17.0
16	8	.0	92	13	23.9	90	188	13.1	-17	19.3	139	53.8	-22	17.0
18	36	56.5	91	13	41.8	88	218	18.3	-17	19.2	169	58.5	-22	17.0
20	65	52.8	90	13	59.5	87	248	23.4	-17	19.1	200	3.2	-22	16.9
22	94	48.8	89	14	16.9	85	278	28.5	-17	19.1	230	7.9	-22	16.9
Δ								26		0		23		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♄	r
h	min	s	'	h min	min	'	'
00	- 7 19.7	.7	16.1	T _m	15 27		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 14.5	0 31.3	179 26.8	161 56.4	6 30.7	266 46.6	-23 31.3
2	208 14.9	0 33.3	209 31.7	191 55.6	6 33.2	296 48.5	-23 31.4
4	238 15.3	0 35.3	239 36.7	221 54.8	6 35.7	326 50.3	-23 31.4
6	268 15.6	0 37.2	269 41.6	251 54.1	6 38.2	356 52.1	-23 31.5
8	298 16.0	0 39.2	299 46.5	281 53.3	6 40.7	26 54.0	-23 31.5
10	328 16.4	0 41.2	329 51.5	311 52.5	6 43.2	56 55.8	-23 31.6
12	358 16.8	0 43.2	359 56.4	341 51.7	6 45.7	86 57.6	-23 31.6
14	28 17.1	0 45.1	30 1.3	11 51.0	6 48.2	116 59.5	-23 31.7
16	58 17.5	0 47.1	60 6.2	41 50.2	6 50.7	147 1.3	-23 31.7
18	88 17.9	0 49.1	90 11.2	71 49.4	6 53.2	177 3.2	-23 31.8
20	118 18.2	0 51.1	120 16.1	101 48.6	6 55.7	207 5.0	-23 31.8
22	148 18.6	0 53.0	150 21.0	131 47.9	6 58.2	237 6.8	-23 31.9
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 56	18 19	0 42	2 28	8 8	1.3	...	.0
55	5 58	18 17	0 36	2 6	8 30	1.5	...	.0
50	5 59	18 16	0 32	1 50	8 46	1.7	...	.0
45	5 60	18 15	0 29	1 39	8 60	1.8	23 50	2.8
40	6 1	18 14	0 27	1 31	9 11	1.9	23 37	2.7
35	6 1	18 13	0 25	1 25	9 20	2.0	23 26	2.6
30	6 2	18 13	0 24	1 20	9 29	2.0	23 17	2.6
20	6 3	18 12	0 22	1 13	9 43	2.1	23 1	2.5
10	6 3	18 11	0 21	1 10	9 56	2.2	22 47	2.4
0	6 4	18 10	0 21	1 9	10 8	2.3	22 34	2.4
10	6 4	18 10	0 21	1 10	10 20	2.4	22 21	2.3
20	6 4	18 9	0 22	1 13	10 32	2.5	22 7	2.2
30	6 5	18 9	0 24	1 20	10 47	2.6	21 51	2.1
35	6 5	18 9	0 25	1 24	10 56	2.7	21 41	2.1
40	6 5	18 8	0 27	1 30	11 6	2.8	21 31	2.0
45	6 5	18 8	0 29	1 38	11 17	2.8	21 18	1.9
50	6 5	18 8	0 32	1 49	11 31	3.0	21 3	1.8
55	6 5	18 8	0 36	2 4	11 49	3.1	20 44	1.7
60	6 5	18 8	0 41	2 24	12 14	3.3	20 19	1.5

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	123 44.6	88 14 34.0	84	308 33.6	-17 19.0	260 12.6	-22 16.9	
2	152 40.2	87 14 50.7	82	338 38.8	-17 18.9	290 17.3	-22 16.9	
4	181 35.5	85 15 7.1	80	8 43.9	-17 18.9	320 22.0	-22 16.9	
6	210 30.6	84 15 23.2	79	38 49.0	-17 18.8	350 26.7	-22 16.9	
8	239 25.4	83 15 38.9	77	68 54.2	-17 18.8	20 31.4	-22 16.9	
10	268 20.0	82 15 54.3	75	98 59.3	-17 18.7	50 36.1	-22 16.8	
12	297 14.4	81 16 9.3	73	129 4.4	-17 18.6	80 40.8	-22 16.8	
14	326 8.5	80 16 23.9	71	159 9.6	-17 18.6	110 45.5	-22 16.8	
16	355 2.5	78 16 38.1	69	189 14.7	-17 18.5	140 50.2	-22 16.8	
18	23 56.2	77 16 51.9	67	219 19.8	-17 18.4	170 54.9	-22 16.8	
20	52 49.6	76 17 5.4	65	249 25.0	-17 18.4	200 59.6	-22 16.8	
22	81 42.9	75 17 18.4	63	279 30.1	-17 18.3	231 4.3	-22 16.7	
Δ				26	0	23	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 7 1.9	.7	16.1	T _m	16 21	2.3	58.5 15.9
12	- 6 53.0	T _{m☉}	12 h 6.9 min	Starost	4.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°		♃	h min	'	°	
♄	13 13	.1	342	-3.0	♄	3 25	.0	129	-1.9
♅	6 13	.1	87	.0	♅	6 38	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 19.0	0 55.0	180 26.0	161 47.1	7 7	267 8.7	-23 31.9
2	208 19.4	0 57.0	210 30.9	191 46.3	7 3.1	297 10.5	-23 32.0
4	238 19.7	0 58.9	240 35.8	221 45.5	7 5.6	327 12.4	-23 32.0
6	268 20.1	1 9	270 40.7	251 44.7	7 8.1	357 14.2	-23 32.0
8	298 20.5	1 2.9	300 45.7	281 44.0	7 10.6	27 16.1	-23 32.1
10	328 20.9	1 4.9	330 50.6	311 43.2	7 13.1	57 17.9	-23 32.1
12	358 21.2	1 6.8	0 55.5	341 42.4	7 15.6	87 19.7	-23 32.2
14	28 21.6	1 8.8	31 1.4	11 41.6	7 18.1	117 21.6	-23 32.2
16	58 22.0	1 10.8	61 5.4	41 40.8	7 20.6	147 23.4	-23 32.3
18	88 22.4	1 12.7	91 10.3	71 40.0	7 23.0	177 25.3	-23 32.3
20	118 22.7	1 14.7	121 15.2	101 39.3	7 25.5	207 27.1	-23 32.3
22	148 23.1	1 16.7	151 20.2	131 38.5	7 28.0	237 29.0	-23 32.4
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 53	18 22	0 42	2 29	8 38	1.7	0 52	3.2
55	5 55	18 19	0 36	2 6	9 6	1.9	0 25	3.0
50	5 57	18 17	0 32	1 51	9 26	2.0	0 5	2.9
45	5 58	18 16	0 29	1 40	9 43	2.1	...	.0
40	5 59	18 15	0 27	1 31	9 56	2.1	...	.0
35	5 60	18 14	0 25	1 25	10 7	2.2	...	.0
30	6 0	18 13	0 24	1 20	10 17	2.2	...	.0
20	6 2	18 12	0 22	1 13	10 34	2.3	...	.0
10	6 3	18 11	0 21	1 10	10 49	2.4	23 45	2.5
0	6 3	18 10	0 21	1 9	11 3	2.4	23 30	2.4
10	6 4	18 9	0 21	1 10	11 17	2.5	23 16	2.4
20	6 5	18 8	0 22	1 13	11 32	2.5	22 60	2.4
30	6 5	18 8	0 24	1 20	11 50	2.6	22 42	2.3
35	6 5	18 7	0 25	1 24	12 0	2.6	22 31	2.3
40	6 6	18 7	0 27	1 30	12 12	2.6	22 19	2.3
45	6 6	18 6	0 29	1 38	12 26	2.7	22 5	2.2
50	6 6	18 6	0 32	1 49	12 42	2.8	21 47	2.2
55	6 7	18 5	0 36	2 3	13 4	2.8	21 25	2.1
60	6 7	18 5	0 41	2 24	13 34	3.0	20 54	2.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	110 35.9	74 17 31.0	61	309 35.3	-17 18.3	261 9.0	-22 16.7	
2	139 28.7	73 17 43.2	59	339 40.4	-17 18.2	291 13.7	-22 16.7	
4	168 21.3	72 17 55.0	57	9 45.5	-17 18.1	321 18.4	-22 16.7	
6	197 13.7	71 18 6.3	54	39 50.7	-17 18.1	351 23.1	-22 16.7	
8	226 5.9	70 18 17.2	52	69 55.8	-17 18.0	21 27.8	-22 16.7	
10	254 57.9	69 18 27.6	50	100 1.0	-17 17.9	51 32.5	-22 16.7	
12	283 49.7	68 18 37.5	47	130 6.1	-17 17.9	81 37.2	-22 16.6	
14	312 41.3	67 18 47.0	45	160 11.3	-17 17.8	111 41.9	-22 16.6	
16	341 32.7	66 18 56.1	43	190 16.4	-17 17.7	141 46.6	-22 16.6	
18	10 24.0	65 19 4.6	40	220 21.6	-17 17.7	171 51.3	-22 16.6	
20	39 15.1	65 19 12.7	38	250 26.8	-17 17.6	201 56.0	-22 16.6	
22	68 6.0	64 19 20.3	35	280 31.9	-17 17.5	232 7	-22 16.6	
Δ				26	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 6 44.0	.8	16.1	T _m	17 17	2.4	58.8 16.0
12	- 6 35.0	T _{m☉}	12 h 6.6 min	Starost	5.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°		♃	h min	'	°	
♄	13 13	.1	341	-3.0	♄	3 21	.0	129	-1.9
♅	6 11	.1	87	.0	♅	6 34	.0	81	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.5	1 18.7	181 25.1	161 37.7	7 30.5	267 30.8	-23 32.4
2	208 23.9	1 20.6	211 30.0	191 36.9	7 33.0	297 32.7	-23 32.4
4	238 24.2	1 22.6	241 34.9	221 36.1	7 35.4	327 34.5	-23 32.5
6	268 24.6	1 24.6	271 39.9	251 35.3	7 37.9	357 36.4	-23 32.5
8	298 25.0	1 26.5	301 44.8	281 34.5	7 40.4	27 38.2	-23 32.5
10	328 25.4	1 28.5	331 49.7	311 33.7	7 42.9	57 40.1	-23 32.6
12	358 25.8	1 30.5	1 54.7	341 32.9	7 45.3	87 42.0	-23 32.6
14	28 26.1	1 32.4	31 59.6	11 32.1	7 47.8	117 43.8	-23 32.6
16	58 26.5	1 34.4	62 4.5	41 31.4	7 50.3	147 45.7	-23 32.7
18	88 26.9	1 36.4	92 9.4	71 30.6	7 52.7	177 47.5	-23 32.7
20	118 27.3	1 38.3	122 14.4	101 29.8	7 55.2	207 49.4	-23 32.7
22	148 27.6	1 40.3	152 19.3	131 29.0	7 57.7	237 51.2	-23 32.7
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 50	18 24	0 42	2 30	9 20	2.3	2 8	2.7
55	5 52	18 21	0 36	2 7	9 52	2.4	1 37	2.6
50	5 54	18 19	0 32	1 51	10 15	2.4	1 14	2.6
45	5 56	18 17	0 29	1 40	10 33	2.4	0 56	2.6
40	5 57	18 16	0 27	1 31	10 47	2.4	0 42	2.6
35	5 58	18 15	0 25	1 25	10 60	2.4	0 30	2.5
30	5 59	18 14	0 24	1 20	11 11	2.4	0 19	2.5
20	6 1	18 12	0 22	1 13	11 29	2.4	0 1	2.5
10	6 2	18 11	0 21	1 10	11 45	2.4	...	.0
0	6 3	18 10	0 21	1 9	12 1	2.4	...	.0
10	6 4	18 8	0 21	1 10	12 16	2.4	...	.0
20	6 5	18 7	0 22	1 13	12 33	2.4	23 57	2.5
30	6 6	18 6	0 24	1 19	12 51	2.5	23 38	2.5
35	6 6	18 6	0 25	1 24	13 2	2.4	23 26	2.5
40	6 7	18 5	0 27	1 30	13 15	2.4	23 14	2.5
45	6 7	18 4	0 29	1 38	13 30	2.4	22 59	2.6
50	6 8	18 4	0 32	1 49	13 48	2.4	22 40	2.6
55	6 9	18 3	0 36	2 3	14 12	2.4	22 16	2.6
60	6 9	18 2	0 41	2 23	14 45	2.4	21 43	2.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	96 56.8	63 19 27.3	33	310 37.1	-17 17.5	262 5.4	-22 16.6	
2	125 47.4	62 19 33.9	30	340 42.2	-17 17.4	292 10.1	-22 16.5	
4	154 37.9	62 19 40.0	28	10 47.4	-17 17.3	322 14.8	-22 16.5	
6	183 28.2	61 19 45.6	25	40 52.5	-17 17.3	352 19.6	-22 16.5	
8	212 18.4	60 19 50.6	23	70 57.7	-17 17.2	22 24.3	-22 16.5	
10	241 8.5	60 19 55.2	20	101 2.9	-17 17.1	52 29.0	-22 16.5	
12	269 58.5	59 19 59.2	17	131 8.0	-17 17.0	82 33.7	-22 16.5	
14	298 48.4	59 20 2.7	15	161 13.2	-17 17.0	112 38.4	-22 16.5	
16	327 38.2	59 20 5.7	12	191 18.4	-17 16.9	142 43.1	-22 16.4	
18	356 27.9	58 20 8.1	10	221 23.5	-17 16.8	172 47.8	-22 16.4	
20	25 17.5	58 20 10.0	7	251 28.7	-17 16.8	202 52.6	-22 16.4	
22	54 7.1	58 20 11.4	4	281 33.9	-17 16.7	232 57.3	-22 16.4	
Δ				26	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 6 26.0	.8	16.1	T _m	18 15	2.4	59.1 16.1
12	- 6 17.0	T _{m☉}	12 h 6.3 min	Starost	6.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	13 14	.1	340	-3.0	♂	3 17	.0	129	-1.9
♂	6 10	.1	86	.0	♂	6 31	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 28.0	1 42.3	182 24.2	161 28.2	8 .1	267 53.1	-23 32.8
2	208 28.4	1 44.2	212 29.2	191 27.4	8 2.6	297 55.0	-23 32.8
4	238 28.8	1 46.2	242 34.1	221 26.6	8 5.0	327 56.8	-23 32.8
6	268 29.2	1 48.2	272 39.0	251 25.8	8 7.5	357 58.7	-23 32.8
8	298 29.5	1 50.1	302 43.9	281 25.0	8 10.0	28 .5	-23 32.9
10	328 29.9	1 52.1	332 48.9	311 24.2	8 12.4	58 2.4	-23 32.9
12	358 30.3	1 54.1	2 53.8	341 23.4	8 14.9	88 4.3	-23 32.9
14	28 30.7	1 56.0	32 58.7	11 22.6	8 17.3	118 6.1	-23 32.9
16	58 31.0	1 58.0	63 3.7	41 21.8	8 19.8	148 8.0	-23 32.9
18	88 31.4	2 .0	93 8.6	71 21.0	8 22.2	178 9.9	-23 33.0
20	118 31.8	2 1.9	123 13.5	101 20.1	8 24.7	208 11.7	-23 33.0
22	148 32.2	2 3.9	153 18.4	131 19.3	8 27.1	238 13.6	-23 33.0
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 47	18 26	0 42	2 31	10 16	2.9	3 13	2.1
55	5 50	18 23	0 37	2 7	10 49	2.8	2 40	2.2
50	5 52	18 21	0 32	1 51	11 12	2.7	2 17	2.3
45	5 54	18 19	0 29	1 40	11 30	2.7	1 58	2.3
40	5 56	18 17	0 27	1 32	11 45	2.6	1 43	2.3
35	5 57	18 16	0 25	1 25	11 58	2.6	1 31	2.4
30	5 58	18 14	0 24	1 20	12 9	2.6	1 20	2.4
20	5 60	18 12	0 22	1 13	12 28	2.5	1 1	2.4
10	6 1	18 11	0 21	1 10	12 44	2.5	0 44	2.4
0	6 3	18 9	0 21	1 9	12 59	2.4	0 29	2.4
10	6 4	18 8	0 21	1 10	13 15	2.4	0 13	2.5
20	6 5	18 7	0 22	1 13	13 31	2.3	...	.0
30	6 6	18 5	0 24	1 19	13 50	2.3	...	.0
35	6 7	18 4	0 25	1 24	14 1	2.2	...	.0
40	6 8	18 4	0 27	1 30	14 14	2.2	...	.0
45	6 9	18 3	0 29	1 38	14 29	2.1	23 60	2.8
50	6 9	18 2	0 32	1 48	14 47	2.1	23 42	2.9
55	6 11	18 0	0 36	2 3	15 11	2.0	23 19	3.0
60	6 12	17 59	0 41	2 22	15 43	1.8	22 46	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	82 56.6	57 20 12.3	2	311 39.1	-17 16.6	263 2.0	-22 16.4	
2	111 46.1	57 20 12.6	-1	341 44.2	-17 16.6	293 6.7	-22 16.4	
4	140 35.6	57 20 12.3	-4	11 49.4	-17 16.5	323 11.4	-22 16.4	
6	169 25.0	57 20 11.6	-7	41 54.6	-17 16.4	353 16.1	-22 16.3	
8	198 14.4	57 20 10.3	-9	71 59.8	-17 16.3	23 20.9	-22 16.3	
10	227 3.8	57 20 8.4	-12	102 4.9	-17 16.3	53 25.6	-22 16.3	
12	255 53.2	57 20 6.0	-15	132 10.1	-17 16.2	83 30.3	-22 16.3	
14	284 42.6	57 20 3.1	-17	162 15.3	-17 16.1	113 35.0	-22 16.3	
16	313 32.0	57 19 59.7	-20	192 20.5	-17 16.0	143 39.8	-22 16.3	
18	342 21.5	58 19 55.7	-23	222 25.7	-17 16.0	173 44.5	-22 16.3	
20	11 11.0	58 19 51.2	-25	252 30.8	-17 15.9	203 49.2	-22 16.3	
22	40 .6	58 19 46.1	-28	282 36.0	-17 15.8	233 53.9	-22 16.2	
Δ				26	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 6 7.9	.8	16.1	T _m	19 13	2.5	59.3 16.1
12	- 5 58.9	T _{m☉}	12 h 6.0 min	Starost	7.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	13 14	.1	339	-3.0	♂	3 13	.0	129	-1.9
♂	6 8	.1	85	.0	♂	6 27	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 32.6	2 5.8	183 23.4	161 18.5	8 29.6	268 15.5	-23 33.0
2	208 32.9	2 7.8	213 28.3	191 17.7	8 32.0	298 17.3	-23 33.0
4	238 33.3	2 9.8	243 33.2	221 16.9	8 34.5	328 19.2	-23 33.0
6	268 33.7	2 11.7	273 38.2	251 16.1	8 36.9	358 21.1	-23 33.1
8	298 34.1	2 13.7	303 43.1	281 15.3	8 39.4	28 22.9	-23 33.1
10	328 34.4	2 15.7	333 48.0	311 14.5	8 41.8	58 24.8	-23 33.1
12	358 34.8	2 17.6	3 52.9	341 13.7	8 44.3	88 26.7	-23 33.1
14	28 35.2	2 19.6	33 57.9	11 12.8	8 46.7	118 28.5	-23 33.1
16	58 35.6	2 21.5	64 2.8	41 12.0	8 49.1	148 30.4	-23 33.1
18	88 36.0	2 23.5	94 7.7	71 11.2	8 51.6	178 32.3	-23 33.1
20	118 36.3	2 25.5	124 12.6	101 10.4	8 54.0	208 34.2	-23 33.1
22	148 36.7	2 27.4	154 17.6	131 9.6	8 56.4	238 36.0	-23 33.1
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 44	18 29	0 42	2 32	11 27	3.4	4 4	1.6
55	5 47	18 25	0 37	2 8	11 56	3.2	3 33	1.8
50	5 50	18 22	0 33	1 52	12 18	3.0	3 11	1.9
45	5 52	18 20	0 29	1 40	12 35	2.9	2 54	2.0
40	5 54	18 18	0 27	1 32	12 49	2.8	2 39	2.1
35	5 56	18 16	0 25	1 25	13 0	2.7	2 27	2.1
30	5 57	18 15	0 24	1 20	13 11	2.7	2 17	2.2
20	5 59	18 13	0 22	1 14	13 28	2.6	1 58	2.3
10	6 1	18 11	0 21	1 10	13 44	2.5	1 42	2.3
0	6 2	18 9	0 21	1 9	13 58	2.4	1 27	2.4
10	6 4	18 7	0 21	1 10	14 12	2.3	1 12	2.5
20	6 5	18 6	0 22	1 13	14 27	2.2	0 56	2.6
30	6 7	18 4	0 24	1 19	14 45	2.1	0 38	2.6
35	6 8	18 3	0 25	1 24	14 55	2.0	0 27	2.7
40	6 9	18 2	0 27	1 30	15 7	1.9	0 15	2.7
45	6 10	18 1	0 29	1 38	15 20	1.9	...	.0
50	6 11	17 59	0 32	1 48	15 37	1.7	...	.0
55	6 13	17 58	0 36	2 2	15 58	1.6	...	.0
60	6 14	17 56	0 41	2 22	16 27	1.3	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	68 50.2	58	19 40.5	-31	312 41.2	-17 15.7	263 58.7	-22 16.2
2	97 39.9	59	19 34.4	-33	342 46.4	-17 15.7	294 3.4	-22 16.2
4	126 29.6	59	19 27.8	-36	12 51.6	-17 15.6	324 8.1	-22 16.2
6	155 19.5	60	19 20.7	-38	42 56.8	-17 15.5	354 12.8	-22 16.2
8	184 9.4	60	19 13.0	-41	73 2.0	-17 15.4	24 17.6	-22 16.2
10	212 59.5	61	19 4.8	-43	103 7.2	-17 15.4	54 22.3	-22 16.2
12	241 49.7	61	18 56.2	-46	133 12.4	-17 15.3	84 27.0	-22 16.1
14	270 40.0	62	18 47.0	-48	163 17.6	-17 15.2	114 31.8	-22 16.1
16	299 30.4	63	18 37.3	-51	193 22.8	-17 15.1	144 36.5	-22 16.1
18	328 20.9	63	18 27.2	-53	223 28.0	-17 15.1	174 41.2	-22 16.1
20	357 11.6	64	18 16.5	-56	253 33.2	-17 15.0	204 46.0	-22 16.1
22	26 2.4	65	18 5.4	-58	283 38.4	-17 14.9	234 50.7	-22 16.1
Δ					26	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	- 5 49.8	.8	16.1	T _m	20 12	2.3	59.4 16.2		
12	- 5 40.7	T _{m☉}	12 h 5.7 min	Starost	8.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 15	.1	338	-3.0	♃	3 9	.0	129	-1.9
♂	6 7	.1	85	.0	♄	6 23	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 37.1	2 29.4	184 22.5	161 8.8	8 58.9	268 37.9	-23 33.1
2	208 37.5	2 31.3	214 27.4	191 7.9	9 1.3	298 39.8	-23 33.2
4	238 37.9	2 33.3	244 32.4	221 7.1	9 3.7	328 41.7	-23 33.2
6	268 38.2	2 35.3	274 37.3	251 6.3	9 6.2	358 43.6	-23 33.2
8	298 38.6	2 37.2	304 42.2	281 5.5	9 8.6	28 45.4	-23 33.2
10	328 39.0	2 39.2	334 47.1	311 4.6	9 11.0	58 47.3	-23 33.2
12	358 39.4	2 41.1	4 52.1	341 3.8	9 13.4	88 49.2	-23 33.2
14	28 39.7	2 43.1	34 57.0	11 3.0	9 15.8	118 51.1	-23 33.2
16	58 40.1	2 45.0	65 1.9	41 2.2	9 18.3	148 53.0	-23 33.2
18	88 40.5	2 47.0	95 6.9	71 1.3	9 20.7	178 54.8	-23 33.2
20	118 40.9	2 48.9	125 11.8	101 .5	9 23.1	208 56.7	-23 33.2
22	148 41.3	2 50.9	155 16.7	130 59.7	9 25.5	238 58.6	-23 33.2
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 41	18 31	0 42	2 33	12 48	3.6	4 41	1.2
55	5 45	18 27	0 37	2 9	13 12	3.3	4 16	1.4
50	5 48	18 24	0 33	1 52	13 30	3.1	3 57	1.6
45	5 50	18 21	0 30	1 41	13 44	3.0	3 42	1.7
40	5 52	18 19	0 27	1 32	13 56	2.9	3 29	1.8
35	5 54	18 17	0 25	1 25	14 6	2.8	3 18	1.9
30	5 56	18 16	0 24	1 20	14 15	2.7	3 9	2.0
20	5 58	18 13	0 22	1 14	14 30	2.5	2 53	2.1
10	6 0	18 11	0 21	1 10	14 43	2.4	2 39	2.2
0	6 2	18 9	0 21	1 9	14 55	2.3	2 25	2.3
10	6 4	18 7	0 21	1 10	15 7	2.2	2 12	2.4
20	6 6	18 5	0 22	1 13	15 20	2.0	1 58	2.6
30	6 8	18 3	0 24	1 19	15 35	1.9	1 41	2.7
35	6 9	18 2	0 25	1 24	15 44	1.8	1 31	2.8
40	6 10	18 0	0 27	1 30	15 53	1.7	1 20	2.9
45	6 11	17 59	0 29	1 38	16 5	1.6	1 7	3.0
50	6 13	17 57	0 32	1 48	16 19	1.5	0 51	3.1
55	6 14	17 55	0 36	2 2	16 36	1.3	0 31	3.3
60	6 17	17 53	0 41	2 22	16 59	1.0	0 3	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	54 53.4	66	17 53.8	-60	313 43.6	-17 14.8	264 55.4	-22 16.1
2	83 44.6	67	17 41.8	-63	343 48.8	-17 14.7	295 .2	-22 16.1
4	112 35.9	67	17 29.3	-65	13 54.0	-17 14.7	325 4.9	-22 16.0
6	141 27.4	68	17 16.3	-67	43 59.2	-17 14.6	355 9.6	-22 16.0
8	170 19.1	69	17 2.9	-69	74 4.4	-17 14.5	25 14.4	-22 16.0
10	199 10.9	70	16 49.0	-71	104 9.6	-17 14.4	55 19.1	-22 16.0
12	228 3.0	71	16 34.8	-73	134 14.8	-17 14.3	85 23.8	-22 16.0
14	256 55.2	72	16 20.1	-76	164 20.0	-17 14.3	115 28.6	-22 16.0
16	285 47.6	73	16 5.0	-78	194 25.2	-17 14.2	145 33.3	-22 16.0
18	314 40.3	74	15 49.4	-80	224 30.4	-17 14.1	175 38.1	-22 16.0
20	343 33.1	75	15 33.5	-81	254 35.6	-17 14.0	205 42.8	-22 15.9
22	12 26.1	76	15 17.2	-83	284 40.9	-17 13.9	235 47.6	-22 15.9
Δ					26	0	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	- 5 31.6	.8	16.1	T _m	21 8	2.3	59.4 16.2		
12	- 5 22.5	T _{m☉}	12 h 5.4 min	Starost	9.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 16	.1	337	-3.0	♃	3 5	.0	129	-1.9
♂	6 5	.1	84	-.1	♄	6 19	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 41.6	2 52.9	185 21.6	160 58.8	9 27.9	269 .5	-23 33.2
2	208 42.0	2 54.8	215 26.6	190 58.0	9 30.3	299 2.4	-23 33.2
4	238 42.4	2 56.8	245 31.5	220 57.2	9 32.8	329 4.3	-23 33.2
6	268 42.8	2 58.7	275 36.4	250 56.3	9 35.2	359 6.2	-23 33.1
8	298 43.2	3 .7	305 41.4	280 55.5	9 37.6	29 8.0	-23 33.1
10	328 43.5	3 2.6	335 46.3	310 54.7	9 40.0	59 9.9	-23 33.1
12	358 43.9	3 4.6	5 51.2	340 53.8	9 42.4	89 11.8	-23 33.1
14	28 44.3	3 6.5	35 56.1	10 53.0	9 44.8	119 13.7	-23 33.1
16	58 44.7	3 8.5	66 1.1	40 52.1	9 47.2	149 15.6	-23 33.1
18	88 45.1	3 10.4	96 6.0	70 51.3	9 49.6	179 17.5	-23 33.1
20	118 45.4	3 12.4	126 10.9	100 50.5	9 52.0	209 19.4	-23 33.1
22	148 45.8	3 14.3	156 15.9	130 49.6	9 54.4	239 21.3	-23 33.1
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 38	18 34	0 42	2 34	14 14	3.7	5 9	.9
55	5 42	18 29	0 37	2 9	14 32	3.4	4 50	1.2
50	5 46	18 25	0 33	1 53	14 45	3.2	4 35	1.3
45	5 48	18 22	0 30	1 41	14 56	3.0	4 23	1.5
40	5 51	18 20	0 27	1 32	15 5	2.9	4 13	1.6
35	5 53	18 18	0 25	1 26	15 13	2.8	4 4	1.7
30	5 54	18 16	0 24	1 21	15 19	2.7	3 57	1.8
20	5 57	18 13	0 22	1 14	15 31	2.5	3 44	2.0
10	5 60	18 11	0 21	1 10	15 41	2.3	3 32	2.1
0	6 2	18 8	0 21	1 9	15 50	2.2	3 22	2.2
10	6 4	18 6	0 21	1 10	15 59	2.1	3 11	2.4
20	6 6	18 4	0 22	1 13	16 9	1.9	2 59	2.5
30	6 8	18 2	0 24	1 19	16 21	1.7	2 45	2.7
35	6 9	18 0	0 25	1 24	16 27	1.6	2 38	2.8
40	6 11	17 59	0 27	1 30	16 35	1.5	2 29	2.9
45	6 12	17 57	0 29	1 38	16 43	1.4	2 18	3.0
50	6 14	17 55	0 32	1 48	16 54	1.3	2 5	3.2
55	6 16	17 53	0 36	2 2	17 6	1.1	1 49	3.4
60	6 19	17 50	0 41	2 21	17 23	.8	1 28	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	41 19.3	77 15 .6	-85	314 46.1	-17 13.9	265 52.3	-22 15.9	
2	70 12.8	78 14 43.5	-87	344 51.3	-17 13.8	295 57.0	-22 15.9	
4	99 6.5	79 14 26.1	-89	14 56.5	-17 13.7	326 1.8	-22 15.9	
6	128 .3	80 14 8.4	-90	45 1.7	-17 13.6	356 6.5	-22 15.9	
8	156 54.4	81 13 50.3	-92	75 7.0	-17 13.5	26 11.3	-22 15.9	
10	185 48.7	83 13 31.9	-94	105 12.2	-17 13.4	56 16.0	-22 15.9	
12	214 43.2	84 13 13.1	-95	135 17.4	-17 13.4	86 20.8	-22 15.8	
14	243 38.0	85 12 54.1	-97	165 22.6	-17 13.3	116 25.5	-22 15.8	
16	272 32.9	86 12 34.7	-98	195 27.9	-17 13.2	146 30.3	-22 15.8	
18	301 28.1	87 12 15.0	-100	225 33.1	-17 13.1	176 35.0	-22 15.8	
20	330 23.4	88 11 55.1	-101	255 38.3	-17 13.0	206 39.8	-22 15.8	
22	359 19.0	89 11 34.9	-102	285 43.5	-17 12.9	236 44.5	-22 15.8	
Δ				26	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 5 13.4	.8	16.1	T _m	22 3	2.2	59.3 16.2
12	- 5 4.3	T _{m☉}	12 h 5.1 min	Starost	10.5 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	' / "	°	°	h	min	' / "	°	°
♀	13 16	.1	336	-3.0	♃	3 0	.0	129	-1.9
♂	6 4	.1	84	-.1	♄	6 16	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 46.2	3 16.3	186 20.8	160 48.8	9 56.8	269 23.2	-23 33.1
2	208 46.6	3 18.2	216 25.7	190 47.9	9 59.2	299 25.1	-23 33.0
4	238 46.9	3 20.2	246 30.6	220 47.1	10 1.6	329 27.0	-23 33.0
6	268 47.3	3 22.1	276 35.6	250 46.2	10 4.0	359 28.9	-23 33.0
8	298 47.7	3 24.1	306 40.5	280 45.4	10 6.3	29 30.8	-23 33.0
10	328 48.1	3 26.0	336 45.4	310 44.5	10 8.7	59 32.7	-23 33.0
12	358 48.5	3 28.0	6 50.4	340 43.7	10 11.1	89 34.6	-23 33.0
14	28 48.8	3 29.9	36 55.3	10 42.8	10 13.5	119 36.5	-23 33.0
16	58 49.2	3 31.8	67 .2	40 42.0	10 15.9	149 38.4	-23 32.9
18	88 49.6	3 33.8	97 5.1	70 41.1	10 18.3	179 40.3	-23 32.9
20	118 50.0	3 35.7	127 10.1	100 40.2	10 20.6	209 42.2	-23 32.9
22	148 50.3	3 37.7	157 15.0	130 39.4	10 23.0	239 44.1	-23 32.9
Δ	2	10		-4	12	9	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 35	18 36	0 43	2 36	15 42	3.6	5 31	.7
55	5 40	18 31	0 37	2 10	15 53	3.3	5 18	1.0
50	5 44	18 27	0 33	1 53	16 1	3.1	5 7	1.2
45	5 47	18 24	0 30	1 41	16 8	3.0	4 59	1.3
40	5 49	18 21	0 27	1 32	16 14	2.8	4 52	1.5
35	5 51	18 19	0 25	1 26	16 19	2.7	4 46	1.6
30	5 53	18 17	0 24	1 21	16 23	2.6	4 41	1.7
20	5 56	18 13	0 22	1 14	16 30	2.4	4 31	1.9
10	5 59	18 11	0 21	1 10	16 37	2.3	4 23	2.0
0	6 2	18 8	0 21	1 9	16 43	2.1	4 15	2.2
10	6 4	18 6	0 21	1 10	16 49	2.0	4 8	2.3
20	6 6	18 3	0 22	1 13	16 55	1.8	3 59	2.5
30	6 9	18 0	0 24	1 19	17 3	1.6	3 50	2.6
35	6 10	17 59	0 25	1 24	17 7	1.5	3 44	2.7
40	6 12	17 57	0 27	1 30	17 12	1.4	3 38	2.9
45	6 14	17 55	0 29	1 38	17 17	1.3	3 30	3.0
50	6 16	17 53	0 32	1 48	17 24	1.1	3 21	3.2
55	6 18	17 50	0 36	2 2	17 32	.9	3 10	3.4
60	6 22	17 47	0 41	2 21	17 42	.7	2 56	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	28 14.8	90 11 14.4	-104	315 48.8	-17 12.9	266 49.3	-22 15.8	
2	57 10.9	91 10 53.7	-105	345 54.0	-17 12.8	296 54.0	-22 15.8	
4	86 7.1	92 10 32.7	-106	15 59.2	-17 12.7	326 58.8	-22 15.7	
6	115 3.5	93 10 11.5	-107	46 4.5	-17 12.6	357 3.5	-22 15.7	
8	144 .2	94 9 50.1	-108	76 9.7	-17 12.5	27 8.3	-22 15.7	
10	172 57.0	95 9 28.5	-109	106 14.9	-17 12.4	57 13.0	-22 15.7	
12	201 54.1	96 9 6.7	-110	136 20.2	-17 12.3	87 17.8	-22 15.7	
14	230 51.3	97 8 44.7	-111	166 25.4	-17 12.3	117 22.6	-22 15.7	
16	259 48.8	98 8 22.5	-112	196 30.7	-17 12.2	147 27.3	-22 15.7	
18	288 46.4	99 8 .1	-113	226 35.9	-17 12.1	177 32.1	-22 15.7	
20	317 44.3	100 7 37.6	-113	256 41.1	-17 12.0	207 36.8	-22 15.7	
22	346 42.3	101 7 14.9	-114	286 46.4	-17 11.9	237 41.6	-22 15.6	
Δ				26	0	24	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 4 55.2	.8	16.0	T _m	22 55	2.1	59.1 16.1
12	- 4 46.2	T _{m☉}	12 h 4.8 min	Starost	11.5 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	' / "	°	°	h	min	' / "	°	°
♀	13 17	.1	334	-3.0	♃	2 56	.0	129	-1.9
♂	6 2	.1	83	-.1	♄	6 12	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 50.7	3 39.6	187 19.9	160 38.5	10 25.4	269 46.0	-23 32.9
2	208 51.1	3 41.6	217 24.9	190 37.7	10 27.8	299 47.9	-23 32.8
4	238 51.5	3 43.5	247 29.8	220 36.8	10 30.1	329 49.8	-23 32.8
6	268 51.9	3 45.4	277 34.7	250 35.9	10 32.5	359 51.7	-23 32.8
8	298 52.2	3 47.4	307 39.6	280 35.1	10 34.9	29 53.6	-23 32.8
10	328 52.6	3 49.3	337 44.6	310 34.2	10 37.2	59 55.5	-23 32.7
12	358 53.0	3 51.3	7 49.5	340 33.3	10 39.6	89 57.4	-23 32.7
14	28 53.4	3 53.2	37 54.4	10 32.5	10 42.0	119 59.3	-23 32.7
16	58 53.7	3 55.2	67 59.3	40 31.6	10 44.3	150 1.2	-23 32.6
18	88 54.1	3 57.1	98 4.3	70 30.7	10 46.7	180 3.1	-23 32.6
20	118 54.5	3 59.0	128 9.2	100 29.9	10 49.1	210 5.1	-23 32.6
22	148 54.9	4 1.0	158 14.1	130 29.0	10 51.4	240 7.0	-23 32.6
Δ	2	10		-4	12	10	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 32	18 39	0 43	2 37	17 9	2.7	5 48	.6
55	5 37	18 33	0 37	2 11	17 13	2.6	5 41	.9
50	5 41	18 29	0 33	1 53	17 16	2.5	5 36	1.1
45	5 45	18 25	0 30	1 41	17 19	2.4	5 31	1.2
40	5 48	18 22	0 27	1 33	17 22	2.3	5 27	1.4
35	5 50	18 20	0 25	1 26	17 24	2.3	5 24	1.5
30	5 52	18 17	0 24	1 21	17 25	2.3	5 21	1.6
20	5 56	18 14	0 22	1 14	17 28	2.2	5 16	1.8
10	5 58	18 11	0 21	1 10	17 31	2.1	5 12	1.9
0	6 1	18 8	0 21	1 9	17 34	2.0	5 7	2.1
10	6 4	18 5	0 21	1 10	17 36	2.0	5 3	2.2
20	6 6	18 2	0 22	1 13	17 39	1.9	4 58	2.4
30	6 9	17 59	0 24	1 19	17 42	1.9	4 53	2.6
35	6 11	17 57	0 25	1 24	17 44	1.8	4 50	2.7
40	6 13	17 55	0 27	1 30	17 46	1.8	4 46	2.8
45	6 15	17 53	0 29	1 38	17 48	1.7	4 42	2.9
50	6 17	17 51	0 32	1 48	17 51	1.7	4 37	3.1
55	6 20	17 48	0 36	2 1	17 54	1.6	4 31	3.3
60	6 24	17 44	0 41	2 20	17 58	1.5	4 23	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	15 40.5	102	6 52.1	-115	316 51.6	-17 11.8	267 46.3	-22 15.6
2	44 38.9	103	6 29.1	-115	346 56.9	-17 11.7	297 51.1	-22 15.6
4	73 37.5	104	6 6.1	-116	17 2.1	-17 11.6	327 55.9	-22 15.6
6	102 36.2	105	5 42.9	-116	47 7.4	-17 11.5	358 .6	-22 15.6
8	131 35.1	105	5 19.6	-117	77 12.6	-17 11.5	28 5.4	-22 15.6
10	160 34.2	106	4 56.2	-117	107 17.9	-17 11.4	58 10.2	-22 15.6
12	189 33.5	107	4 32.8	-118	137 23.1	-17 11.3	88 14.9	-22 15.6
14	218 32.9	108	4 9.3	-118	167 28.4	-17 11.2	118 19.7	-22 15.6
16	247 32.5	109	3 45.7	-118	197 33.6	-17 11.1	148 24.5	-22 15.5
18	276 32.2	109	3 22.1	-118	227 38.9	-17 11.0	178 29.2	-22 15.5
20	305 32.0	110	2 58.5	-118	257 44.2	-17 10.9	208 34.0	-22 15.5
22	334 32.0	111	2 34.8	-119	287 49.4	-17 10.8	238 38.8	-22 15.5
Δ					26	0	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 4 37.1	.8	16.0	T _m	23 45	2.0	58.7 16.0
12	- 4 28.1	T _{m☉}	12 h 4.5 min	Starost	12.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	13 18	.1	333	-3.0	♃	2 52	.0	130	-1.9
♂	6 1	.1	82	-.1	♄	6 8	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 55.2	4 2.9	188 19.1	160 28.1	10 53.8	270 8.9	-23 32.5
2	208 55.6	4 4.8	218 24.0	190 27.2	10 56.1	300 10.8	-23 32.5
4	238 56.0	4 6.8	248 28.9	220 26.4	10 58.5	330 12.7	-23 32.5
6	268 56.4	4 8.7	278 33.8	250 25.5	11 .8	0 14.6	-23 32.4
8	298 56.8	4 10.6	308 38.8	280 24.6	11 3.2	30 16.6	-23 32.4
10	328 57.1	4 12.6	338 43.7	310 23.7	11 5.5	60 18.5	-23 32.4
12	358 57.5	4 14.5	8 48.6	340 22.9	11 7.9	90 20.4	-23 32.3
14	28 57.9	4 16.5	38 53.6	10 22.0	11 10.2	120 22.3	-23 32.3
16	58 58.3	4 18.4	68 58.5	40 21.1	11 12.5	150 24.2	-23 32.3
18	88 58.6	4 20.3	99 3.4	70 20.2	11 14.9	180 26.2	-23 32.2
20	118 59.0	4 22.2	129 8.3	100 19.3	11 17.2	210 28.1	-23 32.2
22	148 59.4	4 24.2	159 13.3	130 18.4	11 19.5	240 30.0	-23 32.1
Δ	2	10		-4	12	10	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 29	18 41	0 43	2 38	18 13	.6	6 4	2.9
55	5 35	18 35	0 37	2 11	18 15	.9	6 3	2.7
50	5 39	18 30	0 33	1 54	18 16	1.0	6 2	2.6
45	5 43	18 26	0 30	1 42	18 17	1.2	6 1	2.5
40	5 46	18 23	0 27	1 33	18 18	1.3	6 0	2.4
35	5 49	18 20	0 25	1 26	18 19	1.4	5 60	2.4
30	5 51	18 18	0 24	1 21	18 19	1.5	5 59	2.3
20	5 55	18 14	0 22	1 14	18 21	1.7	5 59	2.2
10	5 58	18 11	0 21	1 10	18 22	1.9	5 58	2.1
0	6 1	18 7	0 21	1 9	18 23	2.0	5 57	2.0
10	6 4	18 4	0 21	1 10	18 24	2.2	5 56	1.9
20	6 7	18 1	0 22	1 13	18 25	2.3	5 56	1.9
30	6 10	17 58	0 24	1 19	18 26	2.5	5 55	1.7
35	6 12	17 56	0 25	1 24	18 27	2.6	5 54	1.7
40	6 14	17 54	0 27	1 30	18 28	2.7	5 53	1.6
45	6 16	17 51	0 29	1 38	18 29	2.8	5 53	1.6
50	6 19	17 49	0 32	1 48	18 30	3.0	5 52	1.5
55	6 22	17 45	0 36	2 1	18 32	3.2	5 51	1.4
60	6 26	17 41	0 41	2 20	18 34	3.5	5 49	1.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	3 32.2	111	2 11.1	-119	317 54.7	-17 10.7	268 43.5	-22 15.5
2	32 32.5	112	1 47.3	-119	347 59.9	-17 10.6	298 48.3	-22 15.5
4	61 32.9	113	1 23.6	-119	18 5.2	-17 10.5	328 53.1	-22 15.5
6	90 33.4	113	0 59.9	-118	48 10.5	-17 10.4	358 57.8	-22 15.5
8	119 34.0	114	0 36.2	-118	78 15.7	-17 10.4	29 2.6	-22 15.5
10	148 34.8	114	0 12.5	-7	108 21.0	-17 10.3	59 7.4	-22 15.4
12	177 35.7	115	0 11.1	118	138 26.2	-17 10.2	89 12.2	-22 15.4
14	206 36.7	115	0 34.7	118	168 31.5	-17 10.1	119 16.9	-22 15.4
16	235 37.8	116	0 58.3	117	198 36.8	-17 10.0	149 21.7	-22 15.4
18	264 38.9	116	1 21.7	117	228 42.1	-17 9.9	179 26.5	-22 15.4
20	293 40.2	117	1 45.2	117	258 47.3	-17 9.8	209 31.3	-22 15.4
22	322 41.6	117	2 8.5	116	288 52.6	-17 9.7	239 36.0	-22 15.4
Δ					26	0	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 4 19.0	.8	16.0	T _m	...	1.0	58.2 15.9
12	- 4 10.0	T _{m☉}	12 h 4.2 min	Starost	13.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	13 19	.1	332	-3.0	♃	2 48	.0	130	-1.9
♂	5 59	.1	82	-.1	♄	6 4	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 59.8	4 26.1	189 18.2	160 17.5	11 21.9	270 31.9	-23 32.1
2	209 .1	4 28.0	219 23.1	190 16.6	11 24.2	300 33.8	-23 32.1
4	239 .5	4 30.0	249 28.1	220 15.8	11 26.5	330 35.8	-23 32.0
6	269 .9	4 31.9	279 33.0	250 14.9	11 28.9	0 37.7	-23 32.0
8	299 1.2	4 33.8	309 37.9	280 14.0	11 31.2	30 39.6	-23 31.9
10	329 1.6	4 35.8	339 42.8	310 13.1	11 33.5	60 41.6	-23 31.9
12	359 2.0	4 37.7	9 47.8	340 12.2	11 35.8	90 43.5	-23 31.8
14	29 2.4	4 39.6	39 52.7	10 11.3	11 38.2	120 45.4	-23 31.8
16	59 2.7	4 41.5	69 57.6	40 10.4	11 40.5	150 47.3	-23 31.7
18	89 3.1	4 43.5	100 2.6	70 9.5	11 42.8	180 49.3	-23 31.7
20	119 3.5	4 45.4	130 7.5	100 8.6	11 45.1	210 51.2	-23 31.7
22	149 3.9	4 47.3	160 12.4	130 7.7	11 47.4	240 53.1	-23 31.6
Δ	2	10		-4	12	10	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 26	18 44	0 43	2 40	18 28	.7	7 13	3.4
55	5 32	18 37	0 37	2 12	18 35	.9	7 9	3.2
50	5 37	18 32	0 33	1 54	18 41	1.1	7 5	3.0
45	5 41	18 28	0 30	1 42	18 46	1.2	7 2	2.8
40	5 44	18 24	0 27	1 33	18 50	1.4	6 59	2.7
35	5 47	18 21	0 26	1 26	18 53	1.5	6 57	2.6
30	5 50	18 19	0 24	1 21	18 56	1.6	6 55	2.5
20	5 54	18 14	0 22	1 14	19 2	1.7	6 52	2.3
10	5 57	18 11	0 21	1 10	19 6	1.9	6 49	2.1
0	6 1	18 7	0 21	1 9	19 11	2.0	6 46	2.0
10	6 4	18 4	0 21	1 10	19 15	2.1	6 43	1.9
20	6 7	18 0	0 22	1 13	19 20	2.3	6 40	1.7
30	6 11	17 57	0 24	1 19	19 26	2.4	6 37	1.5
35	6 13	17 55	0 25	1 24	19 29	2.5	6 35	1.4
40	6 15	17 52	0 27	1 30	19 33	2.6	6 32	1.3
45	6 17	17 50	0 29	1 37	19 37	2.8	6 30	1.2
50	6 20	17 46	0 32	1 48	19 42	2.9	6 27	1.1
55	6 24	17 43	0 36	2 1	19 48	3.1	6 23	.9
60	6 29	17 38	0 41	2 20	19 57	3.4	6 19	.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	351 43.0	118	2 31.8	116	318 57.9	-17 9.6	269 40.8	-22 15.4
2	20 44.6	118	2 54.9	115	349 3.1	-17 9.5	299 45.6	-22 15.4
4	49 46.2	118	3 18.0	115	19 8.4	-17 9.4	329 50.4	-22 15.3
6	78 47.9	119	3 40.9	114	49 13.7	-17 9.3	359 55.1	-22 15.3
8	107 49.6	119	4 3.8	114	79 19.0	-17 9.2	29 59.9	-22 15.3
10	136 51.4	119	4 26.5	113	109 24.3	-17 9.1	60 4.7	-22 15.3
12	165 53.3	120	4 49.1	112	139 29.5	-17 9.0	90 9.5	-22 15.3
14	194 55.2	120	5 11.5	111	169 34.8	-17 8.9	120 14.3	-22 15.3
16	223 57.2	120	5 33.8	111	199 40.1	-17 8.8	150 19.1	-22 15.3
18	252 59.3	120	5 55.9	110	229 45.4	-17 8.7	180 23.8	-22 15.3
20	282 1.3	121	6 17.9	109	259 50.7	-17 8.6	210 28.6	-22 15.3
22	311 3.4	121	6 39.7	108	289 55.9	-17 8.5	240 33.4	-22 15.3
Δ					26	0	24	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 4 1.0	.7	16.0	T _m	0 34	2.0	57.6	15.7
12	- 3 52.0	T _{m☉}	12 h 3.9 min	Starost	14.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 19	.1	331	-3.0	♃	2 44	.0	130	-1.9
♂	5 57	.1	81	-.2	♄	6 0	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 4.2	4 49.2	190 17.3	160 6.8	11 49.7	270 55.1	-23 31.6
2	209 4.6	4 51.2	220 22.3	190 5.9	11 52.0	300 57.0	-23 31.5
4	239 5.0	4 53.1	250 27.2	220 5.0	11 54.3	330 58.9	-23 31.5
6	269 5.3	4 55.0	280 32.1	250 4.0	11 56.6	1 .9	-23 31.4
8	299 5.7	4 56.9	310 37.1	280 3.1	11 58.9	31 2.8	-23 31.4
10	329 6.1	4 58.8	340 42.0	310 2.2	12 1.2	61 4.8	-23 31.3
12	359 6.5	5 .8	10 46.9	340 1.3	12 3.5	91 6.7	-23 31.2
14	29 6.8	5 2.7	40 51.8	10 .4	12 5.8	121 8.6	-23 31.2
16	59 7.2	5 4.6	70 56.8	39 59.5	12 8.1	151 10.6	-23 31.1
18	89 7.6	5 6.5	101 1.7	69 58.6	12 10.4	181 12.5	-23 31.1
20	119 7.9	5 8.4	131 6.6	99 57.6	12 12.7	211 14.5	-23 31.0
22	149 8.3	5 10.4	161 11.5	129 56.7	12 15.0	241 16.4	-23 31.0
Δ	2	10		-5	11	10	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 23	18 46	0 43	2 41	18 44	.8	8 35	3.3
55	5 30	18 39	0 37	2 13	18 57	1.0	8 24	3.1
50	5 35	18 33	0 33	1 55	19 7	1.2	8 16	2.9
45	5 39	18 29	0 30	1 42	19 15	1.3	8 9	2.7
40	5 43	18 25	0 27	1 33	19 22	1.4	8 3	2.6
35	5 46	18 22	0 26	1 26	19 28	1.5	7 58	2.5
30	5 48	18 19	0 24	1 21	19 34	1.6	7 54	2.4
20	5 53	18 15	0 22	1 14	19 43	1.7	7 46	2.2
10	5 57	18 11	0 21	1 10	19 51	1.9	7 40	2.1
0	6 0	18 7	0 21	1 9	19 59	2.0	7 34	2.0
10	6 4	18 3	0 21	1 10	20 6	2.1	7 28	1.9
20	6 7	17 60	0 22	1 13	20 15	2.2	7 21	1.7
30	6 11	17 56	0 24	1 19	20 24	2.4	7 14	1.6
35	6 13	17 53	0 25	1 24	20 30	2.5	7 9	1.5
40	6 16	17 51	0 27	1 30	20 36	2.6	7 5	1.4
45	6 19	17 48	0 29	1 37	20 43	2.7	6 59	1.3
50	6 22	17 44	0 32	1 47	20 52	2.8	6 52	1.1
55	6 26	17 40	0 36	2 1	21 3	3.0	6 44	.9
60	6 31	17 35	0 41	2 20	21 17	3.2	6 34	.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	340 5.6	121	7 1.3	107	320 1.2	-17 8.4	270 38.2	-22 15.2
2	9 7.8	121	7 22.8	106	350 6.5	-17 8.3	300 43.0	-22 15.2
4	38 10.0	121	7 44.1	105	20 11.8	-17 8.2	330 47.8	-22 15.2
6	67 12.2	121	8 5.1	104	50 17.1	-17 8.1	0 52.6	-22 15.2
8	96 14.5	121	8 26.0	103	80 22.4	-17 8.0	30 57.3	-22 15.2
10	125 16.8	121	8 46.6	102	110 27.7	-17 7.9	61 2.1	-22 15.2
12	154 19.1	122	9 7.1	101	140 33.0	-17 7.8	91 6.9	-22 15.2
14	183 21.4	122	9 27.3	100	170 38.3	-17 7.7	121 11.7	-22 15.2
16	212 23.7	122	9 47.3	99	200 43.6	-17 7.6	151 16.5	-22 15.2
18	241 26.1	122	10 7.1	98	230 48.9	-17 7.5	181 21.3	-22 15.2
20	270 28.4	122	10 26.6	96	260 54.2	-17 7.4	211 26.1	-22 15.1
22	299 30.7	122	10 45.9	95	290 59.5	-17 7.3	241 30.9	-22 15.1
Δ					26	1	24	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 3 43.1	.7	16.0	T _m	1 22	2.0	57.0	15.5
12	- 3 34.2	T _{m☉}	12 h 3.6 min	Starost	15.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 20	.1	330	-3.0	♃	2 39	.0	130	-1.9
♂	5 56	.1	81	-.2	♄	5 57	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	8.7	5	12.3	191	16.5	159	55.8	12	17.3	271	18.4	-23	30.9	
2	209	9.0	5	14.2	221	21.4	189	54.9	12	19.6	301	20.3	-23	30.9	
4	239	9.4	5	16.1	251	26.3	219	53.9	12	21.9	331	22.3	-23	30.8	
6	269	9.8	5	18.0	281	31.3	249	53.0	12	24.1	1	24.2	-23	30.7	
8	299	10.1	5	19.9	311	36.2	279	52.1	12	26.4	31	26.2	-23	30.7	
10	329	10.5	5	21.9	341	41.1	309	51.2	12	28.7	61	28.1	-23	30.6	
12	359	10.9	5	23.8	11	46.0	339	50.2	12	31.0	91	30.1	-23	30.6	
14	29	11.2	5	25.7	41	51.0	9	49.3	12	33.2	121	32.0	-23	30.5	
16	59	11.6	5	27.6	71	55.9	39	48.4	12	35.5	151	34.0	-23	30.4	
18	89	12.0	5	29.5	102	.8	69	47.4	12	37.8	181	35.9	-23	30.4	
20	119	12.3	5	31.4	132	5.8	99	46.5	12	40.0	211	37.9	-23	30.3	
22	149	12.7	5	33.3	162	10.7	129	45.6	12	42.3	241	39.8	-23	30.2	
Δ		2		10				-5		11		10			0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 20	18 48	0 43	2 43	19 2	.9	9 55	3.2
55	5 27	18 41	0 37	2 14	19 21	1.2	9 38	2.9
50	5 33	18 35	0 33	1 55	19 35	1.3	9 25	2.7
45	5 37	18 30	0 30	1 43	19 47	1.4	9 14	2.6
40	5 41	18 26	0 27	1 33	19 56	1.5	9 5	2.5
35	5 44	18 23	0 26	1 27	20 5	1.6	8 58	2.4
30	5 47	18 20	0 24	1 21	20 12	1.7	8 52	2.3
20	5 52	18 15	0 22	1 14	20 25	1.8	8 40	2.2
10	5 56	18 10	0 21	1 10	20 36	1.9	8 31	2.1
0	6 0	18 7	0 21	1 9	20 46	2.0	8 21	2.0
10	6 4	18 3	0 21	1 10	20 57	2.1	8 12	1.9
20	6 8	17 59	0 22	1 13	21 8	2.2	8 3	1.8
30	6 12	17 54	0 24	1 19	21 21	2.3	7 51	1.6
35	6 14	17 52	0 25	1 24	21 29	2.4	7 45	1.6
40	6 17	17 49	0 27	1 30	21 37	2.5	7 38	1.5
45	6 20	17 46	0 29	1 37	21 47	2.6	7 29	1.4
50	6 24	17 42	0 32	1 47	21 59	2.7	7 19	1.2
55	6 28	17 38	0 36	2 1	22 15	2.8	7 7	1.1
60	6 34	17 32	0 41	2 19	22 35	3.1	6 51	.8

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃	δ _♃		S _♄	δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	328	33.1	122	11	4.9	94	321	4.8	-17	7.2	271	35.7	-22	15.1	
2	357	35.4	122	11	23.7	93	351	10.1	-17	7.1	301	40.5	-22	15.1	
4	26	37.7	122	11	42.2	91	21	15.4	-17	7.0	331	45.3	-22	15.1	
6	55	40.0	122	12	.5	90	51	20.7	-17	6.9	1	50.1	-22	15.1	
8	84	42.4	122	12	18.5	89	81	26.0	-17	6.8	31	54.9	-22	15.1	
10	113	44.7	121	12	36.2	87	111	31.3	-17	6.7	61	59.7	-22	15.1	
12	142	47.0	121	12	53.6	86	141	36.6	-17	6.6	92	4.5	-22	15.1	
14	171	49.2	121	13	10.8	84	171	41.9	-17	6.5	122	9.3	-22	15.1	
16	200	51.5	121	13	27.7	83	201	47.2	-17	6.4	152	14.1	-22	15.0	
18	229	53.7	121	13	44.3	81	231	52.5	-17	6.3	182	18.9	-22	15.0	
20	258	55.9	121	14	.5	80	261	57.8	-17	6.2	212	23.7	-22	15.0	
22	287	58.1	121	14	16.5	78	292	3.1	-17	6.1	242	28.5	-22	15.0	
Δ								27		1		24			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 3 25.3	.7	16.0	T _m	2 10	2.0	56.3	15.3
12	- 3 16.5	T _{m☉}	12 h 3.3 min	Starost	16.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h	min	'	°	°
♀	13 21	.1	329	-3.0	♃	2 35	.0	130	-2.0
♂	5 54	.1	80	-.2	♄	5 53	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	13.1	5	35.2	192	15.6	159	44.6	12	44.6	271	41.8	-23	30.2	
2	209	13.4	5	37.1	222	20.5	189	43.7	12	46.8	301	43.7	-23	30.1	
4	239	13.8	5	39.0	252	25.5	219	42.7	12	49.1	331	45.7	-23	30.0	
6	269	14.2	5	41.0	282	30.4	249	41.8	12	51.3	1	47.6	-23	30.0	
8	299	14.5	5	42.9	312	35.3	279	40.8	12	53.6	31	49.6	-23	29.9	
10	329	14.9	5	44.8	342	40.3	309	39.9	12	55.8	61	51.6	-23	29.8	
12	359	15.3	5	46.7	12	45.2	339	39.0	12	58.1	91	53.5	-23	29.8	
14	29	15.6	5	48.6	42	50.1	9	38.0	13	.3	121	55.5	-23	29.7	
16	59	16.0	5	50.5	72	55.0	39	37.0	13	2.6	151	57.5	-23	29.6	
18	89	16.3	5	52.4	103	.0	69	36.1	13	4.8	181	59.4	-23	29.5	
20	119	16.7	5	54.3	133	4.9	99	35.1	13	7.1	212	1.4	-23	29.5	
22	149	17.1	5	56.2	163	9.8	129	34.2	13	9.3	242	3.4	-23	29.4	
Δ		2		10				-5		11		10			0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 17	18 51	0 44	2 45	19 24	1.2	11 11	2.9
55	5 25	18 43	0 37	2 15	19 49	1.4	10 48	2.7
50	5 31	18 36	0 33	1 56	20 7	1.5	10 30	2.6
45	5 35	18 31	0 30	1 43	20 21	1.6	10 17	2.5
40	5 40	18 27	0 27	1 34	20 33	1.7	10 6	2.4
35	5 43	18 24	0 26	1 27	20 43	1.7	9 56	2.3
30	5 46	18 20	0 24	1 21	20 52	1.8	9 48	2.3
20	5 51	18 15	0 22	1 14	21 8	1.9	9 33	2.2
10	5 56	18 10	0 21	1 10	21 21	1.9	9 21	2.1
0	5 60	18 6	0 21	1 9	21 34	2.0	9 9	2.0
10	6 4	18 2	0 21	1 10	21 47	2.1	8 57	1.9
20	6 8	17 58	0 22	1 13	22 1	2.1	8 45	1.8
30	6 12	17 53	0 24	1 19	22 16	2.2	8 31	1.7
35	6 15	17 50	0 25	1 24	22 26	2.3	8 23	1.7
40	6 18	17 48	0 27	1 30	22 36	2.3	8 13	1.6
45	6 21	17 44	0 29	1 37	22 49	2.4	8 2	1.5
50	6 25	17 40	0 32	1 47	23 4	2.5	7 49	1.4
55	6 30	17 35	0 36	2 1	23 23	2.0	7 33	1.3
60	6 36	17 29	0 41	2 19	23 49	2.0	7 11	1.0

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃	δ _♃		S _♄	δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	317	.3	121	14	32.2	77	322	8.4	-17	6.0	272	33.3	-22	15.0	
2	346	2.5	121	14	47.6	75	352	13.8	-17	5.9	302	38.1	-22	15.0	
4	15	4.6	121	15	2.6	74	22	19.1	-17	5.8	332	42.9	-22	15.0	
6	44	6.7	120	15	17.4	72	52	24.4	-17	5.7	2	47.7	-22	15.0	
8	73	8.8	120	15	31.8	71	82	29.7	-17	5.6	32	52.5	-22	15.0	
10	102	10.9	120	15	45.9	69	112	35.0	-17	5.4	62	57.3	-22	15.0	
12	131	12.9	120	15	59.7	67	142	40.4	-17	5.3	93	2.1	-22	15.0	
14	160	14.9	120	16	13.1	66	172	45.7	-17	5.2	123	6.9	-22	15.0	
16	189	16.9	120	16	26.3	64	202	51.0	-17	5.1	153	11.7	-22	14.9	
18	218	18.8	120	16	39.0	62	232	56.3	-17	5.0	183	16.5	-22	14.9	
20	247	20.8	120	16	51.5	61	263	1.6	-17	4.9	213	21.3	-22	14.9	
22	276	22.7	119	17	3.6	59	293	7.0	-17	4.8	243	26.2	-22	14.9	
Δ								27		1		24			0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 3 7.7	.7	16.0	T _m	2 58	2.0	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 17.4	5 58.1	193 14.8	159 33.2	13 11.5	272 5.3	-23 29.3
2	209 17.8	6 .0	223 19.7	189 32.3	13 13.8	302 7.3	-23 29.2
4	239 18.2	6 1.9	253 24.6	219 31.3	13 16.0	332 9.3	-23 29.2
6	269 18.5	6 3.8	283 29.5	249 30.3	13 18.2	2 11.2	-23 29.1
8	299 18.9	6 5.7	313 34.5	279 29.4	13 20.4	32 13.2	-23 29.0
10	329 19.2	6 7.6	343 39.4	309 28.4	13 22.7	62 15.2	-23 28.9
12	359 19.6	6 9.5	13 44.3	339 27.5	13 24.9	92 17.1	-23 28.9
14	29 20.0	6 11.4	43 49.3	9 26.5	13 27.1	122 19.1	-23 28.8
16	59 20.3	6 13.3	73 54.2	39 25.5	13 29.3	152 21.1	-23 28.7
18	89 20.7	6 15.2	103 59.1	69 24.5	13 31.5	182 23.1	-23 28.6
20	119 21.0	6 17.1	134 4.0	99 23.6	13 33.8	212 25.1	-23 28.5
22	149 21.4	6 18.9	164 9.0	129 22.6	13 36.0	242 27.0	-23 28.5
Δ	2	9		-5	11	10	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 14	18 53	0 44	2 47	19 53	1.5	12 21	2.6
55	5 22	18 45	0 38	2 16	20 22	1.6	11 53	2.5
50	5 28	18 38	0 33	1 56	20 43	1.7	11 33	2.4
45	5 34	18 33	0 30	1 43	20 59	1.8	11 17	2.3
40	5 38	18 28	0 28	1 34	21 13	1.8	11 3	2.3
35	5 42	18 24	0 26	1 27	21 25	1.9	10 52	2.2
30	5 45	18 21	0 24	1 22	21 35	1.9	10 42	2.2
20	5 50	18 15	0 22	1 14	21 52	1.9	10 26	2.1
10	5 55	18 10	0 21	1 10	22 8	2.0	10 11	2.1
0	5 59	18 6	0 21	1 9	22 22	2.0	9 57	2.0
10	6 4	18 2	0 21	1 10	22 37	2.0	9 44	2.0
20	6 8	17 57	0 22	1 13	22 52	2.1	9 29	1.9
30	6 13	17 52	0 24	1 19	23 10	2.0	9 12	1.8
35	6 16	17 49	0 25	1 24	23 20	2.0	9 3	1.8
40	6 19	17 46	0 27	1 30	23 32	2.0	8 51	1.7
45	6 22	17 42	0 29	1 37	23 46	2.0	8 38	1.7
50	6 27	17 38	0 32	1 47	...	.0	8 23	1.6
55	6 32	17 33	0 36	2 1	...	.0	8 3	1.5
60	6 38	17 26	0 42	2 19	...	.0	7 36	1.3
S								

UT	MESEC				JUPITER			SATURN		
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	305 24.5	119	17 15.3	57	323 12.3	-17 4.7	273 31.0	-22 14.9	303 35.8	-22 14.9
2	334 26.4	119	17 26.8	55	353 17.6	-17 4.6	303 35.8	-22 14.9	333 40.6	-22 14.9
4	3 28.2	119	17 37.8	54	23 22.9	-17 4.5	333 40.6	-22 14.9	3 45.4	-22 14.9
6	32 30.0	119	17 48.5	52	53 28.3	-17 4.4	3 45.4	-22 14.9	33 50.2	-22 14.9
8	61 31.8	119	17 58.9	50	83 33.6	-17 4.3	33 50.2	-22 14.9	63 55.0	-22 14.9
10	90 33.5	119	18 8.9	48	113 38.9	-17 4.1	63 55.0	-22 14.9	93 59.9	-22 14.9
12	119 35.3	119	18 18.5	46	143 44.3	-17 4.0	93 59.9	-22 14.9	124 4.7	-22 14.9
14	148 37.0	118	18 27.8	45	173 49.6	-17 3.9	124 4.7	-22 14.9	154 9.5	-22 14.8
16	177 38.7	118	18 36.7	43	203 54.9	-17 3.8	154 9.5	-22 14.8	184 14.3	-22 14.8
18	206 40.3	118	18 45.3	41	234 .3	-17 3.7	184 14.3	-22 14.8	214 19.1	-22 14.8
20	235 42.0	118	18 53.5	39	264 5.6	-17 3.6	214 19.1	-22 14.8	244 23.9	-22 14.8
22	264 43.6	118	19 1.3	37	294 11.0	-17 3.5	244 23.9	-22 14.8		
Δ					27	1	24	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	- 2 50.3	.7	16.0	T _m	3 46	2.0	55.1 15.0
12	- 2 41.6	T _{m☉}	12 h 2.7 min	Starost	18.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 22	.1	326	-3.0	♃	2 27	.0	130	-2.0
♂	5 51	.1	79	-.2	♄	5 45	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 21.7	6 20.8	194 13.9	159 21.6	13 38.2	272 29.0	-23 28.4
2	209 22.1	6 22.7	224 18.8	189 20.6	13 40.4	302 31.0	-23 28.3
4	239 22.5	6 24.6	254 23.8	219 19.7	13 42.6	332 33.0	-23 28.2
6	269 22.8	6 26.5	284 28.7	249 18.7	13 44.8	2 35.0	-23 28.1
8	299 23.2	6 28.4	314 33.6	279 17.7	13 47.0	32 36.9	-23 28.0
10	329 23.5	6 30.3	344 38.5	309 16.7	13 49.2	62 38.9	-23 28.0
12	359 23.9	6 32.2	14 43.5	339 15.7	13 51.4	92 40.9	-23 27.9
14	29 24.2	6 34.1	44 48.4	9 14.7	13 53.6	122 42.9	-23 27.8
16	59 24.6	6 35.9	74 53.3	39 13.8	13 55.8	152 44.9	-23 27.7
18	89 24.9	6 37.8	104 58.2	69 12.8	13 58.0	182 46.9	-23 27.6
20	119 25.3	6 39.7	135 3.2	99 11.8	14 .1	212 48.9	-23 27.5
22	149 25.7	6 41.6	165 8.1	129 10.8	14 2.3	242 50.9	-23 27.4
Δ	2	9		-5	11	10	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 11	18 56	0 44	2 49	20 29	1.9	13 25	2.2
55	5 19	18 47	0 38	2 17	21 1	1.9	12 53	2.2
50	5 26	18 40	0 33	1 57	21 24	2.0	12 30	2.2
45	5 32	18 34	0 30	1 44	21 42	2.0	12 12	2.1
40	5 36	18 29	0 28	1 34	21 57	2.0	11 58	2.1
35	5 40	18 25	0 26	1 27	22 9	2.0	11 46	2.1
30	5 44	18 22	0 24	1 22	22 20	2.0	11 35	2.1
20	5 49	18 16	0 22	1 14	22 39	2.0	11 17	2.1
10	5 55	18 10	0 21	1 11	22 55	2.0	11 0	2.0
0	5 59	18 6	0 21	1 9	23 11	2.0	10 46	2.0
10	6 4	18 1	0 21	1 10	23 26	2.0	10 31	2.0
20	6 8	17 56	0 22	1 13	23 42	2.0	10 15	2.0
30	6 14	17 51	0 24	1 19	23 58	2.0	11 56	1.9
35	6 17	17 48	0 25	1 24	...	.0	9 46	1.9
40	6 20	17 44	0 27	1 30	...	.0	9 33	1.9
45	6 24	17 40	0 29	1 37	...	.0	9 19	1.9
50	6 28	17 36	0 32	1 47	0 4	2.3	9 1	1.8
55	6 34	17 30	0 36	2 1	0 26	2.3	8 39	1.8
60	6 41	17 23	0 42	2 19	0 56	2.4	8 8	1.7
S								

UT	MESEC				JUPITER			SATURN		
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	293 45.3	118	19 8.8	35	324 16.3	-17 3.4	274 28.8	-22 14.8	304 33.6	-22 14.8
2	322 46.9	118	19 15.9	34	354 21.6	-17 3.3	304 33.6	-22 14.8	334 38.4	-22 14.8
4	351 48.5	118	19 22.6	32	24 27.0	-17 3.1	334 38.4	-22 14.8	4 43.2	-22 14.8
6	20 50.1	118	19 28.9	30	54 32.3	-17 3.0	4 43.2	-22 14.8	34 48.1	-22 14.8
8	49 51.7	118	19 34.9	28	84 37.7	-17 2.9	34 48.1	-22 14.8	64 52.9	-22 14.8
10	78 53.2	118	19 40.5	26	114 43.0	-17 2.8	64 52.9	-22 14.8	94 57.7	-22 14.8
12	107 54.8	118	19 45.7	24	144 48.4	-17 2.7	94 57.7	-22 14.8	125 2.5	-22 14.8
14	136 56.4	118	19 50.6	22	174 53.7	-17 2.6	125 2.5	-22 14.8	155 7.4	-22 14.7
16	165 57.9	118	19 55.1	20	204 59.0	-17 2.5	155 7.4	-22 14.7	185 12.2	-22 14.7
18	194 59.5	118	19 59.1	19	235 4.4	-17 2.4	185 12.2	-22 14.7	215 17.0	-22 14.7
20	224 1.1	118	20 2.9	17	265 9.7	-17 2.2	215 17.0	-22 14.7	245 21.8	-22 14.7
22	253 2.7	118	20 6.2	15	295 15.1	-17 2.1	245 21.8	-22 14.7		
Δ					27	1	24	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	s	'	h min	min	'	'
00	- 2 33.0	.7	16.0	T _m	4 34	2.0	54.7 14.9
12	- 2 24.5	T _{m☉}	12 h 2.4 min	Starost	19.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 23	.1	325	-3.0	♃	2 22	.0	130	-2.0
♂	5 50	.1	78	-.3	♄	5 41	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 26.0	6 43.5	195 13.0	159 9.8 14 4.5	272 52.8 -23 27.3		
2	209 26.4	6 45.4	225 18.0	189 8.8 14 6.7	302 54.8 -23 27.3		
4	239 26.7	6 47.2	255 22.9	219 7.8 14 8.9	332 56.8 -23 27.2		
6	269 27.1	6 49.1	285 27.8	249 6.8 14 11.0	2 58.8 -23 27.1		
8	299 27.4	6 51.0	315 32.7	279 5.8 14 13.2	33 .8 -23 27.0		
10	329 27.8	6 52.9	345 37.7	309 4.8 14 15.4	63 2.8 -23 26.9		
12	359 28.1	6 54.8	15 42.6	339 3.8 14 17.5	93 4.8 -23 26.8		
14	29 28.5	6 56.6	45 47.5	9 2.8 14 19.7	123 6.8 -23 26.7		
16	59 28.8	6 58.5	75 52.5	39 1.8 14 21.9	153 8.8 -23 26.6		
18	89 29.2	7 .4	105 57.4	69 .8 14 24.0	183 10.8 -23 26.5		
20	119 29.5	7 2.3	136 2.3	98 59.7 14 26.2	213 12.8 -23 26.4		
22	149 29.9	7 4.1	166 7.2	128 58.7 14 28.3	243 14.8 -23 26.3		
Δ	2	9		-5 11	10 0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 8	18 58	0 44	2 51	21 15	2.3	14 18	1.8
55	5 17	18 49	0 38	2 18	21 47	2.2	13 45	1.9
50	5 24	18 41	0 33	1 58	22 11	2.2	13 22	1.9
45	5 30	18 35	0 30	1 44	22 29	2.2	13 3	1.9
40	5 35	18 30	0 28	1 35	22 44	2.1	12 49	1.9
35	5 39	18 26	0 26	1 27	22 57	2.1	12 36	1.9
30	5 42	18 22	0 24	1 22	23 8	2.1	12 25	2.0
20	5 49	18 16	0 22	1 15	23 27	2.0	12 6	2.0
10	5 54	18 10	0 21	1 11	23 43	2.0	11 49	2.0
0	5 59	18 5	0 21	1 9	23 59	2.0	11 34	2.0
10	6 4	18 0	0 21	1 10	...	.0	11 18	2.0
20	6 9	17 55	0 22	1 13	...	.0	11 2	2.0
30	6 14	17 50	0 24	1 19	...	.0	10 43	2.0
35	6 17	17 46	0 25	1 24	0 12	2.0	10 32	2.0
40	6 21	17 43	0 27	1 30	0 25	2.0	10 19	2.1
45	6 25	17 39	0 29	1 37	0 40	2.0	10 4	2.1
50	6 30	17 34	0 32	1 47	0 58	2.0	9 45	2.1
55	6 36	17 28	0 36	2 0	1 22	2.0	9 22	2.1
60	6 43	17 20	0 42	2 19	1 55	2.0	8 49	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	282 4.2 118 20 9.2 13				325 20.4 -17 2.0		275 26.7 -22 14.7	
2	311 5.8 118 20 11.7 11				355 25.8 -17 1.9		305 31.5 -22 14.7	
4	340 7.4 118 20 13.9 9				25 31.2 -17 1.8		335 36.3 -22 14.7	
6	9 9.0 118 20 15.8 7				55 36.5 -17 1.7		5 41.2 -22 14.7	
8	38 10.7 118 20 17.2 5				85 41.9 -17 1.6		35 46.0 -22 14.7	
10	67 12.3 118 20 18.3 3				115 47.2 -17 1.4		65 50.8 -22 14.7	
12	96 14.0 118 20 18.9 2				145 52.6 -17 1.3		95 55.7 -22 14.7	
14	125 15.7 119 20 19.2 0				175 57.9 -17 1.2		126 .5 -22 14.7	
16	154 17.4 119 20 19.2 -2				206 3.3 -17 1.1		156 5.3 -22 14.7	
18	183 19.1 119 20 18.7 -4				236 8.7 -17 1.0		186 10.2 -22 14.7	
20	212 20.9 119 20 17.9 -6				266 14.0 -17 0.9		216 15.0 -22 14.6	
22	241 22.7 119 20 16.7 -8				296 19.4 -17 0.7		246 19.8 -22 14.6	
Δ					27 1		24 0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 2 16.0	.7	16.0	T _m	5 22	2.0	54.4 14.8
12	- 2 7.6	T _{m☉}	12 h 2.1 min	Starost	20.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 24	.1	324	-3.0	♄	2 18	.0	130	-2.0
♂	5 48	.1	78	-.3	♂	5 37	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 30.2	7 6.0	196 12.2	158 57.7 14 30.5	273 16.8 -23 26.2		
2	209 30.6	7 7.9	226 17.1	188 56.7 14 32.6	303 18.8 -23 26.1		
4	239 30.9	7 9.8	256 22.0	218 55.7 14 34.8	333 20.8 -23 26.0		
6	269 31.2	7 11.6	286 27.0	248 54.7 14 36.9	3 22.9 -23 25.9		
8	299 31.6	7 13.5	316 31.9	278 53.6 14 39.1	33 24.9 -23 25.8		
10	329 31.9	7 15.4	346 36.8	308 52.6 14 41.2	63 26.9 -23 25.7		
12	359 32.3	7 17.2	16 41.7	338 51.6 14 43.3	93 28.9 -23 25.6		
14	29 32.6	7 19.1	46 46.7	8 50.6 14 45.5	123 30.9 -23 25.5		
16	59 33.0	7 21.0	76 51.6	38 49.5 14 47.6	153 32.9 -23 25.4		
18	89 33.3	7 22.8	106 56.5	68 48.5 14 49.7	183 34.9 -23 25.3		
20	119 33.7	7 24.7	137 1.5	98 47.5 14 51.9	213 36.9 -23 25.2		
22	149 34.0	7 26.6	167 6.4	128 46.4 14 54.0	243 39.0 -23 25.1		
Δ	2	9		-5 11	10 1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 5	19 1	0 45	2 54	22 10	2.7	15 1	1.4
55	5 14	18 50	0 38	2 19	22 41	2.5	14 30	1.5
50	5 22	18 43	0 33	1 58	23 4	2.4	14 7	1.6
45	5 28	18 36	0 30	1 45	23 21	2.0	13 49	1.7
40	5 33	18 31	0 28	1 35	23 35	2.0	13 35	1.8
35	5 38	18 27	0 26	1 28	23 47	2.0	13 23	1.8
30	5 41	18 23	0 24	1 22	23 58	2.0	13 12	1.8
20	5 48	18 16	0 22	1 15	...	.0	12 53	1.9
10	5 53	18 10	0 21	1 11	...	.0	12 37	1.9
0	5 59	18 5	0 21	1 9	...	.0	12 22	2.0
10	6 4	17 60	0 21	1 10	0 14	2.0	12 7	2.0
20	6 9	17 55	0 22	1 13	0 31	1.9	11 50	2.1
30	6 15	17 49	0 24	1 19	0 50	1.9	11 32	2.1
35	6 18	17 45	0 25	1 24	1 1	1.9	11 21	2.2
40	6 22	17 41	0 27	1 30	1 13	1.8	11 8	2.2
45	6 26	17 37	0 29	1 37	1 28	1.8	10 53	2.2
50	6 31	17 32	0 32	1 47	1 47	1.8	10 35	2.3
55	6 38	17 25	0 36	2 0	2 10	1.7	10 12	2.4
60	6 46	17 17	0 42	2 19	2 43	1.6	9 39	2.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	270 24.5 119 20 15.1 -10				326 24.7 -17 0.6		276 24.7 -22 14.6	
2	299 26.4 119 20 13.1 -12				356 30.1 -17 0.5		306 29.5 -22 14.6	
4	328 28.3 120 20 10.8 -14				26 35.5 -17 0.4		336 34.4 -22 14.6	
6	357 30.2 120 20 8.1 -15				56 40.8 -17 0.3		6 39.2 -22 14.6	
8	26 32.2 120 20 5.0 -17				86 46.2 -17 0.1		36 44.0 -22 14.6	
10	55 34.2 120 20 1.6 -19				116 51.6 -17 0.0		66 48.9 -22 14.6	
12	84 36.2 120 19 57.7 -21				146 57.0 -16 59.9		96 53.7 -22 14.6	
14	113 38.3 121 19 53.6 -23				177 2.3 -16 59.8		126 58.6 -22 14.6	
16	142 40.5 121 19 49.0 -25				207 7.7 -16 59.7		157 3.4 -22 14.6	
18	171 42.7 121 19 44.1 -26				237 13.1 -16 59.6		187 8.3 -22 14.6	
20	200 44.9 121 19 38.8 -28				267 18.4 -16 59.4		217 13.1 -22 14.6	
22	229 47.2 122 19 33.1 -30				297 23.8 -16 59.3		247 18.0 -22 14.6	
Δ					27 1		24 0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 59.2	.7	16.0	T _m	6 10	2.0	54.3 14.8
12	- 1 50.9	T _{m☉}	12 h 1.8 min	Starost	21.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 25	.1	323	-3.0	♄	2 14	.0	130	-2.0
♂	5 46	.1	77	-.3	♂	5 33	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 34.3	7 28.4	197 11.3	158 45.4	14 56.1	273 41.0	-23 25.0	
2	209 34.7	7 30.3	227 16.2	188 44.4	14 58.2	303 43.0	-23 24.9	
4	239 35.0	7 32.1	257 21.2	218 43.3	15 .3	333 45.0	-23 24.8	
6	269 35.4	7 34.0	287 26.1	248 42.3	15 2.5	3 47.0	-23 24.7	
8	299 35.7	7 35.9	317 31.0	278 41.3	15 4.6	33 49.1	-23 24.6	
10	329 36.1	7 37.7	347 36.0	308 40.2	15 6.7	63 51.1	-23 24.5	
12	359 36.4	7 39.6	17 40.9	338 39.2	15 8.8	93 53.1	-23 24.4	
14	29 36.7	7 41.4	47 45.8	8 38.1	15 10.9	123 55.1	-23 24.3	
16	59 37.1	7 43.3	77 50.7	38 37.1	15 13.0	153 57.2	-23 24.1	
18	89 37.4	7 45.1	107 55.7	68 36.0	15 15.1	183 59.2	-23 24.0	
20	119 37.7	7 47.0	138 .6	98 35.0	15 17.2	214 1.2	-23 23.9	
22	149 38.1	7 48.9	168 5.5	128 33.9	15 19.3	244 3.2	-23 23.8	
Δ	2	9		-5	11	10	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 2	19 3	0 45	2 56	23 14	2.0	15 35	1.1
55	5 12	18 52	0 38	2 20	23 41	2.0	15 7	1.3
50	5 20	18 44	0 34	1 59	...	.0	14 46	1.4
45	5 26	18 38	0 30	1 45	...	.0	14 30	1.5
40	5 32	18 32	0 28	1 35	...	.0	14 17	1.6
35	5 36	18 28	0 26	1 28	...	.0	14 6	1.7
30	5 40	18 23	0 24	1 22	...	.0	13 56	1.7
20	5 47	18 16	0 22	1 15	0 16	2.1	13 39	1.8
10	5 53	18 10	0 21	1 11	0 32	2.0	13 24	1.9
0	5 58	18 5	0 21	1 9	0 47	2.0	13 10	2.0
10	6 4	17 59	0 21	1 10	1 1	1.9	12 55	2.0
20	6 9	17 54	0 22	1 13	1 17	1.8	12 40	2.1
30	6 15	17 47	0 24	1 19	1 35	1.8	12 23	2.2
35	6 19	17 44	0 25	1 24	1 46	1.7	12 13	2.3
40	6 23	17 40	0 27	1 30	1 58	1.7	12 1	2.3
45	6 27	17 35	0 29	1 37	2 12	1.6	11 47	2.4
50	6 33	17 30	0 32	1 47	2 29	1.5	11 31	2.5
55	6 39	17 23	0 36	2 0	2 51	1.4	11 9	2.6
60	6 48	17 14	0 42	2 19	3 21	1.2	10 39	2.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	258 49.5	122	19 27.1	-32	327 29.2	-16 59.2	277 22.8	-22 14.6
2	287 51.9	122	19 20.7	-34	357 34.6	-16 59.1	307 27.6	-22 14.6
4	316 54.3	122	19 14.0	-35	27 39.9	-16 58.9	337 32.5	-22 14.5
6	345 56.8	123	19 6.9	-37	57 45.3	-16 58.8	7 37.3	-22 14.5
8	14 59.4	123	18 59.4	-39	87 50.7	-16 58.7	37 42.2	-22 14.5
10	44 2.0	123	18 51.6	-41	117 56.1	-16 58.6	67 47.0	-22 14.5
12	73 4.6	124	18 43.5	-43	148 1.5	-16 58.5	97 51.9	-22 14.5
14	102 7.3	124	18 35.0	-44	178 6.9	-16 58.3	127 56.8	-22 14.5
16	131 10.1	124	18 26.1	-46	208 12.2	-16 58.2	158 1.6	-22 14.5
18	160 12.9	124	18 16.9	-48	238 17.6	-16 58.1	188 6.5	-22 14.5
20	189 15.8	125	18 7.4	-49	268 23.0	-16 58.0	218 11.3	-22 14.5
22	218 18.7	125	17 57.5	-51	298 28.4	-16 57.8	248 16.2	-22 14.5
Δ					27	1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 1 42.6	.7	16.0	T _m	6 58	2.0	54.3 14.8
12	- 1 34.5	T _{m☉}	12 h 1.6 min	Starost	22.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 25	.1	322	-3.1	♄	2 10	.0	130	-2.0
♂	5 45	.1	76	-.3	♂	5 30	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 38.4	7 50.7	198 10.5	158 32.9	15 21.4	274 5.3	-23 23.7	
2	209 38.8	7 52.6	228 15.4	188 31.8	15 23.5	304 7.3	-23 23.6	
4	239 39.1	7 54.4	258 20.3	218 30.7	15 25.5	334 9.3	-23 23.5	
6	269 39.4	7 56.3	288 25.2	248 29.7	15 27.6	4 11.4	-23 23.4	
8	299 39.8	7 58.1	318 30.2	278 28.6	15 29.7	34 13.4	-23 23.2	
10	329 40.1	8 .0	348 35.1	308 27.6	15 31.8	64 15.4	-23 23.1	
12	359 40.4	8 1.8	18 40.0	338 26.5	15 33.9	94 17.5	-23 23.0	
14	29 40.8	8 3.6	48 44.9	8 25.4	15 35.9	124 19.5	-23 22.9	
16	59 41.1	8 5.5	78 49.9	38 24.4	15 38.0	154 21.6	-23 22.8	
18	89 41.4	8 7.3	108 54.8	68 23.3	15 40.1	184 23.6	-23 22.7	
20	119 41.8	8 9.2	138 59.7	98 22.2	15 42.1	214 25.6	-23 22.5	
22	149 42.1	8 11.0	169 4.7	128 21.1	15 44.2	244 27.7	-23 22.4	
Δ	2	9		-5	10	10	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 59	19 6	0 45	2 59	...	.0	16 1	.9
55	5 10	18 54	0 38	2 21	...	.0	15 38	1.1
50	5 18	18 46	0 34	1 60	0 1	2.6	15 20	1.2
45	5 25	18 39	0 30	1 45	0 17	2.5	15 7	1.4
40	5 30	18 33	0 28	1 35	0 30	2.4	14 55	1.5
35	5 35	18 28	0 26	1 28	0 41	2.3	14 45	1.5
30	5 39	18 24	0 24	1 22	0 50	2.2	14 37	1.6
20	5 46	18 17	0 22	1 15	1 6	2.1	14 22	1.7
10	5 52	18 10	0 21	1 11	1 21	2.0	14 9	1.8
0	5 58	18 5	0 21	1 9	1 34	1.9	13 57	1.9
10	6 4	17 59	0 21	1 10	1 47	1.9	13 44	2.0
20	6 9	17 53	0 22	1 13	2 1	1.8	13 31	2.1
30	6 16	17 46	0 24	1 20	2 18	1.7	13 16	2.3
35	6 20	17 42	0 25	1 24	2 27	1.6	13 7	2.3
40	6 24	17 38	0 27	1 30	2 38	1.5	12 57	2.4
45	6 29	17 33	0 29	1 37	2 50	1.4	12 45	2.5
50	6 34	17 27	0 32	1 47	3 5	1.3	12 30	2.6
55	6 41	17 20	0 36	2 0	3 25	1.2	12 12	2.8
60	6 50	17 11	0 42	2 19	3 51	1.0	11 47	3.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	247 21.7	125	17 47.3	-53	328 33.8	-16 57.7	278 21.0	-22 14.5
2	276 24.8	126	17 36.7	-54	358 39.2	-16 57.6	308 25.9	-22 14.5
4	305 27.9	126	17 25.8	-56	28 44.6	-16 57.5	338 30.7	-22 14.5
6	334 31.0	126	17 14.6	-58	58 50.0	-16 57.4	8 35.6	-22 14.5
8	3 34.2	126	17 3.1	-59	88 55.3	-16 57.2	38 40.5	-22 14.5
10	32 37.5	127	16 51.2	-61	119 .7	-16 57.1	68 45.3	-22 14.5
12	61 40.8	127	16 39.0	-63	149 6.1	-16 57.0	98 50.2	-22 14.5
14	90 44.2	127	16 26.5	-64	179 11.5	-16 56.9	128 55.0	-22 14.4
16	119 47.6	127	16 13.7	-66	209 16.9	-16 56.7	158 59.9	-22 14.4
18	148 51.1	128	16 .5	-67	239 22.3	-16 56.6	189 4.8	-22 14.4
20	177 54.7	128	15 47.1	-69	269 27.7	-16 56.5	219 9.6	-22 14.4
22	206 58.2	128	15 33.3	-70	299 33.1	-16 56.4	249 14.5	-22 14.4
Δ					27	1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 1 26.3	.7	16.0	T _m	7 45	2.0	54.5 14.9
12	- 1 18.3	T _{m☉}	12 h 1.3 min	Starost	23.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 26	.1	320	-3.1	♄	2 5	.0	130	-2.0
♂	5 43	.1	76	-.4	♂	5 26	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 42.4	8 12.9	199 9.6	158 20.1	15 46.2	274 29.7	-23 22.3
2	209 42.8	8 14.7	229 14.5	188 19.0	15 48.3	304 31.8	-23 22.2
4	239 43.1	8 16.5	259 19.4	218 17.9	15 50.4	334 33.8	-23 22.1
6	269 43.4	8 18.4	289 24.4	248 16.8	15 52.4	4 35.9	-23 21.9
8	299 43.7	8 20.2	319 29.3	278 15.7	15 54.4	34 37.9	-23 21.8
10	329 44.1	8 22.1	349 34.2	308 14.7	15 56.5	64 40.0	-23 21.7
12	359 44.4	8 23.9	19 39.2	338 13.6	15 58.5	94 42.0	-23 21.6
14	29 44.7	8 25.7	49 44.1	8 12.5	16 .6	124 44.1	-23 21.5
16	59 45.0	8 27.6	79 49.0	38 11.4	16 2.6	154 46.1	-23 21.3
18	89 45.4	8 29.4	109 53.9	68 10.3	16 4.6	184 48.2	-23 21.2
20	119 45.7	8 31.2	139 58.9	98 9.2	16 6.7	214 50.3	-23 21.1
22	149 46.0	8 33.1	170 3.8	128 8.1	16 8.7	244 52.3	-23 21.0
Δ	2	9		-5	10	10	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 56	19 8	0 45	3 2	0 25	3.1	16 22	.7
55	5 7	18 56	0 38	2 22	0 47	2.9	16 4	.9
50	5 16	18 47	0 34	2 0	1 3	2.7	15 50	1.1
45	5 23	18 40	0 30	1 46	1 16	2.6	15 39	1.2
40	5 29	18 34	0 28	1 36	1 27	2.5	15 30	1.4
35	5 34	18 29	0 26	1 28	1 36	2.4	15 22	1.5
30	5 38	18 25	0 24	1 23	1 44	2.3	15 16	1.5
20	5 45	18 17	0 22	1 15	1 57	2.2	15 4	1.7
10	5 52	18 10	0 21	1 11	2 9	2.0	14 53	1.8
0	5 58	18 4	0 21	1 9	2 21	1.9	14 43	1.9
10	6 4	17 58	0 21	1 10	2 32	1.8	14 33	2.0
20	6 10	17 52	0 22	1 13	2 44	1.7	14 22	2.2
30	6 17	17 45	0 24	1 20	2 57	1.6	14 10	2.3
35	6 20	17 41	0 25	1 24	3 5	1.5	14 3	2.4
40	6 25	17 37	0 27	1 30	3 14	1.4	13 55	2.5
45	6 30	17 31	0 30	1 37	3 25	1.3	13 45	2.6
50	6 36	17 25	0 33	1 47	3 37	1.2	13 34	2.7
55	6 43	17 18	0 37	2 0	3 53	1.0	13 19	2.9
60	6 53	17 8	0 42	2 19	4 14	.8	12 60	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	236 1.9	128 15	19.3	-72	329 38.5	-16 56.2	279 19.4	-22 14.4
2	265 5.6	129 15	4.9	-73	359 43.9	-16 56.1	309 24.2	-22 14.4
4	294 9.3	129 14	50.2	-75	29 49.3	-16 56.0	339 29.1	-22 14.4
6	323 13.0	129 14	35.3	-76	59 54.7	-16 55.8	9 34.0	-22 14.4
8	352 16.8	129 14	20.0	-78	90 .1	-16 55.7	39 38.8	-22 14.4
10	21 20.7	129 14	4.5	-79	120 5.5	-16 55.6	69 43.7	-22 14.4
12	50 24.6	130 13	48.7	-80	150 10.9	-16 55.5	99 48.6	-22 14.4
14	79 28.5	130 13	32.6	-82	180 16.3	-16 55.3	129 53.4	-22 14.4
16	108 32.4	130 13	16.2	-83	210 21.7	-16 55.2	159 58.3	-22 14.4
18	137 36.4	130 12	59.6	-85	240 27.2	-16 55.1	190 3.2	-22 14.4
20	166 40.4	130 12	42.7	-86	270 32.6	-16 54.9	220 8.0	-22 14.4
22	195 44.5	130 12	25.5	-87	300 38.0	-16 54.8	250 12.9	-22 14.4
Δ					27	1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 10.3	.7	16.0	T _m	8 32	1.9	54.9 15.0
12	- 1 2.5	T _{m☉}	12 h 1.0 min	Starost 24.5 d Faza ●			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 27	.1	319	-3.1	♄	2 1	.0	130	-2.0
♂	5 42	.1	75	-.4	♂	5 22	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 46.4	8 34.9	200 8.7	158 7.0	16 10.7	274 54.4	-23 20.8
2	209 46.7	8 36.7	230 13.7	188 5.9	16 12.8	304 56.4	-23 20.7
4	239 47.0	8 38.5	260 18.6	218 4.8	16 14.8	334 58.5	-23 20.6
6	269 47.3	8 40.4	290 23.5	248 3.7	16 16.8	5 .6	-23 20.5
8	299 47.6	8 42.2	320 28.4	278 2.6	16 18.8	35 2.6	-23 20.3
10	329 48.0	8 44.0	350 33.4	308 1.5	16 20.8	65 4.7	-23 20.2
12	359 48.3	8 45.8	20 38.3	338 .4	16 22.8	95 6.8	-23 20.1
14	29 48.6	8 47.7	50 43.2	7 59.3	16 24.8	125 8.8	-23 19.9
16	59 48.9	8 49.5	80 48.2	37 58.2	16 26.8	155 10.9	-23 19.8
18	89 49.2	8 51.3	110 53.1	67 57.1	16 28.8	185 13.0	-23 19.7
20	119 49.6	8 53.1	140 58.0	97 55.9	16 30.8	215 15.0	-23 19.6
22	149 49.9	8 54.9	171 2.9	127 54.8	16 32.8	245 17.1	-23 19.4
Δ	2	9		-6	10	10	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 53	19 10	0 46	3 5	1 39	3.2	16 39	.6
55	5 5	18 58	0 39	2 24	1 56	3.0	16 26	.9
50	5 14	18 49	0 34	2 1	2 8	2.8	16 17	1.0
45	5 21	18 41	0 30	1 46	2 18	2.6	16 9	1.2
40	5 27	18 35	0 28	1 36	2 26	2.5	16 3	1.3
35	5 32	18 30	0 26	1 28	2 33	2.4	15 57	1.4
30	5 37	18 25	0 24	1 23	2 39	2.3	15 52	1.5
20	5 45	18 17	0 22	1 15	2 49	2.2	15 44	1.7
10	5 51	18 10	0 21	1 11	2 58	2.0	15 36	1.8
0	5 57	18 4	0 21	1 10	3 7	1.9	15 29	1.9
10	6 4	17 58	0 21	1 10	3 16	1.8	15 22	2.1
20	6 10	17 51	0 22	1 13	3 25	1.7	15 14	2.2
30	6 17	17 44	0 24	1 20	3 35	1.5	15 5	2.4
35	6 21	17 40	0 25	1 24	3 41	1.4	15 0	2.5
40	6 26	17 35	0 27	1 30	3 48	1.3	14 54	2.6
45	6 31	17 30	0 30	1 38	3 56	1.2	14 48	2.7
50	6 37	17 23	0 33	1 47	4 5	1.1	14 39	2.8
55	6 45	17 15	0 37	2 1	4 17	.9	14 29	3.0
60	6 55	17 5	0 42	2 19	4 33	.7	14 16	3.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	224 48.5	130 12	8.1	-88	330 43.4	-16 54.7	280 17.8	-22 14.4
2	253 52.6	130 11	50.4	-90	0 48.8	-16 54.6	310 22.7	-22 14.4
4	282 56.7	131 11	32.5	-91	30 54.2	-16 54.4	340 27.5	-22 14.4
6	312 .8	131 11	14.3	-92	60 59.6	-16 54.3	10 32.4	-22 14.4
8	341 4.9	131 10	55.8	-93	91 5.0	-16 54.2	40 37.3	-22 14.3
10	10 9.0	131 10	37.2	-95	121 10.5	-16 54.0	70 42.2	-22 14.3
12	39 13.1	131 10	18.3	-96	151 15.9	-16 53.9	100 47.1	-22 14.3
14	68 17.3	131 9	59.1	-97	181 21.3	-16 53.8	130 51.9	-22 14.3
16	97 21.4	131 9	39.8	-98	211 26.7	-16 53.7	160 56.8	-22 14.3
18	126 25.5	131 9	20.2	-99	241 32.1	-16 53.5	191 1.7	-22 14.3
20	155 29.6	130 9	.4	-100	271 37.5	-16 53.4	221 6.6	-22 14.3
22	184 33.7	130 8	40.4	-101	301 43.0	-16 53.3	251 11.5	-22 14.3
Δ					27	1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 0 54.6	.6	16.0	T _m	9 18	1.9	55.4 15.1
12	- 0 46.9	T _{m☉}	12 h .8 min	Starost 25.5 d Faza ●			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 28	.1	318	-3.1	♄	1 57	.0	131	-2.0
♂	5 40	.1	75	-.4	♂	5 18	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 50.2	8 56.8	201 7.9	157 53.7	16 34.8	275 19.2	-23 19.3	
2	209 50.5	8 58.6	231 12.8	187 52.6	16 36.8	305 21.3	-23 19.2	
4	239 50.8	9 .4	261 17.7	217 51.5	16 38.8	335 23.3	-23 19.0	
6	269 51.2	9 2.2	291 22.7	247 50.3	16 40.8	5 25.4	-23 18.9	
8	299 51.5	9 4.0	321 27.6	277 49.2	16 42.7	35 27.5	-23 18.8	
10	329 51.8	9 5.8	351 32.5	307 48.1	16 44.7	65 29.6	-23 18.6	
12	359 52.1	9 7.6	21 37.4	337 47.0	16 46.7	95 31.7	-23 18.5	
14	29 52.4	9 9.5	51 42.4	7 45.8	16 48.7	125 33.7	-23 18.3	
16	59 52.7	9 11.3	81 47.3	37 44.7	16 50.6	155 35.8	-23 18.2	
18	89 53.0	9 13.1	111 52.2	67 43.6	16 52.6	185 37.9	-23 18.1	
20	119 53.3	9 14.9	141 57.1	97 42.4	16 54.6	215 40.0	-23 17.9	
22	149 53.7	9 16.7	172 2.1	127 41.3	16 56.5	245 42.1	-23 17.8	
Δ	2	9		-6	10	10	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 50	19 13	0 46	3 9	2 57	3.3	16 53	.6
55	5 2	19 0	0 39	2 25	3 7	3.1	16 47	.8
50	5 12	18 50	0 34	2 2	3 15	2.9	16 42	1.0
45	5 19	18 43	0 31	1 47	3 21	2.7	16 38	1.2
40	5 25	18 36	0 28	1 36	3 26	2.6	16 34	1.3
35	5 31	18 31	0 26	1 29	3 31	2.5	16 31	1.4
30	5 36	18 26	0 24	1 23	3 35	2.4	16 28	1.5
20	5 44	18 18	0 22	1 15	3 42	2.2	16 24	1.7
10	5 51	18 10	0 21	1 11	3 48	2.1	16 19	1.8
0	5 57	18 4	0 21	1 10	3 53	1.9	16 15	2.0
10	6 4	17 57	0 21	1 10	3 59	1.8	16 11	2.1
20	6 10	17 51	0 22	1 14	4 5	1.7	16 7	2.2
30	6 18	17 43	0 24	1 20	4 12	1.5	16 2	2.4
35	6 22	17 39	0 26	1 24	4 15	1.4	15 59	2.5
40	6 27	17 34	0 27	1 30	4 20	1.3	15 56	2.6
45	6 32	17 28	0 30	1 38	4 25	1.2	15 52	2.8
50	6 39	17 21	0 33	1 47	4 31	1.0	15 48	2.9
55	6 47	17 13	0 37	2 1	4 39	.8	15 42	3.1
60	6 58	17 2	0 42	2 19	4 48	.6	15 34	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	213 37.8	130	8 20.2	-102	331 48.4	-16 53.1	281 16.3	-22 14.3
2	242 41.8	130	7 59.8	-103	1 53.8	-16 53.0	311 21.2	-22 14.3
4	271 45.9	130	7 39.2	-104	31 59.2	-16 52.9	341 26.1	-22 14.3
6	300 49.9	130	7 18.5	-105	62 4.7	-16 52.7	11 31.0	-22 14.3
8	329 53.8	130	6 57.5	-106	92 10.1	-16 52.6	41 35.9	-22 14.3
10	358 57.7	129	6 36.4	-107	122 15.5	-16 52.5	71 40.8	-22 14.3
12	28 1.6	129	6 15.1	-107	152 20.9	-16 52.3	101 45.7	-22 14.3
14	57 5.5	129	5 53.6	-108	182 26.4	-16 52.2	131 50.5	-22 14.3
16	86 9.2	129	5 32.0	-109	212 31.8	-16 52.1	161 55.4	-22 14.3
18	115 13.0	128	5 10.2	-110	242 37.2	-16 51.9	192 .3	-22 14.3
20	144 16.6	128	4 48.2	-110	272 42.7	-16 51.8	222 5.2	-22 14.3
22	173 20.2	128	4 26.2	-111	302 48.1	-16 51.7	252 10.1	-22 14.3
Δ					27	1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s		h min	min	'	'
00	- 0 39.2	.6	16.0	T _m	10 4	2.0	56.0 15.3
12	- 0 31.7	T _m ☉	12 h .5 min	Starost	26.5 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 29	.1	317	-3.1	♃	1 52	.0	131	-2.0
♂	5 38	.1	74	-.4	♄	5 14	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 54.0	9 18.5	202 7.0	157 40.1	16 58.5	275 44.2	-23 17.7	
2	209 54.3	9 20.3	232 11.9	187 39.0	17 .4	305 46.3	-23 17.5	
4	239 54.6	9 22.1	262 16.9	217 37.9	17 2.4	335 48.4	-23 17.4	
6	269 54.9	9 23.9	292 21.8	247 36.7	17 4.3	5 50.5	-23 17.2	
8	299 55.2	9 25.7	322 26.7	277 35.6	17 6.3	35 52.6	-23 17.1	
10	329 55.5	9 27.5	352 31.6	307 34.4	17 8.2	65 54.7	-23 17.0	
12	359 55.8	9 29.3	22 36.6	337 33.3	17 10.2	95 56.7	-23 16.8	
14	29 56.1	9 31.1	52 41.5	7 32.1	17 12.1	125 58.8	-23 16.7	
16	59 56.4	9 32.9	82 46.4	37 31.0	17 14.0	156 .9	-23 16.5	
18	89 56.7	9 34.7	112 51.4	67 29.8	17 15.9	186 3.0	-23 16.4	
20	119 57.0	9 36.5	142 56.3	97 28.6	17 17.9	216 5.2	-23 16.3	
22	149 57.3	9 38.3	173 1.2	127 27.5	17 19.8	246 7.3	-23 16.1	
Δ	2	9		-6	10	10	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 47	19 15	0 46	3 13	4 17	2.5	17 7	3.0
55	4 60	19 2	0 39	2 26	4 21	2.4	17 7	2.8
50	5 10	18 52	0 34	2 3	4 24	2.3	17 6	2.7
45	5 17	18 44	0 31	1 47	4 27	2.3	17 5	2.6
40	5 24	18 37	0 28	1 37	4 29	2.2	17 5	2.5
35	5 30	18 32	0 26	1 29	4 31	2.2	17 5	2.4
30	5 35	18 27	0 25	1 23	4 32	2.1	17 4	2.3
20	5 43	18 18	0 22	1 15	4 35	2.1	17 3	2.2
10	5 50	18 10	0 21	1 11	4 37	2.0	17 3	2.1
0	5 57	18 4	0 21	1 10	4 40	2.0	17 2	2.0
10	6 4	17 57	0 21	1 10	4 42	1.9	17 2	1.9
20	6 11	17 50	0 22	1 14	4 45	1.9	17 1	1.8
30	6 18	17 42	0 24	1 20	4 47	1.8	17 0	1.7
35	6 23	17 37	0 26	1 24	4 49	1.8	16 60	1.6
40	6 28	17 32	0 27	1 30	4 51	1.7	16 59	1.6
45	6 34	17 26	0 30	1 38	4 53	1.7	16 58	1.5
50	6 41	17 19	0 33	1 47	4 56	1.7	16 58	1.4
55	6 49	17 11	0 37	2 1	4 59	1.6	16 57	1.2
60	7 0	16 59	0 42	2 19	5 3	1.5	16 55	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	202 23.8	127	4 4.0	-112	332 53.5	-16 51.5	282 15.0	-22 14.3
2	231 27.2	127	3 41.6	-112	2 58.9	-16 51.4	312 19.9	-22 14.3
4	260 30.6	126	3 19.2	-113	33 4.4	-16 51.3	342 24.8	-22 14.3
6	289 33.9	126	2 56.6	-113	63 9.8	-16 51.1	12 29.7	-22 14.3
8	318 37.1	126	2 34.0	-114	93 15.3	-16 51.0	42 34.6	-22 14.3
10	347 40.2	125	2 11.2	-114	123 20.7	-16 50.9	72 39.5	-22 14.3
12	16 43.2	125	1 48.3	-115	153 26.1	-16 50.7	102 44.4	-22 14.3
14	45 46.1	124	1 25.4	-115	183 31.6	-16 50.6	132 49.3	-22 14.3
16	74 48.9	123	1 2.4	-115	213 37.0	-16 50.4	162 54.2	-22 14.2
18	103 51.6	123	0 39.3	-116	243 42.4	-16 50.3	192 59.1	-22 14.2
20	132 54.1	122	0 16.1	-45	273 47.9	-16 50.2	223 4.0	-22 14.2
22	161 56.6	122	0 7.1	116	303 53.3	-16 50.0	253 8.9	-22 14.2
Δ					27	1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s		h min	min	'	'
00	- 0 24.1	.6	16.0	T _m	10 51	2.0	56.7 15.4
12	- 0 16.8	T _m ☉	12 h .3 min	Starost	27.5 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 30	.1	316	-3.1	♃	1 48	.0	131	-2.0
♂	5 37	.1	74	-.4	♄	5 10	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 57.7	9 40.1	203 6.1	157 26.3	17 21.7	276 9.4	-23 16.0	
2	209 58.0	9 41.9	233 11.1	187 25.2	17 23.6	306 11.5	-23 15.8	
4	239 58.3	9 43.6	263 16.0	217 24.0	17 25.5	336 13.6	-23 15.7	
6	269 58.6	9 45.4	293 20.9	247 22.8	17 27.5	6 15.7	-23 15.5	
8	299 58.9	9 47.2	323 25.9	277 21.7	17 29.4	36 17.8	-23 15.4	
10	329 59.2	9 49.0	353 30.8	307 20.5	17 31.3	66 19.9	-23 15.2	
12	359 59.5	9 50.8	23 35.7	337 19.3	17 33.2	96 22.0	-23 15.1	
14	29 59.8	9 52.6	53 40.6	7 18.1	17 35.1	126 24.1	-23 14.9	
16	60 .1	9 54.4	83 45.6	37 17.0	17 37.0	156 26.3	-23 14.8	
18	90 .4	9 56.1	113 50.5	67 15.8	17 38.9	186 28.4	-23 14.6	
20	120 .7	9 57.9	143 55.4	97 14.6	17 40.7	216 30.5	-23 14.5	
22	150 1.0	9 59.7	174 .4	127 13.4	17 42.6	246 32.6	-23 14.3	
Δ	1	9		-6	9	11	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 44	19 18	0 46	3 18	5 17	.6	18 19	3.6
55	4 57	19 4	0 39	2 28	5 19	.9	18 14	3.3
50	5 7	18 54	0 34	2 3	5 20	1.1	18 10	3.1
45	5 16	18 45	0 31	1 48	5 21	1.2	18 7	2.9
40	5 22	18 38	0 28	1 37	5 22	1.3	18 4	2.8
35	5 28	18 32	0 26	1 29	5 23	1.5	18 2	2.7
30	5 33	18 27	0 25	1 23	5 24	1.6	17 60	2.6
20	5 42	18 18	0 22	1 16	5 25	1.7	17 56	2.4
10	5 50	18 10	0 21	1 11	5 26	1.9	17 53	2.2
0	5 57	18 3	0 21	1 10	5 27	2.0	17 50	2.1
10	6 4	17 56	0 21	1 10	5 28	2.2	17 47	1.9
20	6 11	17 49	0 22	1 14	5 30	2.3	17 44	1.8
30	6 19	17 41	0 24	1 20	5 31	2.5	17 41	1.6
35	6 24	17 36	0 26	1 24	5 32	2.6	17 39	1.5
40	6 29	17 31	0 27	1 30	5 33	2.7	17 36	1.4
45	6 35	17 25	0 30	1 38	5 34	2.9	17 34	1.3
50	6 42	17 17	0 33	1 48	5 35	3.1	17 31	1.1
55	6 51	17 8	0 37	2 1	5 37	3.3	17 27	.9
60	7 2	16 57	0 43	2 19	5 39	3.5	17 22	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	190 58.9	121	0 30.4	116	333 58.8	-16 49.9	283 13.8	-22 14.2
2	220 1.1	120	0 53.7	117	4 4.2	-16 49.8	313 18.7	-22 14.2
4	249 3.1	119	1 17.0	117	34 9.7	-16 49.6	343 23.6	-22 14.2
6	278 5.0	119	1 40.3	117	64 15.1	-16 49.5	13 28.5	-22 14.2
8	307 6.8	118	2 3.7	117	94 20.5	-16 49.3	43 33.4	-22 14.2
10	336 8.4	117	2 27.1	117	124 26.0	-16 49.2	73 38.3	-22 14.2
12	5 9.8	116	2 50.4	117	154 31.4	-16 49.1	103 43.2	-22 14.2
14	34 11.1	116	3 13.8	117	184 36.9	-16 48.9	133 48.1	-22 14.2
16	63 12.2	115	3 37.1	116	214 42.3	-16 48.8	163 53.0	-22 14.2
18	92 13.1	114	4 .4	116	244 47.8	-16 48.7	193 57.9	-22 14.2
20	121 13.9	113	4 23.7	116	274 53.2	-16 48.5	224 2.8	-22 14.2
22	150 14.5	112	4 46.9	116	304 58.7	-16 48.4	254 7.7	-22 14.2
Δ					27	1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	- 0 9.4	.6	16.0	T _m	11 39	2.0	57.4 15.6		
12	- 0 2.2	T _{m☉}	12 h .0 min	Starost	28.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 31	.1	314	-3.1	♄	1 44	.0	131	-2.0
♂	5 35	.1	73	-5	♂	5 6	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	180 1.2	10 1.5	204 5.3	157 12.2	17 44.5	276 34.7	-23 14.2	
2	210 1.5	10 3.3	234 10.2	187 11.0	17 46.4	306 36.9	-23 14.0	
4	240 1.8	10 5.0	264 15.1	217 9.9	17 48.3	336 39.0	-23 13.9	
6	270 2.1	10 6.8	294 20.1	247 8.7	17 50.1	6 41.1	-23 13.7	
8	300 2.4	10 8.6	324 25.0	277 7.5	17 52.0	36 43.2	-23 13.6	
10	330 2.7	10 10.4	354 29.9	307 6.3	17 53.9	66 45.4	-23 13.4	
12	0 3.0	10 12.1	24 34.9	337 5.1	17 55.7	96 47.5	-23 13.3	
14	30 3.3	10 13.9	54 39.8	7 3.9	17 57.6	126 49.6	-23 13.1	
16	60 3.6	10 15.7	84 44.7	37 2.7	17 59.5	156 51.8	-23 13.0	
18	90 3.9	10 17.4	114 49.6	67 1.5	18 1.3	186 53.9	-23 12.8	
20	120 4.2	10 19.2	144 54.6	97 .3	18 3.2	216 56.0	-23 12.7	
22	150 4.5	10 21.0	174 59.5	126 59.1	18 5.0	246 58.2	-23 12.5	
Δ	1	9		-6	9	11	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 41	19 20	0 47	3 23	5 32	.7	19 44	3.6
55	4 55	19 6	0 39	2 29	5 39	1.0	19 33	3.3
50	5 5	18 55	0 34	2 4	5 45	1.2	19 24	3.1
45	5 14	18 47	0 31	1 48	5 50	1.3	19 17	3.0
40	5 21	18 39	0 28	1 37	5 54	1.5	19 11	2.8
35	5 27	18 33	0 26	1 29	5 58	1.6	19 6	2.7
30	5 32	18 28	0 25	1 24	6 1	1.7	19 1	2.6
20	5 41	18 19	0 23	1 16	6 7	1.8	18 53	2.5
10	5 49	18 11	0 21	1 11	6 11	2.0	18 47	2.3
0	5 56	18 3	0 21	1 10	6 16	2.1	18 40	2.2
10	6 4	17 56	0 21	1 11	6 21	2.3	18 34	2.0
20	6 11	17 48	0 22	1 14	6 26	2.4	18 27	1.9
30	6 20	17 40	0 24	1 20	6 32	2.6	18 19	1.7
35	6 24	17 35	0 26	1 24	6 35	2.7	18 15	1.6
40	6 30	17 29	0 27	1 30	6 39	2.8	18 10	1.5
45	6 36	17 23	0 30	1 38	6 43	3.0	18 4	1.4
50	6 44	17 15	0 33	1 48	6 49	3.1	17 57	1.2
55	6 53	17 6	0 37	2 1	6 55	3.3	17 48	1.0
60	7 5	16 54	0 43	2 19	7 4	3.6	17 37	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	179 14.8	111	5 10.0	115	335 4.1	-16 48.2	284 12.6	-22 14.2
2	208 15.0	110	5 33.1	115	5 9.6	-16 48.1	314 17.5	-22 14.2
4	237 15.0	109	5 56.1	115	35 15.1	-16 48.0	344 22.4	-22 14.2
6	266 14.9	108	6 19.0	114	65 20.5	-16 47.8	14 27.4	-22 14.2
8	295 14.5	107	6 41.9	114	95 26.0	-16 47.7	44 32.3	-22 14.2
10	324 13.9	106	7 4.6	113	125 31.4	-16 47.5	74 37.2	-22 14.2
12	353 13.0	105	7 27.2	112	155 36.9	-16 47.4	104 42.1	-22 14.2
14	22 12.0	104	7 49.7	112	185 42.3	-16 47.3	134 47.0	-22 14.2
16	51 10.8	103	8 12.0	111	215 47.8	-16 47.1	164 51.9	-22 14.2
18	80 9.3	102	8 34.2	110	245 53.3	-16 47.0	194 56.8	-22 14.2
20	109 7.6	100	8 56.3	109	275 58.7	-16 46.8	225 1.8	-22 14.2
22	138 5.7	99	9 18.2	109	306 4.2	-16 46.7	255 6.7	-22 14.2
Δ					27	1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	0 5.0	.6	16.0	T _m	12 28	2.2	58.0 15.8		
12	0 12.0	T _{m☉}	11 h 59.8 min	Starost	29.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 32	.1	313	-3.1	♄	1 39	.0	131	-2.0
♂	5 33	.1	72	-5	♂	5 2	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	4.8	10	22.7	205	4.4	156	57.9	18	6.9	277	.3	-23	12.4
2	210	5.0	10	24.5	235	9.4	186	56.7	18	8.7	307	2.4	-23	12.2
4	240	5.3	10	26.3	265	14.3	216	55.5	18	10.5	337	4.6	-23	12.0
6	270	5.6	10	28.0	295	19.2	246	54.2	18	12.4	7	6.7	-23	11.9
8	300	5.9	10	29.8	325	24.1	276	53.0	18	14.2	37	8.9	-23	11.7
10	330	6.2	10	31.5	355	29.1	306	51.8	18	16.0	67	11.0	-23	11.6
12	0	6.5	10	33.3	25	34.0	336	50.6	18	17.9	97	13.2	-23	11.4
14	30	6.8	10	35.0	55	38.9	6	49.4	18	19.7	127	15.3	-23	11.3
16	60	7.0	10	36.8	85	43.8	36	48.2	18	21.5	157	17.5	-23	11.1
18	90	7.3	10	38.6	115	48.8	66	46.9	18	23.3	187	19.6	-23	10.9
20	120	7.6	10	40.3	145	53.7	96	45.7	18	25.1	217	21.8	-23	10.8
22	150	7.9	10	42.1	175	58.6	126	44.5	18	26.9	247	23.9	-23	10.6
Δ		1		9				-6		9		11		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 38	19 23	0 47	3 29	5 49	.9	21 12	3.6
55	4 52	19 8	0 40	2 31	6 3	1.1	20 53	3.3
50	5 3	18 57	0 35	2 5	6 13	1.3	20 39	3.1
45	5 12	18 48	0 31	1 49	6 22	1.5	20 28	3.0
40	5 20	18 40	0 28	1 38	6 29	1.6	20 19	2.9
35	5 26	18 34	0 26	1 30	6 35	1.7	20 11	2.8
30	5 31	18 28	0 25	1 24	6 41	1.8	20 4	2.7
20	5 41	18 19	0 23	1 16	6 51	2.0	19 53	2.5
10	5 49	18 11	0 21	1 12	6 59	2.1	19 42	2.4
0	5 56	18 3	0 21	1 10	7 7	2.2	19 33	2.3
10	6 4	17 55	0 21	1 11	7 15	2.4	19 23	2.2
20	6 11	17 47	0 22	1 14	7 24	2.5	19 13	2.0
30	6 20	17 39	0 24	1 20	7 34	2.7	19 1	1.9
35	6 25	17 33	0 26	1 24	7 40	2.8	18 54	1.8
40	6 31	17 28	0 27	1 30	7 47	2.9	18 46	1.7
45	6 37	17 21	0 30	1 38	7 54	3.0	18 37	1.6
50	6 45	17 13	0 33	1 48	8 4	3.2	18 27	1.5
55	6 55	17 3	0 37	2 1	8 15	3.4	18 13	1.3
60	7 7	16 51	0 43	2 19	8 31	3.6	17 56	1.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	167	3.5	98	9	39.9	108	336	9.6	-16	46.5	285	11.6	-22	14.2		
2	196	1.1	97	10	1.4	107	6	15.1	-16	46.4	315	16.5	-22	14.2		
4	224	58.5	96	10	22.7	106	36	20.6	-16	46.3	345	21.4	-22	14.2		
6	253	55.6	94	10	43.8	104	66	26.0	-16	46.1	15	26.4	-22	14.2		
8	282	52.5	93	11	4.7	103	96	31.5	-16	46.0	45	31.3	-22	14.2		
10	311	49.2	92	11	25.4	102	126	37.0	-16	45.8	75	36.2	-22	14.2		
12	340	45.6	91	11	45.8	101	156	42.4	-16	45.7	105	41.1	-22	14.2		
14	9	41.7	90	12	6.0	100	186	47.9	-16	45.5	135	46.0	-22	14.2		
16	38	37.6	88	12	25.9	98	216	53.4	-16	45.4	165	51.0	-22	14.2		
18	67	33.3	87	12	45.9	97	246	58.8	-16	45.3	195	55.9	-22	14.2		
20	96	28.7	86	13	4.9	95	277	4.3	-16	45.1	226	.8	-22	14.2		
22	125	23.9	85	13	24.0	94	307	9.8	-16	45.0	256	5.7	-22	14.2		
Δ								27		1		25		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	0 19.0	.6	16.0	T _m	13 20	2.3	58.6	16.0	
12	0 25.8	T _{m☉}	11 h 59.6 min	Starost	.9 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	13 33	.1	312	-3.1	♄	1 35	.0	131	-2.0
	5 32	.1	72	-5	♅	4 58	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	8.2	10	43.8	206	3.6	156	43.2	18	28.7	277	26.1	-23	10.5
2	210	8.4	10	45.6	236	8.5	186	42.0	18	30.5	307	28.2	-23	10.3
4	240	8.7	10	47.3	266	13.4	216	40.8	18	32.3	337	30.4	-23	10.1
6	270	9.0	10	49.0	296	18.3	246	39.6	18	34.1	7	32.5	-23	10.0
8	300	9.3	10	50.8	326	23.3	276	38.3	18	35.9	37	34.7	-23	9.8
10	330	9.6	10	52.5	356	28.2	306	37.1	18	37.7	67	36.9	-23	9.6
12	0	9.8	10	54.3	26	33.1	336	35.8	18	39.5	97	39.0	-23	9.5
14	30	10.1	10	56.0	56	38.1	6	34.6	18	41.3	127	41.2	-23	9.3
16	60	10.4	10	57.8	86	43.0	36	33.4	18	43.1	157	43.4	-23	9.2
18	90	10.7	10	59.5	116	47.9	66	32.1	18	44.8	187	45.5	-23	9.0
20	120	10.9	11	1.2	146	52.8	96	30.9	18	46.6	217	47.7	-23	8.8
22	150	11.2	11	3.0	176	57.8	126	29.6	18	48.4	247	49.9	-23	8.7
Δ		1		9				-6		9		11		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 35	19 25	0 48	3 36	6 10	1.2	22 38	3.4
55	4 50	19 10	0 40	2 33	6 30	1.4	22 13	3.2
50	5 1	18 58	0 35	2 6	6 46	1.6	21 54	3.0
45	5 10	18 49	0 31	1 49	6 58	1.7	21 40	2.9
40	5 18	18 41	0 28	1 38	7 8	1.8	21 28	2.8
35	5 24	18 35	0 26	1 30	7 17	1.9	21 18	2.7
30	5 30	18 29	0 25	1 24	7 25	2.0	21 9	2.7
20	5 40	18 19	0 23	1 16	7 38	2.1	20 53	2.6
10	5 48	18 11	0 21	1 12	7 50	2.2	20 40	2.5
0	5 56	18 3	0 21	1 10	8 1	2.3	20 27	2.4
10	6 4	17 55	0 21	1 11	8 12	2.4	20 15	2.3
20	6 12	17 47	0 22	1 14	8 24	2.6	20 2	2.2
30	6 21	17 37	0 24	1 20	8 38	2.7	19 46	2.1
35	6 26	17 32	0 26	1 25	8 46	2.8	19 38	2.0
40	6 32	17 26	0 28	1 30	8 55	2.9	19 28	2.0
45	6 39	17 19	0 30	1 38	9 6	3.0	19 16	1.9
50	6 47	17 11	0 33	1 48	9 19	3.1	19 2	1.7
55	6 57	17 1	0 37	2 1	9 36	3.3	18 44	1.6
60	7 10	16 48	0 43	2 19	9 58	3.5	18 20	1.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	154	18.8	83	13	42.8	92	337	15.2	-16	44.8	286	10.7	-22	14.2		
2	183	13.5	82	14	1.2	91	7	20.7	-16	44.7	316	15.6	-22	14.2		
4	212	7.9	81	14	19.4	89	37	26.2	-16	44.5	346	20.5	-22	14.2		
6	241	2.1	80	14	37.2	87	67	31.7	-16	44.4	16	25.5	-22	14.2		
8	269	56.0	78	14	54.7	86	97	37.1	-16	44.2	46	30.4	-22	14.2		
10	298	49.7	77	15	11.8	84	127	42.6	-16	44.1	76	35.3	-22	14.2		
12	327	43.1	76	15	28.6	82	157	48.1	-16	44.0	106	40.2	-22	14.2		
14	356	36.3	75	15	44.9	80	187	53.6	-16	43.8	136	45.2	-22	14.2		
16	25	29.3	74	16	1.0	78	217	59.0	-16	43.7	166	50.1	-22	14.2		
18	54	22.0	73	16	16.6	76	248	4.5	-16	43.5	196	55.0	-22	14.2		
20	83	14.5	71	16	31.8	74	278	10.0	-16	43.4	226	60.0	-22	14.2		
22	112	6.8	70	16	46.6	72	308	15.5	-16	43.2	257	4.9	-22	14.2		
Δ								27		1		25		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS					
	S _☉		δ _☉		S _♈		S _♀	δ _♀	S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	11.5	11	4.7	207	2.7	156	28.4	18	50.1	277	52.0	-23	8.5
2	210	11.7	11	6.4	237	7.6	186	27.1	18	51.9	307	54.2	-23	8.3
4	240	12.0	11	8.2	267	12.6	216	25.8	18	53.7	337	56.4	-23	8.2
6	270	12.3	11	9.9	297	17.5	246	24.6	18	55.4	7	58.6	-23	8.0
8	300	12.6	11	11.6	327	22.4	276	23.3	18	57.2	38	.7	-23	7.8
10	330	12.8	11	13.4	357	27.3	306	22.1	18	58.9	68	2.9	-23	7.7
12	0	13.1	11	15.1	27	32.3	336	20.8	19	.7	98	5.1	-23	7.5
14	30	13.4	11	16.8	57	37.2	6	19.5	19	2.4	128	7.3	-23	7.3
16	60	13.6	11	18.5	87	42.1	36	18.3	19	4.1	158	9.5	-23	7.2
18	90	13.9	11	20.3	117	47.1	66	17.0	19	5.9	188	11.6	-23	7.0
20	120	14.2	11	22.0	147	52.0	96	15.7	19	7.6	218	13.8	-23	6.8
22	150	14.4	11	23.7	177	56.9	126	14.5	19	9.3	248	16.0	-23	6.6
Δ		1		9				-6		9		11		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 32	19 28	0 48	3 45	6 38	1.6	23 59	2.9
55	4 48	19 12	0 40	2 35	7 4	1.8	23 29	2.8
50	4 59	18 60	0 35	2 7	7 24	1.9	23 7	2.8
45	5 9	18 50	0 31	1 50	7 39	2.0	22 49	2.7
40	5 17	18 42	0 28	1 39	7 52	2.1	22 35	2.7
35	5 23	18 36	0 26	1 30	8 3	2.2	22 23	2.6
30	5 29	18 30	0 25	1 24	8 13	2.2	22 13	2.6
20	5 39	18 19	0 23	1 16	8 29	2.3	21 55	2.5
10	5 48	18 11	0 21	1 12	8 44	2.4	21 39	2.5
0	5 56	18 2	0 21	1 10	8 57	2.4	21 25	2.5
10	6 4	17 54	0 21	1 11	9 11	2.5	21 10	2.4
20	6 12	17 46	0 22	1 14	9 26	2.6	20 55	2.4
30	6 21	17 36	0 24	1 20	9 42	2.6	20 37	2.3
35	6 27	17 31	0 26	1 25	9 52	2.7	20 26	2.3
40	6 33	17 25	0 28	1 30	10 4	2.7	20 15	2.2
45	6 40	17 18	0 30	1 38	10 17	2.8	20 1	2.2
50	6 48	17 9	0 33	1 48	10 33	2.9	19 44	2.1
55	6 59	16 59	0 37	2 1	10 54	3.0	19 22	2.0
60	7 12	16 45	0 43	2 20	11 23	3.2	18 52	1.9

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	140	58.9	69	17	1.0	70	338	20.9	-16	43.1	287	9.9	-22	14.2
2	169	50.7	68	17	15.0	68	8	26.4	-16	42.9	317	14.8	-22	14.2
4	198	42.3	67	17	28.5	65	38	31.9	-16	42.8	347	19.7	-22	14.2
6	227	33.7	66	17	41.6	63	68	37.4	-16	42.6	17	24.7	-22	14.2
8	256	24.9	65	17	54.2	61	98	42.9	-16	42.5	47	29.6	-22	14.2
10	285	16.0	64	18	6.4	59	128	48.4	-16	42.3	77	34.5	-22	14.2
12	314	6.8	63	18	18.2	56	158	53.8	-16	42.2	107	39.5	-22	14.2
14	342	57.4	62	18	29.4	54	188	59.3	-16	42.1	137	44.4	-22	14.2
16	11	47.9	61	18	40.2	51	219	4.8	-16	41.9	167	49.4	-22	14.2
18	40	38.2	61	18	50.4	49	249	10.3	-16	41.8	197	54.3	-22	14.2
20	69	28.3	60	19	.2	46	279	15.8	-16	41.6	227	59.3	-22	14.2
22	98	18.3	59	19	9.5	44	309	21.3	-16	41.5	258	4.2	-22	14.2
Δ								27		1		25		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	0 45.9	.5	16.0	T _m	15 11	2.5	59.3	16.2
12	0 52.3	T _{m☉}	11 h 59.1 min	Starost	2.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	13 35	.1	309	-3.1	♃	1 26	.0	131	-2.0
♂	5 28	.1	71	-5	♄	4 51	.0	80	.6

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS					
	S _☉		δ _☉		S _♈		S _♀	δ _♀	S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	14.7	11	25.4	208	1.8	156	13.2	19	11.1	278	18.2	-23	6.5
2	210	15.0	11	27.1	238	6.8	186	11.9	19	12.8	308	20.4	-23	6.3
4	240	15.2	11	28.9	268	11.7	216	10.6	19	14.5	338	22.6	-23	6.1
6	270	15.5	11	30.6	298	16.6	246	9.4	19	16.2	8	24.8	-23	6.0
8	300	15.7	11	32.3	328	21.6	276	8.1	19	17.9	38	27.0	-23	5.8
10	330	16.0	11	34.0	358	26.5	306	6.8	19	19.6	68	29.2	-23	5.6
12	0	16.3	11	35.7	28	31.4	336	5.5	19	21.3	98	31.4	-23	5.4
14	30	16.5	11	37.4	58	36.3	6	4.2	19	23.0	128	33.6	-23	5.3
16	60	16.8	11	39.1	88	41.3	36	2.9	19	24.7	158	35.8	-23	5.1
18	90	17.0	11	40.8	118	46.2	66	1.7	19	26.4	188	38.0	-23	4.9
20	120	17.3	11	42.5	148	51.1	96	.4	19	28.1	218	40.2	-23	4.8
22	150	17.5	11	44.3	178	56.0	126	59.1	19	29.8	248	42.4	-23	4.6
Δ		1		9				-6		9		11		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 29	19 30	0 48	3 59	7 16	2.2	...	.0
55	4 45	19 14	0 40	2 36	7 47	2.3	...	.0
50	4 57	19 1	0 35	2 8	8 10	2.3	...	.0
45	5 7	18 52	0 31	1 51	8 28	2.3	23 54	2.4
40	5 15	18 43	0 28	1 39	8 42	2.4	23 39	2.4
35	5 22	18 36	0 26	1 31	8 55	2.4	23 26	2.4
30	5 28	18 30	0 25	1 24	9 5	2.4	23 15	2.4
20	5 38	18 20	0 23	1 16	9 24	2.4	22 56	2.4
10	5 47	18 11	0 21	1 12	9 40	2.4	22 39	2.5
0	5 56	18 2	0 21	1 10	9 55	2.5	22 24	2.5
10	6 4	17 54	0 21	1 11	10 11	2.5	22 8	2.5
20	6 12	17 45	0 22	1 14	10 27	2.5	21 51	2.5
30	6 22	17 35	0 24	1 20	10 46	2.5	21 32	2.5
35	6 28	17 30	0 26	1 25	10 57	2.5	21 21	2.5
40	6 34	17 23	0 28	1 31	11 10	2.5	21 8	2.5
45	6 41	17 16	0 30	1 38	11 25	2.6	20 53	2.5
50	6 50	17 7	0 33	1 48	11 43	2.6	20 34	2.5
55	7 1	16 56	0 37	2 1	12 7	2.6	20 10	2.5
60	7 14	16 42	0 43	2 20	12 40	2.6	19 37	2.5

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	127	8.2	59	19	18.3	41	339	26.8	-16	41.3	288	9.1	-22	14.2
2	155	57.9	58	19	26.6	39	9	32.2	-16	41.2	318	14.1	-22	14.2
4	184	47.4	57	19	34.3	36	39	37.7	-16	41.0	348	19.0	-22	14.2
6	213	36.9	57	19	41.5	34	69	43.2	-16	40.9	18	24.0	-22	14.2
8	242	26.2	56	19	48.3	31	99	48.7	-16	40.7	48	28.9	-22	14.2
10	271	15.5	56	19	54.4	28	129	54.2	-16	40.6	78	33.9	-22	14.2
12	300	4.7	55	20	.1	26	159	59.7	-16	40.4	108	38.8	-22	14.2
14	328	53.7	55	20	5.2	23	190	5.2	-16	40.3	138	43.8	-22	14.2
16	357	42.8	55	20	9.8	20	220	10.7	-16	40.1	168	48.7	-22	14.2
18	26	31.7	55	20	13.8	17	250	16.2	-16	40.0	198	53.7	-22	14.2
20	55	20.6	54	20	17.3	15	280	21.7	-16	39.8	228	58.6	-22	14.2
22	84	9.5	54	20	20.2	12	310	27.2	-16	39.7	259	3.6	-22	14.2
Δ								27		1		25		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	0 58.8	.5	15.9	T _m	16 10	2.5	59.4	16.2
12								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 17.8	11 46.0	209 1.0	155 57.8	19 31.5	278 44.6	-23 4.4
2	210 18.1	11 47.7	239 5.9	185 56.5	19 33.1	308 46.8	-23 4.2
4	240 18.3	11 49.4	269 10.8	215 55.2	19 34.8	338 49.0	-23 4.1
6	270 18.6	11 51.1	299 15.8	245 53.9	19 36.5	8 51.2	-23 3.9
8	300 18.8	11 52.8	329 20.7	275 52.6	19 38.2	38 53.4	-23 3.7
10	330 19.1	11 54.5	359 25.6	305 51.3	19 39.8	68 55.7	-23 3.5
12	0 19.3	11 56.1	29 30.5	335 50.0	19 41.5	98 57.9	-23 3.4
14	30 19.6	11 57.8	59 35.5	5 48.7	19 43.1	129 .1	-23 3.2
16	60 19.8	11 59.5	89 40.4	35 47.4	19 44.8	159 2.3	-23 3.0
18	90 20.1	12 1.2	119 45.3	65 46.0	19 46.4	189 4.5	-23 2.8
20	120 20.3	12 2.9	149 50.3	95 44.7	19 48.1	219 6.7	-23 2.6
22	150 20.6	12 4.6	179 55.2	125 43.4	19 49.7	249 9.0	-23 2.5
Δ	1	8		-7	8	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 26	19 33	0 49	:::	8 8	2.8	1 10	2.3
55	4 43	19 16	0 40	2 38	8 41	2.7	0 36	2.4
50	4 55	19 3	0 35	2 9	9 5	2.7	0 13	2.4
45	5 5	18 53	0 31	1 51	9 24	2.6	...	.0
40	5 14	18 44	0 29	1 39	9 39	2.6	...	.0
35	5 21	18 37	0 26	1 31	9 52	2.6	...	.0
30	5 27	18 31	0 25	1 25	10 3	2.5	...	.0
20	5 38	18 20	0 23	1 16	10 22	2.5	23 55	2.3
10	5 47	18 11	0 22	1 12	10 39	2.5	23 38	2.4
0	5 55	18 2	0 21	1 10	10 55	2.4	23 23	2.4
10	6 4	17 54	0 21	1 11	11 10	2.4	23 7	2.5
20	6 13	17 45	0 22	1 14	11 27	2.4	22 51	2.5
30	6 23	17 34	0 24	1 20	11 46	2.3	22 32	2.6
35	6 28	17 29	0 26	1 25	11 58	2.3	22 20	2.6
40	6 35	17 22	0 28	1 31	12 11	2.3	22 8	2.7
45	6 42	17 14	0 30	1 38	12 26	2.2	21 52	2.7
50	6 51	17 5	0 33	1 48	12 45	2.2	21 34	2.8
55	7 2	16 54	0 37	2 2	13 9	2.1	21 10	2.9
60	7 17	16 40	0 43	2 20	13 43	2.0	20 36	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	112 58.3	54 20 22.6	9	340 32.7	-16 39.5	289 8.5	-22 14.2	
2	141 47.2	54 20 24.4	6	10 38.2	-16 39.4	319 13.5	-22 14.2	
4	170 36.0	54 20 25.7	4	40 43.6	-16 39.2	349 18.4	-22 14.2	
6	199 24.8	54 20 26.4	1	70 49.1	-16 39.1	19 23.4	-22 14.2	
8	228 13.6	54 20 26.6	-2	100 54.6	-16 38.9	49 28.4	-22 14.2	
10	257 2.5	55 20 26.2	-5	131 .1	-16 38.8	79 33.3	-22 14.2	
12	285 51.4	55 20 25.3	-7	161 5.6	-16 38.6	109 38.3	-22 14.2	
14	314 40.3	55 20 23.9	-10	191 11.1	-16 38.5	139 43.2	-22 14.2	
16	343 29.4	55 20 21.9	-13	221 16.6	-16 38.3	169 48.2	-22 14.2	
18	12 18.4	56 20 19.3	-15	251 22.1	-16 38.2	199 53.2	-22 14.2	
20	41 7.6	56 20 16.2	-18	281 27.6	-16 38.0	229 58.1	-22 14.2	
22	69 56.8	57 20 12.6	-21	311 33.1	-16 37.9	260 3.1	-22 14.2	
Δ				27	1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	1 11.2	.5	15.9	T _m	17 9	2.4	59.5 16.2		
12	1 17.2	T _{m☉}	11 h 58.7 min	Starost	4.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 37	.1	307	-3.1	♃	1 18	.0	132	-2.0
	5 25	.1	70	-.6	♄	4 43	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 20.8	12 6.3	210 .1	155 42.1	19 51.4	279 11.2	-23 2.3
2	210 21.1	12 8.0	240 5.0	185 40.8	19 53.0	309 13.4	-23 2.1
4	240 21.3	12 9.7	270 10.0	215 39.5	19 54.6	339 15.6	-23 1.9
6	270 21.5	12 11.3	300 14.9	245 38.1	19 56.3	9 17.9	-23 1.7
8	300 21.8	12 13.0	330 19.8	275 36.8	19 57.9	39 20.1	-23 1.6
10	330 22.0	12 14.7	0 24.8	305 35.5	19 59.5	69 22.3	-23 1.4
12	0 22.3	12 16.4	30 29.7	335 34.2	20 1.1	99 24.6	-23 1.2
14	30 22.5	12 18.1	60 34.6	5 32.8	20 2.7	129 26.8	-23 1.0
16	60 22.8	12 19.7	90 39.5	35 31.5	20 4.3	159 29.1	-23 .8
18	90 23.0	12 21.4	120 44.5	65 30.2	20 5.9	189 31.3	-23 .7
20	120 23.2	12 23.1	150 49.4	95 28.8	20 7.5	219 33.5	-23 .5
22	150 23.5	12 24.8	180 54.3	125 27.5	20 9.1	249 35.8	-23 .3
Δ	1	8		-7	8	11	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 23	19 35	0 49	:::	9 15	3.3	2 5	1.7
55	4 41	19 18	0 41	2 41	9 46	3.1	1 33	1.9
50	4 53	19 5	0 35	2 10	10 9	2.9	1 10	2.0
45	5 4	18 54	0 31	1 52	10 27	2.8	0 52	2.1
40	5 12	18 45	0 29	1 40	10 41	2.7	0 37	2.1
35	5 20	18 38	0 27	1 31	10 53	2.7	0 25	2.2
30	5 26	18 32	0 25	1 25	11 4	2.6	0 14	2.2
20	5 37	18 20	0 23	1 17	11 23	2.5	...	.0
10	5 46	18 11	0 22	1 12	11 38	2.5	...	.0
0	5 55	18 2	0 21	1 10	11 53	2.4	...	.0
10	6 4	17 53	0 21	1 11	12 8	2.3	...	.0
20	6 13	17 44	0 22	1 14	12 24	2.2	23 52	2.5
30	6 23	17 33	0 24	1 20	12 43	2.1	23 34	2.6
35	6 29	17 27	0 26	1 25	12 53	2.1	23 24	2.7
40	6 36	17 21	0 28	1 31	13 5	2.0	23 12	2.8
45	6 44	17 13	0 30	1 38	13 20	1.9	22 58	2.9
50	6 53	17 3	0 33	1 48	13 37	1.8	22 41	3.0
55	7 4	16 52	0 38	2 2	13 60	1.7	22 19	3.2
60	7 19	16 37	0 44	2 20	14 31	1.4	21 49	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	98 46.1	57 20 8.4	-24	341 38.7	-16 37.7	290 8.0	-22 14.2	
2	127 35.6	58 20 3.7	-26	11 44.2	-16 37.5	320 13.0	-22 14.2	
4	156 25.1	58 19 58.4	-29	41 49.7	-16 37.4	350 18.0	-22 14.2	
6	185 14.8	59 19 52.7	-31	71 55.2	-16 37.2	20 22.9	-22 14.2	
8	214 4.6	60 19 46.4	-34	102 .7	-16 37.1	50 27.9	-22 14.2	
10	242 54.6	61 19 39.6	-37	132 6.2	-16 36.9	80 32.9	-22 14.2	
12	271 44.7	61 19 32.2	-39	162 11.7	-16 36.8	110 37.8	-22 14.2	
14	300 35.0	62 19 24.4	-42	192 17.2	-16 36.6	140 42.8	-22 14.2	
16	329 25.4	63 19 16.1	-44	222 22.7	-16 36.5	170 47.8	-22 14.2	
18	358 16.0	64 19 7.3	-47	252 28.2	-16 36.3	200 52.7	-22 14.2	
20	27 6.8	65 18 57.9	-49	282 33.7	-16 36.2	230 57.7	-22 14.2	
22	55 57.8	66 18 48.1	-51	312 39.2	-16 36.0	261 2.7	-22 14.2	
Δ				28	1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	1 23.2	.5	15.9	T _m	18 7	2.4	59.4 16.2		
12	1 29.0	T _{m☉}	11 h 58.5 min	Starost	5.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 38	.1	306	-3.1	♃	1 13	.0	132	-2.0
	5 23	.1	69	-.6	♄	4 39	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	23.7	12	26.4	210	59.3	155	26.2	20	10.7	279	38.0	-23	.1
2	210	23.9	12	28.1	241	4.2	185	24.8	20	12.3	309	40.3	-22	59.9
4	240	24.2	12	29.8	271	9.1	215	23.5	20	13.9	339	42.5	-22	59.7
6	270	24.4	12	31.4	301	14.0	245	22.1	20	15.5	9	44.8	-22	59.6
8	300	24.7	12	33.1	331	19.0	275	20.8	20	17.1	39	47.0	-22	59.4
10	330	24.9	12	34.8	1	23.9	305	19.4	20	18.7	69	49.3	-22	59.2
12	0	25.1	12	36.4	31	28.8	335	18.1	20	20.2	99	51.5	-22	59.0
14	30	25.4	12	38.1	61	33.8	5	16.7	20	21.8	129	53.8	-22	58.8
16	60	25.6	12	39.7	91	38.7	35	15.4	20	23.4	159	56.0	-22	58.6
18	90	25.8	12	41.4	121	43.6	65	14.0	20	24.9	189	58.3	-22	58.5
20	120	26.0	12	43.0	151	48.5	95	12.7	20	26.5	220	.5	-22	58.3
22	150	26.3	12	44.7	181	53.5	125	11.3	20	28.0	250	2.8	-22	58.1
Δ		1		8				-7		8		11		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 21	19 38	0 50	:	10 33	3.5	2 46	1.2
55	4 38	19 20	0 41	2 43	10 60	3.2	2 18	1.5
50	4 52	19 6	0 35	2 11	11 19	3.1	1 58	1.7
45	5 2	18 55	0 32	1 52	11 35	2.9	1 42	1.8
40	5 11	18 46	0 29	1 40	11 47	2.8	1 28	1.9
35	5 18	18 39	0 27	1 31	11 58	2.7	1 17	2.0
30	5 25	18 32	0 25	1 25	12 7	2.6	1 7	2.0
20	5 36	18 21	0 23	1 17	12 23	2.5	0 50	2.1
10	5 46	18 11	0 22	1 12	12 37	2.4	0 35	2.2
0	5 55	18 2	0 21	1 10	12 51	2.3	0 21	2.3
10	6 4	17 53	0 21	1 11	13 4	2.2	0 7	2.4
20	6 13	17 43	0 22	1 14	13 18	2.1	...	.0
30	6 24	17 32	0 24	1 20	13 34	1.9	...	.0
35	6 30	17 26	0 26	1 25	13 43	1.8	...	.0
40	6 37	17 19	0 28	1 31	13 53	1.7	...	.0
45	6 45	17 11	0 30	1 38	14 6	1.6	...	.0
50	6 54	17 2	0 33	1 48	14 21	1.5	23 53	3.1
55	7 6	16 50	0 38	2 2	14 40	1.3	23 35	3.3
60	7 22	16 34	0 44	2 21	15 5	1.1	23 11	3.6
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	84	48.9	67	18	37.8	-54	342	44.7	-16	35.9	291	7.6	-22	14.2
2	113	40.3	68	18	27.1	-56	12	50.2	-16	35.7	321	12.6	-22	14.2
4	142	31.8	69	18	15.9	-58	42	55.8	-16	35.6	351	17.6	-22	14.2
6	171	23.6	70	18	4.2	-61	73	1.3	-16	35.4	21	22.6	-22	14.2
8	200	15.6	71	17	52.1	-63	103	6.8	-16	35.2	51	27.5	-22	14.2
10	229	7.8	72	17	39.5	-65	133	12.3	-16	35.1	81	32.5	-22	14.2
12	258	.2	73	17	26.5	-67	163	17.8	-16	34.9	111	37.5	-22	14.2
14	286	52.9	74	17	13.1	-69	193	23.3	-16	34.8	141	42.5	-22	14.2
16	315	45.7	76	16	59.2	-71	223	28.8	-16	34.6	171	47.4	-22	14.2
18	344	38.8	77	16	45.0	-73	253	34.4	-16	34.5	201	52.4	-22	14.2
20	372	32.2	78	16	30.3	-75	283	39.9	-16	34.3	231	57.4	-22	14.2
22	42	25.7	79	16	15.2	-77	313	45.4	-16	34.2	262	2.4	-22	14.2
Δ							28			1		25		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	1 34.9	.5	15.9	T _m	19 4	2.2	59.2	16.1	
12	1 40.4	T _{m☉}	11 h 58.3 min	Starost	6.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	13 39	.1	304	-3.1	♄	1 9	.0	132	-2.0
	5 21	.1	69	-.6	♅	4 35	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	26.5	12	46.4	211	58.4	155	10.0	20	29.6	280	5.1	-22	57.9
2	210	26.7	12	48.0	242	3.3	185	8.6	20	31.1	310	7.3	-22	57.7
4	240	27.0	12	49.7	272	8.3	215	7.2	20	32.7	340	9.6	-22	57.5
6	270	27.2	12	51.3	302	13.2	245	5.9	20	34.2	10	11.9	-22	57.3
8	300	27.4	12	52.9	332	18.1	275	4.5	20	35.7	40	14.1	-22	57.2
10	330	27.6	12	54.6	2	23.0	305	3.1	20	37.3	70	16.4	-22	57.0
12	0	27.9	12	56.2	32	28.0	335	1.8	20	38.8	100	18.7	-22	56.8
14	30	28.1	12	57.9	62	32.9	5	.4	20	40.3	130	20.9	-22	56.6
16	60	28.3	12	59.5	92	37.8	34	59.0	20	41.8	160	23.2	-22	56.4
18	90	28.5	13	1.2	122	42.7	64	57.6	20	43.4	190	25.5	-22	56.2
20	120	28.7	13	2.8	152	47.7	94	56.3	20	44.9	220	27.8	-22	56.0
22	150	29.0	13	4.4	182	52.6	124	54.9	20	46.4	250	30.0	-22	55.8
Δ		1		8				-7		8		11		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 18	19 40	0 50	:	11 57	3.6	3 16	.9
55	4 36	19 22	0 41	2 45	12 17	3.3	2 54	1.2
50	4 50	19 8	0 36	2 12	12 33	3.1	2 38	1.4
45	5 1	18 57	0 32	1 53	12 45	2.9	2 24	1.5
40	5 10	18 47	0 29	1 41	12 55	2.8	2 13	1.6
35	5 17	18 40	0 27	1 32	13 3	2.7	2 4	1.7
30	5 24	18 33	0 25	1 25	13 11	2.6	1 56	1.8
20	5 35	18 21	0 23	1 17	13 23	2.4	1 41	2.0
10	5 45	18 11	0 22	1 12	13 35	2.3	1 29	2.1
0	5 55	18 2	0 21	1 11	13 45	2.2	1 17	2.2
10	6 4	17 52	0 21	1 11	13 56	2.0	1 5	2.4
20	6 14	17 42	0 23	1 14	14 7	1.9	0 52	2.5
30	6 25	17 31	0 24	1 20	14 20	1.7	0 37	2.6
35	6 31	17 25	0 26	1 25	14 27	1.7	0 29	2.7
40	6 38	17 18	0 28	1 31	14 35	1.5	0 19	2.8
45	6 46	17 10	0 30	1 39	14 45	1.4	0 8	2.9
50	6 56	16 60	0 33	1 49	14 57	1.3	...	.0
55	7 8	16 47	0 38	2 2	15 11	1.1	...	.0
60	7 24	16 31	0 44	2 21	15 30	.8	...	.0
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	71	19.5	80	15	59.8	-79	343	50.9	-16	34.0	292	7.4	-22	14.2
2	100	13.6	81	15	44.0	-81	13	56.4	-16	33.8	322	12.3	-22	14.2
4	129	7.9	83	15	27.8	-83	44	1.9	-16	33.7	352	17.3	-22	14.2
6	158	2.4	84	15	11.2	-85	74	7.5	-16	33.5	22	22.3	-22	14.2
8	186	57.1	85	14	54.3	-86	104	13.0	-16	33.4	52	27.3	-22	14.2
10	215	52.1	86	14	37.1	-88	134	18.5	-16	33.2	82	32.3	-22	14.2
12	244	47.4	87	14	19.5	-89	164	24.0	-16	33.1	112	37.3	-22	14.3
14	273	42.9	89	14	1.6	-91	194	29.5	-16	32.9	142	42.2	-22	14.3
16	302	38.6	90	13	43.4	-93	224	35.1	-16	32.7	172	47.2	-22	14.3
18	331	34.5	91	13	24.9	-94	254	40.6	-16	32.6	202	52.2	-22	14.3
20	0	30.7	92	13	6.1	-96	284	46.1	-16	32.4	232	57.2	-22	14.3
22	29	27.2	93	12	47.0	-97	314	51.6	-16	32.3	263	2.2	-22	14.3
Δ							28			1		25		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	1 46.0	.4	15.9	T _m	19 58	2.2	58.9	16.1
12	1 51.4	T _{m☉}	11 h 58.1 min	Starost	7.9 d	Faza	☉	
PLANETE								
Pl.	T							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	29.2	13	6.1	212	57.5	154	53.5	20	47.9	280	32.3	-22	55.6
2	210	29.4	13	7.7	243	2.5	184	52.1	20	49.4	310	34.6	-22	55.5
4	240	29.6	13	9.3	273	7.4	214	50.7	20	50.9	340	36.9	-22	55.3
6	270	29.8	13	11.0	303	12.3	244	49.4	20	52.4	10	39.2	-22	55.1
8	300	30.1	13	12.6	333	17.2	274	48.0	20	53.8	40	41.5	-22	54.9
10	330	30.3	13	14.2	3	22.2	304	46.6	20	55.3	70	43.8	-22	54.7
12	0	30.5	13	15.8	33	27.1	334	45.2	20	56.8	100	46.0	-22	54.5
14	30	30.7	13	17.5	63	32.0	4	43.8	20	58.3	130	48.3	-22	54.3
16	60	30.9	13	19.1	93	37.0	34	42.4	20	59.8	160	50.6	-22	54.1
18	90	31.1	13	20.7	123	41.9	64	41.0	21	1.2	190	52.9	-22	53.9
20	120	31.3	13	22.3	153	46.8	94	39.6	21	2.7	220	55.2	-22	53.7
22	150	31.5	13	23.9	183	51.7	124	38.2	21	4.2	250	57.5	-22	53.5
Δ		1		8				-7		7		11		1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	58	23.8	94	12	27.6	-98	344	57.2	-16	32.1	293	7.2	-22	14.3		
2	87	20.7	96	12	7.9	-100	15	2.7	-16	32.0	323	12.2	-22	14.3		
4	116	17.8	97	11	48.0	-101	45	8.2	-16	31.8	353	17.2	-22	14.3		
6	145	15.1	98	11	27.9	-102	75	13.7	-16	31.6	23	22.1	-22	14.3		
8	174	12.7	99	11	7.5	-103	105	19.3	-16	31.5	53	27.1	-22	14.3		
10	203	10.5	100	10	46.8	-104	135	24.8	-16	31.3	83	32.1	-22	14.3		
12	232	8.5	101	10	26.0	-105	165	30.3	-16	31.2	113	37.1	-22	14.3		
14	261	6.7	102	10	4.9	-106	195	35.8	-16	31.0	143	42.1	-22	14.3		
16	290	5.1	103	9	43.6	-107	225	41.4	-16	30.9	173	47.1	-22	14.3		
18	319	3.7	104	9	22.2	-108	255	46.9	-16	30.7	203	52.1	-22	14.3		
20	348	2.5	105	9	5	-109	285	52.4	-16	30.5	233	57.1	-22	14.3		
22	17	1.5	106	8	38.7	-110	315	57.9	-16	30.4	264	2.1	-22	14.3		
Δ								28		1		25		0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 15	19 43	0 50	:	13 23	3.6	3 38	.7
55	4 34	19 24	0 41	2 48	13 37	3.3	3 23	1.0
50	4 48	19 9	0 36	2 13	13 47	3.1	3 11	1.2
45	4 59	18 58	0 32	1 54	13 55	2.9	3 1	1.3
40	5 8	18 48	0 29	1 41	14 2	2.8	2 53	1.5
35	5 16	18 40	0 27	1 32	14 8	2.7	2 46	1.6
30	5 23	18 33	0 25	1 26	14 13	2.6	2 40	1.7
20	5 35	18 21	0 23	1 17	14 22	2.4	2 29	1.8
10	5 45	18 11	0 22	1 12	14 30	2.2	2 19	2.0
0	5 55	18 1	0 21	1 11	14 37	2.1	2 10	2.1
10	6 4	17 52	0 22	1 11	14 45	1.9	2 1	2.3
20	6 14	17 42	0 23	1 14	14 53	1.8	1 52	2.4
30	6 25	17 30	0 25	1 21	15 1	1.6	1 41	2.6
35	6 32	17 24	0 26	1 25	15 7	1.5	1 34	2.7
40	6 39	17 17	0 28	1 31	15 12	1.4	1 27	2.8
45	6 47	17 8	0 30	1 39	15 19	1.3	1 18	2.9
50	6 57	16 58	0 34	1 49	15 27	1.1	1 8	3.1
55	7 10	16 45	0 38	2 2	15 37	.9	0 55	3.3
60	7 26	16 29	0 44	2 21	15 50	.7	0 38	3.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	1 56.8	.4	15.9	T _m	20 50	2.0	58.6	16.0	
12	2 1.9	T _{m☉}	11 h 58.0 min	Starost	8.9 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 41	.1	302	-3.1	♄	1 0	.0	132	-2.0
♂	5 17	.1	68	-7	♅	4 27	.0	80	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	31.8	13	25.6	213	56.7	154	36.8	21	5.6	280	59.8	-22	53.4
2	210	32.0	13	27.2	244	1.6	184	35.4	21	7.1	311	2.1	-22	53.2
4	240	32.2	13	28.8	274	6.5	214	34.0	21	8.5	341	4.4	-22	53.0
6	270	32.4	13	30.4	304	11.5	244	32.6	21	10.0	11	6.7	-22	52.8
8	300	32.6	13	32.0	334	16.4	274	31.2	21	11.4	41	9.0	-22	52.6
10	330	32.8	13	33.6	4	21.3	304	29.8	21	12.8	71	11.4	-22	52.4
12	0	33.0	13	35.2	34	26.2	334	28.4	21	14.3	101	13.7	-22	52.2
14	30	33.2	13	36.8	64	31.2	4	26.9	21	15.7	131	16.0	-22	52.0
16	60	33.4	13	38.4	94	36.1	34	25.5	21	17.1	161	18.3	-22	51.8
18	90	33.6	13	40.0	124	41.0	64	24.1	21	18.5	191	20.6	-22	51.6
20	120	33.8	13	41.6	154	46.0	94	22.7	21	20.0	221	22.9	-22	51.4
22	150	34.0	13	43.2	184	50.9	124	21.3	21	21.4	251	25.2	-22	51.2
Δ		1		8				-7		7		12		1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	46	.7	107	8	16.7	-111	346	3.5	-16	30.2	294	7.1	-22	14.3		
2	75	.1	108	7	54.5	-112	16	9.0	-16	30.1	324	12.1	-22	14.3		
4	103	59.7	109	7	32.2	-112	46	14.5	-16	29.9	354	17.1	-22	14.3		
6	132	59.4	110	7	9.8	-113	76	20.1	-16	29.7	24	22.1	-22	14.3		
8	161	59.4	110	6	47.2	-113	106	25.6	-16	29.6	54	27.1	-22	14.3		
10	190	59.5	111	6	24.5	-114	136	31.1	-16	29.4	84	32.1	-22	14.3		
12	219	59.7	112	6	1.7	-115	166	36.7	-16	29.3	114	37.1	-22	14.3		
14	249	.1	113	5	38.8	-115	196	42.2	-16	29.1	144	42.1	-22	14.3		
16	278	.7	114	5	15.8	-115	226	47.7	-16	28.9	174	47.1	-22	14.3		
18	307	1.4	114	4	52.7	-116	256	53.3	-16	28.8	204	52.1	-22	14.4		
20	336	2.3	115	4	29.5	-116	286	58.8	-16	28.6	234	57.1	-22	14.4		
22	5	3.3	116	4	6.3	-116	317	4.3	-16	28.5	265	2.1	-22	14.4		
Δ								28		1		25		0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 12	19 45	0 51	:	14 48	3.5	3 56	.6
55	4 31	19 26	0 42	2 51	14 55	3.2	3 47	.9
50	4 46	19 11	0 36	2 14	15 1	3.0	3 39	1.1
45	4 57	18 59	0 32	1 54	15 5	2.9	3 33	1.2
40	5 7	18 49	0 29	1 41	15 9	2.7	3 28	1.4
35	5 15	18 41	0 27	1 32	15 12	2.6	3 24	1.5
30	5 22	18 34	0 25	1 26	15 15	2.5	3 20	1.6
20	5 34	18 22	0 23	1 17	15 19	2.3	3 13	1.7
10	5 45	18 11	0 23	1 13	15 24	2.2	3 7	1.9
0	5 54	18 1	0 21	1 11	15 27	2.0	3 1	2.0
10	6 4	17 51	0 22	1 11	15 31	1.9	2 56	2.2
20	6 14	17 41	0 23	1 15	15 36	1.7	2 50	2.4
30	6 26	17 29	0 25	1 21	15 40	1.5	2 43	2.5
35	6 32	17 23	0 26	1 25	15 43	1.4	2 39	2.6
40	6 40	17 15	0 28	1 31	15 46	1.3	2 34	2.8
45	6 49	17 7	0 30	1 39	15 50	1.2	2 29	2.9
50	6 59	16 56	0 34	1 49	15 54	1.0	2 22	3.1
55	7 12	16 43	0 38	2 3	15 59	.8	2 14	3.3
60	7 29	16 26	0 44	2 21	16 6	.6	2 4	3.5
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	34.2	13	44.8	214	55.8	154	19.9	21	22.8	281	27.6	-22	51.0	
2	210	34.4	13	46.4	245	5.7	184	18.4	21	24.2	311	29.9	-22	50.8	
4	240	34.6	13	48.0	275	5.7	214	17.0	21	25.6	341	32.2	-22	50.6	
6	270	34.8	13	49.6	305	10.6	244	15.6	21	27.0	11	34.5	-22	50.4	
8	300	35.0	13	51.2	335	15.5	274	14.2	21	28.4	41	36.9	-22	50.2	
10	330	35.2	13	52.8	5	20.5	304	12.7	21	29.8	71	39.2	-22	50.1	
12	0	35.4	13	54.4	35	25.4	334	11.3	21	31.1	101	41.5	-22	49.9	
14	30	35.6	13	56.0	65	30.3	4	9.9	21	32.5	131	43.8	-22	49.7	
16	60	35.8	13	57.6	95	35.2	34	8.4	21	33.9	161	46.2	-22	49.5	
18	90	36.0	13	59.1	125	40.2	64	7.0	21	35.3	191	48.5	-22	49.3	
20	120	36.2	14	.7	155	45.1	94	5.6	21	36.6	221	50.9	-22	49.1	
22	150	36.3	14	2.3	185	50.0	124	4.1	21	38.0	251	53.2	-22	48.9	
Δ		1		8				-7		7		12			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 9	19 48	0 51	:	16 12	.9	4 11	1.7
55	4 29	19 27	0 42	2 54	16 13	1.1	4 8	1.7
50	4 44	19 12	0 36	2 15	16 13	1.2	4 5	1.8
45	4 56	19 0	0 32	1 55	16 14	1.3	4 3	1.8
40	5 5	18 50	0 29	1 42	16 14	1.4	4 1	1.8
35	5 14	18 42	0 27	1 33	16 14	1.5	3 59	1.9
30	5 21	18 35	0 25	1 26	16 15	1.6	3 58	1.9
20	5 33	18 22	0 23	1 17	16 15	1.7	3 55	1.9
10	5 44	18 11	0 22	1 13	16 15	1.9	3 53	2.0
0	5 54	18 1	0 21	1 11	16 16	2.0	3 51	2.0
10	6 4	17 51	0 22	1 11	16 16	2.1	3 49	2.0
20	6 15	17 40	0 23	1 15	16 17	2.2	3 46	2.1
30	6 26	17 29	0 25	1 21	16 17	2.4	3 43	2.1
35	6 33	17 22	0 26	1 25	16 17	2.4	3 42	2.1
40	6 41	17 14	0 28	1 31	16 18	2.5	3 40	2.2
45	6 50	17 5	0 30	1 39	16 18	2.6	3 38	2.2
50	7 0	16 54	0 34	1 49	16 19	2.8	3 36	2.2
55	7 14	16 41	0 38	2 3	16 19	2.9	3 33	2.3
60	7 31	16 23	0 45	2 22	16 20	3.1	3 29	2.4
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	34	4.4	116	3	43.0	-117	347	9.9	-16	28.3	295	7.1	-22	14.4	
2	63	5.7	117	3	19.6	-117	17	15.4	-16	28.1	325	12.1	-22	14.4	
4	92	7.1	118	2	56.2	-117	47	20.9	-16	28.0	355	17.1	-22	14.4	
6	121	8.6	118	2	32.8	-117	77	26.5	-16	27.8	25	22.1	-22	14.4	
8	150	10.2	119	2	9.4	-117	107	32.0	-16	27.7	55	27.2	-22	14.4	
10	179	12.0	119	1	45.9	-117	137	37.5	-16	27.5	85	32.2	-22	14.4	
12	208	13.8	120	1	22.4	-117	167	43.1	-16	27.3	115	37.2	-22	14.4	
14	237	15.7	120	0	58.9	-117	197	48.6	-16	27.2	145	42.2	-22	14.4	
16	266	17.8	121	0	35.5	-117	227	54.2	-16	27.0	175	47.2	-22	14.4	
18	295	19.9	121	0	12.0	-3	257	59.7	-16	26.8	205	52.2	-22	14.4	
20	324	22.1	121	0	11.4	117	288	5.2	-16	26.7	235	57.2	-22	14.4	
22	353	24.3	122	0	34.8	117	318	10.8	-16	26.5	266	2.2	-22	14.4	
Δ							28			1		25			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	2 16.8	.4	15.9	T _m	22 27	2.0	57.8	15.8	
12	2 21.5	T _{m☉}	11 h 57.6 min	Starost	10.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	-3.2	♃	h min	'	°	132
♂	5 14	.1	67	-7	♄	4 19	.0	80	-2.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	36.5	14	3.9	215	54.9	154	2.7	21	39.4	281	55.5	-22	48.7	
2	210	36.7	14	5.5	245	59.9	184	1.2	21	40.7	311	57.9	-22	48.5	
4	240	36.9	14	7.0	276	4.8	213	59.8	21	42.1	342	.2	-22	48.3	
6	270	37.1	14	8.6	306	9.7	243	58.3	21	43.4	12	2.6	-22	48.1	
8	300	37.3	14	10.2	336	14.7	273	56.9	21	44.8	42	4.9	-22	47.9	
10	330	37.5	14	11.8	6	19.6	303	55.4	21	46.1	72	7.3	-22	47.7	
12	0	37.6	14	13.3	36	24.5	333	54.0	21	47.4	102	9.6	-22	47.5	
14	30	37.8	14	14.9	66	29.4	3	52.5	21	48.8	132	12.0	-22	47.3	
16	60	38.0	14	16.5	96	34.4	33	51.1	21	50.1	162	14.3	-22	47.1	
18	90	38.2	14	18.0	126	39.3	63	49.6	21	51.4	192	16.7	-22	46.9	
20	120	38.4	14	19.6	156	44.2	93	48.2	21	52.7	222	19.0	-22	46.7	
22	150	38.6	14	21.1	186	49.2	123	46.7	21	54.1	252	21.4	-22	46.5	
Δ		1		8				-7		7		12			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 7	19 50	0 52	:	16 34	.6	4 52	3.4
55	4 27	19 29	0 42	2 57	16 39	.9	4 50	3.2
50	4 42	19 14	0 36	2 16	16 43	1.0	4 48	3.0
45	4 54	19 2	0 32	1 56	16 46	1.2	4 46	2.8
40	5 4	18 51	0 29	1 42	16 49	1.3	4 45	2.7
35	5 13	18 43	0 27	1 33	16 51	1.4	4 44	2.5
30	5 20	18 35	0 25	1 26	16 53	1.5	4 43	2.4
20	5 33	18 22	0 23	1 17	16 57	1.7	4 41	2.3
10	5 44	18 11	0 22	1 13	17 0	1.8	4 40	2.1
0	5 54	18 1	0 21	1 11	17 3	2.0	4 39	2.0
10	6 4	17 51	0 22	1 12	17 6	2.1	4 37	1.8
20	6 15	17 40	0 23	1 15	17 10	2.3	4 36	1.7
30	6 27	17 28	0 25	1 21	17 14	2.4	4 34	1.5
35	6 34	17 21	0 26	1 25	17 16	2.5	4 33	1.4
40	6 42	17 13	0 28	1 31	17 18	2.6	4 32	1.3
45	6 51	17 3	0 31	1 39	17 21	2.8	4 31	1.2
50	7 2	16 52	0 34	1 49	17 25	2.9	4 29	1.0
55	7 16	16 39	0 38	2 3	17 29	3.1	4 28	.8
60	7 34	16 20	0 45	2 22	17 35	3.4	4 25	.6
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	22	26.7	122	0	58.2	117	348	16.3	-16	26.4	296	7.2	-22	14.4	
2	51	29.1	122	1	21.5	116	18	21.8	-16	26.2	326	12.3	-22	14.4	
4	80	31.6	123	1	44.8	116	48	27.4	-16	26.0	356	17.3	-22	14.4	
6	109	34.1	123	2	7.9	116	78	32.9	-16	25.9	26	22.3	-22	14.4	
8	138	36.7	123	2	31.1	115	108	38.5	-16	25.7	56	27.3	-22	14.4	
10	167	39.3	123	2	54.1	115	138	44.0	-16	25.5	86	32.3	-22	14.4	
12	196	42.0	124	3	17.1	114	168	49.6	-16	25.4	116	37.4	-22	14.5	
14	225	44.7	124	3	39.9	114	198	55.1	-16	25.2	146	42.4	-22	14.5	
16	254	47.5	124	4	2.7	113	229	.6	-16	25.1	176	47.4	-22	14.5	
18	283	50.3	124	4	25.3	113	259	6.2	-16	24.9	206	52.4	-22	14.5	
20	312	53.1	124	4	47.9	112	289	11.7	-16	24.7	236	57.4	-22	14.5	
22	341	55.9	124	5	10.3	111	319	17.3	-16	24.6	267	2.5	-22	14.5	
Δ							28			1		25			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	2 26.1	.4	15.9	T _m	23 15	2.0	57.3	15.6
12	2 30.5	T _{m☉}	11 h 57.5 min	Starost	11.9 d	Faza	☉	
PLANETE								
Pl.	T _m </							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 38.7	14 22.7	216 54.1	153 45.2	21 55.4	282 23.7	-22 46.3
2	210 38.9	14 24.3	246 59.0	183 43.8	21 56.7	312 26.1	-22 46.1
4	240 39.1	14 25.8	277 3.9	213 42.3	21 58.0	342 28.5	-22 45.9
6	270 39.3	14 27.4	307 8.9	243 40.9	21 59.3	12 30.8	-22 45.7
8	300 39.4	14 28.9	337 13.8	273 39.4	22 .6	42 33.2	-22 45.5
10	330 39.6	14 30.5	7 18.7	303 37.9	22 1.9	72 35.6	-22 45.3
12	0 39.8	14 32.0	37 23.7	333 36.4	22 3.1	102 37.9	-22 45.1
14	30 40.0	14 33.6	67 28.6	3 35.0	22 4.4	132 40.3	-22 44.9
16	60 40.1	14 35.1	97 33.5	33 33.5	22 5.7	162 42.7	-22 44.7
18	90 40.3	14 36.7	127 38.4	63 32.0	22 7.0	192 45.1	-22 44.5
20	120 40.5	14 38.2	157 43.4	93 30.6	22 8.2	222 47.4	-22 44.3
22	150 40.6	14 39.7	187 48.3	123 29.1	22 9.5	252 49.8	-22 44.1
Δ	1	8		-7	6	12	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 4	19 53	0 53	:::	16 49	.7	6 14	3.3
55	4 25	19 31	0 43	3 0	16 59	.9	6 5	3.1
50	4 40	19 15	0 36	2 18	17 8	1.1	5 59	2.9
45	4 53	19 3	0 32	1 56	17 15	1.3	5 53	2.7
40	5 3	18 53	0 29	1 43	17 20	1.4	5 49	2.6
35	5 12	18 44	0 27	1 33	17 25	1.5	5 45	2.5
30	5 19	18 36	0 25	1 27	17 30	1.6	5 42	2.4
20	5 32	18 23	0 23	1 18	17 37	1.7	5 36	2.2
10	5 43	18 11	0 22	1 13	17 44	1.8	5 31	2.1
0	5 54	18 1	0 21	1 11	17 51	2.0	5 26	2.0
10	6 4	17 50	0 22	1 12	17 57	2.1	5 21	1.8
20	6 15	17 39	0 23	1 15	18 4	2.2	5 16	1.7
30	6 28	17 27	0 25	1 21	18 12	2.4	5 10	1.5
35	6 35	17 20	0 26	1 26	18 16	2.5	5 7	1.4
40	6 43	17 11	0 28	1 32	18 22	2.6	5 3	1.3
45	6 52	17 2	0 31	1 39	18 28	2.7	4 59	1.2
50	7 3	16 51	0 34	1 50	18 35	2.9	4 54	1.1
55	7 17	16 36	0 39	2 3	18 44	3.0	4 47	.9
60	7 36	16 18	0 45	2 23	18 56	3.3	4 39	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	10 58.7	124	5 32.6	111	349 22.8	-16 24.4	297 7.5	-22 14.5
2	40 1.6	124	5 54.7	110	19 28.4	-16 24.2	327 12.5	-22 14.5
4	69 4.5	124	6 16.7	109	49 33.9	-16 24.1	357 17.5	-22 14.5
6	98 7.3	124	6 38.5	108	79 39.5	-16 23.9	27 22.6	-22 14.5
8	127 10.2	124	7 .2	108	109 45.0	-16 23.8	57 27.6	-22 14.5
10	156 13.1	124	7 21.7	107	139 50.5	-16 23.6	87 32.6	-22 14.5
12	185 15.9	124	7 43.1	106	169 56.1	-16 23.4	117 37.6	-22 14.5
14	214 18.8	124	8 4.2	105	200 1.6	-16 23.3	147 42.7	-22 14.5
16	243 21.6	124	8 25.2	104	230 7.2	-16 23.1	177 47.7	-22 14.5
18	272 24.5	124	8 46.0	103	260 12.7	-16 22.9	207 52.7	-22 14.5
20	301 27.3	124	9 6.6	102	290 18.3	-16 22.8	237 57.7	-22 14.5
22	330 30.1	124	9 26.9	101	320 23.8	-16 22.6	268 2.8	-22 14.5
Δ					28	1	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	2 34.9	.3	15.9	T _m	1.0	56.8	15.5
12	2 39.1	T _{m☉}	11 h 57.3 min	Starost	12.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 46	.1	297	-3.2	♃	0 42	.0	132	-2.0
♂	5 10	.1	65	-.8	♄	4 11	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 40.8	14 41.3	217 53.2	153 27.6	22 10.8	282 52.2	-22 43.9
2	210 41.0	14 42.8	247 58.2	183 26.1	22 12.0	312 54.6	-22 43.7
4	240 41.1	14 44.3	278 3.1	213 24.6	22 13.3	342 57.0	-22 43.5
6	270 41.3	14 45.9	308 8.0	243 23.1	22 14.5	12 59.4	-22 43.3
8	300 41.5	14 47.4	338 12.9	273 21.7	22 15.8	43 1.7	-22 43.1
10	330 41.6	14 48.9	8 17.9	303 20.2	22 17.0	73 4.1	-22 42.9
12	0 41.8	14 50.5	38 22.8	333 18.7	22 18.2	103 6.5	-22 42.7
14	30 42.0	14 52.0	68 27.7	3 17.2	22 19.5	133 8.9	-22 42.5
16	60 42.1	14 53.5	98 32.7	33 15.7	22 20.7	163 11.3	-22 42.3
18	90 42.3	14 55.0	128 37.6	63 14.2	22 21.9	193 13.7	-22 42.1
20	120 42.4	14 56.6	158 42.5	93 12.7	22 23.1	223 16.1	-22 41.9
22	150 42.6	14 58.1	188 47.4	123 11.2	22 24.4	253 18.5	-22 41.7
Δ	1	8		-7	6	12	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 1	19 55	0 53	:::	17 5	.8	7 34	3.2
55	4 22	19 33	0 43	3 4	17 22	1.1	7 19	3.0
50	4 38	19 17	0 37	2 19	17 34	1.2	7 8	2.8
45	4 51	19 4	0 32	1 57	17 45	1.4	6 59	2.7
40	5 2	18 54	0 29	1 43	17 53	1.5	6 52	2.6
35	5 10	18 45	0 27	1 34	18 1	1.6	6 45	2.5
30	5 18	18 37	0 25	1 27	18 7	1.6	6 39	2.4
20	5 32	18 23	0 23	1 18	18 19	1.8	6 30	2.2
10	5 43	18 11	0 22	1 13	18 29	1.9	6 21	2.1
0	5 54	18 1	0 21	1 11	18 38	2.0	6 13	2.0
10	6 4	17 50	0 22	1 12	18 47	2.1	6 5	1.9
20	6 16	17 39	0 23	1 15	18 58	2.2	5 57	1.7
30	6 28	17 26	0 25	1 21	19 9	2.3	5 47	1.6
35	6 36	17 18	0 26	1 26	19 16	2.4	5 42	1.5
40	6 44	17 10	0 28	1 32	19 24	2.5	5 35	1.4
45	6 53	17 0	0 31	1 39	19 33	2.6	5 28	1.3
50	7 5	16 49	0 34	1 50	19 44	2.8	5 19	1.2
55	7 19	16 34	0 39	2 4	19 57	2.9	5 9	1.0
60	7 38	16 15	0 45	2 23	20 15	3.2	4 55	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	359 32.8	124	9 47.1	100	350 29.4	-16 22.4	298 7.8	-22 14.6
2	28 35.6	124	10 7.1	99	20 34.9	-16 22.3	328 12.8	-22 14.6
4	57 38.3	123	10 26.8	97	50 40.5	-16 22.1	358 17.9	-22 14.6
6	86 40.9	123	10 46.3	96	80 46.0	-16 21.9	28 22.9	-22 14.6
8	115 43.6	123	11 5.5	95	110 51.6	-16 21.8	58 27.9	-22 14.6
10	144 46.2	123	11 24.6	94	140 57.1	-16 21.6	88 33.0	-22 14.6
12	173 48.7	123	11 43.3	93	171 2.7	-16 21.5	118 38.0	-22 14.6
14	202 51.3	122	12 1.8	91	201 8.2	-16 21.3	148 43.0	-22 14.6
16	231 53.7	122	12 20.1	90	231 13.8	-16 21.1	178 48.1	-22 14.6
18	260 56.2	122	12 38.1	89	261 19.3	-16 21.0	208 53.1	-22 14.6
20	289 58.6	122	12 55.8	87	291 24.9	-16 20.8	238 58.2	-22 14.6
22	319 .9	121	13 13.3	86	321 30.4	-16 20.6	269 3.2	-22 14.6
Δ					28	1	25	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	2 43.2	.3	15.9	T _m	0 2	2.0	56.3	15.3
12	2 47.1	T _{m☉}	11 h 57.2 min	Starost	13.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	13 47	.1	296	-3.2	♃	0 38	.0	133	-2.0
♂	5 8	.1	65	-.8	♄	4 7	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	42.7	14	59.6	218	52.4	153	9.7	22	25.6	283	20.9	-22	41.5	
2	210	42.9	15	1.1	248	57.3	183	8.2	22	26.8	313	23.3	-22	41.3	
4	240	43.1	15	2.6	279	2.2	213	6.7	22	28.0	343	25.7	-22	41.1	
6	270	43.2	15	4.2	309	7.2	243	5.2	22	29.2	13	28.1	-22	40.9	
8	300	43.4	15	5.7	339	12.1	273	3.7	22	30.4	43	30.5	-22	40.7	
10	330	43.5	15	7.2	9	17.0	303	2.2	22	31.6	73	33.0	-22	40.5	
12	0	43.7	15	8.7	39	21.9	333	.7	22	32.7	103	35.4	-22	40.3	
14	30	43.8	15	10.2	69	26.9	2	59.2	22	33.9	133	37.8	-22	40.1	
16	60	44.0	15	11.7	99	31.8	32	57.7	22	35.1	163	40.2	-22	39.9	
18	90	44.1	15	13.2	129	36.7	62	56.2	22	36.3	193	42.6	-22	39.7	
20	120	44.3	15	14.7	159	41.6	92	54.7	22	37.4	223	45.0	-22	39.4	
22	150	44.4	15	16.2	189	46.6	122	53.1	22	38.6	253	47.5	-22	39.2	
Δ		1		8				-8		6		12			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 58	19 58	0 54	:	17 25	1.1	8 52	3.1
55	4 20	19 35	0 43	3 8	17 47	1.3	8 31	2.8
50	4 37	19 19	0 37	2 20	18 4	1.4	8 16	2.7
45	4 50	19 5	0 32	1 58	18 18	1.5	8 3	2.6
40	5 0	18 55	0 29	1 44	18 29	1.6	7 53	2.5
35	5 9	18 45	0 27	1 34	18 38	1.7	7 44	2.4
30	5 17	18 37	0 25	1 27	18 47	1.7	7 36	2.3
20	5 31	18 23	0 23	1 18	19 1	1.8	7 23	2.2
10	5 43	18 12	0 22	1 13	19 14	1.9	7 12	2.1
0	5 54	18 1	0 21	1 11	19 26	2.0	7 1	2.0
10	6 4	17 50	0 22	1 12	19 38	2.1	6 50	1.9
20	6 16	17 38	0 23	1 15	19 51	2.2	6 39	1.8
30	6 29	17 25	0 25	1 21	20 6	2.3	6 26	1.7
35	6 36	17 17	0 26	1 26	20 14	2.3	6 18	1.6
40	6 45	17 9	0 28	1 32	20 24	2.4	6 9	1.5
45	6 55	16 59	0 31	1 40	20 36	2.5	5 59	1.4
50	7 6	16 47	0 34	1 50	20 50	2.6	5 47	1.3
55	7 21	16 32	0 39	2 4	21 8	2.8	5 32	1.2
60	7 41	16 13	0 46	2 23	21 32	3.0	5 13	.9

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	348	3.2	121	13	30.4	84	351	36.0	-16	20.5	299	8.2	-22	14.6	
2	17	5.5	121	13	47.3	83	21	41.5	-16	20.3	329	13.3	-22	14.6	
4	46	7.7	121	14	3.9	81	51	47.1	-16	20.1	359	18.3	-22	14.6	
6	75	9.8	121	14	20.2	80	81	52.6	-16	20.0	29	23.4	-22	14.7	
8	104	11.9	120	14	36.2	78	111	58.2	-16	19.8	59	28.4	-22	14.7	
10	133	14.0	120	14	51.9	77	142	3.8	-16	19.6	89	33.4	-22	14.7	
12	162	16.0	120	15	7.3	75	172	9.3	-16	19.5	119	38.5	-22	14.7	
14	191	17.9	120	15	22.4	74	202	14.9	-16	19.3	149	43.5	-22	14.7	
16	220	19.8	119	15	37.1	72	232	20.4	-16	19.1	179	48.6	-22	14.7	
18	249	21.7	119	15	51.6	71	262	26.0	-16	19.0	209	53.6	-22	14.7	
20	278	23.5	119	16	5.7	69	292	31.5	-16	18.8	239	58.7	-22	14.7	
22	307	25.2	119	16	19.4	67	322	37.1	-16	18.6	270	3.7	-22	14.7	
Δ								28		1		25			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	2 51.0	.3	15.9	T _m	0 49	2.0	55.8	15.2
12	2 54.6	T _{m☉}	11 h 57.1 min	Starost	14.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	13 48	.1	294	-3.2	♃	0 33	.0	133	-2.0
♂	5 6	.1	64	-8	♄	4 3	.0	80	.6

2. MAJ

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	44.5	15	17.7	219	51.5	152	51.6	22	39.7	283	49.9	-22	39.0	
2	210	44.7	15	19.2	249	56.4	182	50.1	22	40.9	313	52.3	-22	38.8	
4	240	44.8	15	20.7	280	1.4	212	48.6	22	42.1	343	54.7	-22	38.6	
6	270	45.0	15	22.2	310	6.3	242	47.1	22	43.2	13	57.2	-22	38.4	
8	300	45.1	15	23.7	340	11.2	272	45.5	22	44.3	43	59.6	-22	38.2	
10	330	45.3	15	25.2	10	16.1	302	44.0	22	45.5	74	2.0	-22	38.0	
12	0	45.4	15	26.6	40	21.1	332	42.5	22	46.6	104	4.5	-22	37.8	
14	30	45.5	15	28.1	70	26.0	2	41.0	22	47.7	134	6.9	-22	37.6	
16	60	45.7	15	29.6	100	30.9	32	39.4	22	48.9	164	9.4	-22	37.4	
18	90	45.8	15	31.1	130	35.9	62	37.9	22	50.0	194	11.8	-22	37.2	
20	120	45.9	15	32.6	160	40.8	92	36.4	22	51.1	224	14.2	-22	37.0	
22	150	46.1	15	34.1	190	45.7	122	34.9	22	52.2	254	16.7	-22	36.8	
Δ		1		7				-8		6		12			1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 56	20 0	0 54	:	17 50	1.4	10 6	2.8
55	4 18	19 37	0 43	3 13	18 18	1.5	9 40	2.6
50	4 35	19 20	0 37	2 22	18 38	1.6	9 20	2.5
45	4 48	19 7	0 33	1 59	18 54	1.7	9 5	2.4
40	4 59	18 56	0 29	1 44	19 7	1.8	8 52	2.4
35	5 8	18 46	0 27	1 34	19 18	1.8	8 41	2.3
30	5 16	18 38	0 25	1 27	19 28	1.9	8 32	2.2
20	5 30	18 24	0 23	1 18	19 45	1.9	8 16	2.2
10	5 42	18 12	0 22	1 13	20 0	2.0	8 2	2.1
0	5 54	18 0	0 21	1 11	20 14	2.0	7 49	2.0
10	6 5	17 49	0 22	1 12	20 28	2.1	7 36	2.0
20	6 16	17 37	0 23	1 15	20 43	2.1	7 22	1.9
30	6 30	17 24	0 25	1 21	21 0	2.2	7 6	1.8
35	6 37	17 16	0 26	1 26	21 10	2.2	6 57	1.7
40	6 46	17 8	0 28	1 32	21 22	2.3	6 46	1.7
45	6 56	16 58	0 31	1 40	21 36	2.3	6 34	1.6
50	7 8	16 45	0 34	1 50	21 52	2.4	6 19	1.5
55	7 23	16 30	0 39	2 4	22 14	2.5	6 0	1.4
60	7 43	16 10	0 46	2 24	22 43	2.6	5 35	1.2

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	336	26.9	118	16	32.9	66	352	42.6	-16	18.5	300	8.8	-22	14.7	
2	5	28.6	118	16	46.0	64	22	48.2	-16	18.3	330	13.8	-22	14.7	
4	34	30.2	118	16	58.8	62	52	53.8	-16	18.1	0	18.9	-22	14.7	
6	63	31.8	118	17	11.2	60	82	59.3	-16	18.0	30	23.9	-22	14.7	
8	92	33.3	117	17	23.3	59	113	4.9	-16	17.8	60	29.0	-22	14.7	
10	121	34.8	117	17	35.0	57	143	10.4	-16	17.6	90	34.0	-22	14.8	
12	150	36.2	117	17	46.4	55	173	16.0	-16	17.5	120	39.1	-22	14.8	
14	179	37.6	117	17	57.4	53	203	21.5	-16	17.3	150	44.1	-22	14.8	
16	208	39.0	117	18	8.1	52	233	27.1	-16	17.1	180	49.2	-22	14.8	
18	237	40.3	116	18	18.4	50	263	32.7	-16	17.0	210	54.2	-22	14.8	
20	266	41.6	116	18	28.3	48	293	38.2	-16	16.8	240	59.3	-22	14.8	
22	295	42.8	116	18	37.9	46	323	43.8	-16	16.6	271	4.3	-22	14.8	
Δ								28		1		25			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	2 58.2	.3	15.9	T _m	1 37	2.0	55.3	15.1
12	3 1.5	T _{m☉}	11 h 57.0 min	Starost	15.9 d	Faza	☉	

PLANETE							
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UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 46.2	15 35.5	220 50.6	152 33.3	22 53.3	284 19.1	-22 36.6
2	210 46.3	15 37.0	250 55.6	182 31.8	22 54.4	314 21.6	-22 36.4
4	240 46.5	15 38.5	281 5	212 30.2	22 55.5	344 24.0	-22 36.2
6	270 46.6	15 39.9	311 5.4	242 28.7	22 56.6	14 26.5	-22 36.0
8	300 46.7	15 41.4	341 10.4	272 27.2	22 57.7	44 28.9	-22 35.8
10	330 46.9	15 42.9	11 15.3	302 25.6	22 58.8	74 31.4	-22 35.6
12	0 47.0	15 44.4	41 20.2	332 24.1	22 59.8	104 33.9	-22 35.4
14	30 47.1	15 45.8	71 25.1	2 22.5	23 59.9	134 36.3	-22 35.2
16	60 47.2	15 47.3	101 30.1	32 21.0	23 2.0	164 38.8	-22 35.0
18	90 47.4	15 48.7	131 35.0	62 19.5	23 3.1	194 41.2	-22 34.8
20	120 47.5	15 50.2	161 39.9	92 17.9	23 4.1	224 43.7	-22 34.6
22	150 47.6	15 51.7	191 44.9	122 16.4	23 5.2	254 46.2	-22 34.4
Δ	1	7		-8	5	12	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 53	20 3	0 55	:	18 23	1.7	11 14	2.4
55	4 16	19 39	0 44	3 18	18 54	1.8	10 43	2.3
50	4 33	19 22	0 37	2 23	19 17	1.9	10 20	2.3
45	4 47	19 8	0 33	1 59	19 35	1.9	10 3	2.2
40	4 58	18 57	0 30	1 45	19 50	1.9	9 49	2.2
35	5 7	18 47	0 27	1 35	20 2	1.9	9 37	2.2
30	5 16	18 39	0 25	1 28	20 13	2.0	9 26	2.1
20	5 30	18 24	0 23	1 18	20 31	2.0	9 8	2.1
10	5 42	18 12	0 22	1 13	20 48	2.0	8 52	2.1
0	5 53	18 0	0 21	1 11	21 3	2.0	8 38	2.0
10	6 5	17 49	0 22	1 12	21 18	2.0	8 23	2.0
20	6 17	17 37	0 23	1 15	21 34	2.1	8 7	2.0
30	6 30	17 23	0 25	1 21	21 53	2.1	7 49	1.9
35	6 38	17 15	0 26	1 26	22 4	2.1	7 39	1.9
40	6 47	17 7	0 28	1 32	22 17	2.1	7 27	1.8
45	6 57	16 56	0 31	1 40	22 32	2.1	7 13	1.8
50	7 9	16 44	0 34	1 50	22 50	2.1	6 55	1.7
55	7 25	16 28	0 39	2 4	23 14	2.0	6 33	1.7
60	7 45	16 7	0 46	2 24	23 46	2.0	6 3	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	324 44.1	116	18 47.1	44	353 49.3	-16 16.5	301 9.4	-22 14.8
2	353 45.3	116	18 55.9	42	23 54.9	-16 16.3	331 14.5	-22 14.8
4	22 46.4	116	19 4.4	40	54 4	-16 16.1	1 19.5	-22 14.8
6	51 47.6	116	19 12.5	39	84 6.0	-16 16.0	31 24.6	-22 14.8
8	80 48.7	116	19 20.2	37	114 11.6	-16 15.8	61 29.6	-22 14.8
10	109 49.8	116	19 27.5	35	144 17.1	-16 15.6	91 34.7	-22 14.9
12	138 51.0	115	19 34.5	33	174 22.7	-16 15.5	121 39.8	-22 14.9
14	167 52.0	115	19 41.1	31	204 28.2	-16 15.3	151 44.8	-22 14.9
16	196 53.1	115	19 47.2	29	234 33.8	-16 15.1	181 49.9	-22 14.9
18	225 54.2	115	19 53.1	27	264 39.4	-16 15.0	211 54.9	-22 14.9
20	254 55.3	115	19 58.5	25	294 44.9	-16 14.8	241 60.0	-22 14.9
22	283 56.4	115	20 3.5	23	324 50.5	-16 14.6	272 5.1	-22 14.9
Δ					28	1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	3 4.9	.3	15.9	T _m	2 26	2.0	54.9 14.9		
12	3 7.9	T _{m☉}	11 h 56.9 min	Starost	16.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	-3.2	♃	h min	'	°	133
♂	5 2	.1	63	-9	♄	3 55	.0	80	-2.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 47.7	15 53.1	221 49.8	152 14.8	23 6.2	284 48.6	-22 34.2
2	210 47.9	15 54.6	251 54.7	182 13.3	23 7.3	314 51.1	-22 33.9
4	240 48.0	15 56.0	281 59.6	212 11.7	23 8.3	344 53.6	-22 33.7
6	270 48.1	15 57.5	312 4.6	242 10.2	23 9.4	14 56.1	-22 33.5
8	300 48.2	15 58.9	342 9.5	272 8.6	23 10.4	44 58.5	-22 33.3
10	330 48.3	16 4	12 14.4	302 7.0	23 11.4	75 1.0	-22 33.1
12	0 48.5	16 1.8	42 19.4	332 5.5	23 12.4	105 3.5	-22 32.9
14	30 48.6	16 3.2	72 24.3	2 3.9	23 13.5	135 6.0	-22 32.7
16	60 48.7	16 4.7	102 29.2	32 2.4	23 14.5	165 8.5	-22 32.5
18	90 48.8	16 6.1	132 34.1	62 1.8	23 15.5	195 11.0	-22 32.3
20	120 48.9	16 7.6	162 39.1	91 59.2	23 16.5	225 13.5	-22 32.1
22	150 49.0	16 9.0	192 44.0	121 57.7	23 17.5	255 16.0	-22 31.9
Δ	1	7		-8	5	12	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 50	20 5	0 56	:	19 5	2.2	12 12	2.0
55	4 14	19 41	0 44	3 24	19 38	2.1	11 39	2.0
50	4 31	19 23	0 37	2 25	20 2	2.1	11 15	2.0
45	4 45	19 9	0 33	2 0	20 21	2.1	10 57	2.0
40	4 57	18 58	0 30	1 45	20 36	2.1	10 41	2.0
35	5 6	18 48	0 27	1 35	20 49	2.1	10 29	2.0
30	5 15	18 39	0 26	1 28	20 60	2.1	10 18	2.0
20	5 29	18 25	0 23	1 18	21 19	2.0	9 58	2.0
10	5 42	18 12	0 22	1 14	21 36	2.0	9 42	2.0
0	5 53	18 0	0 22	1 12	21 51	2.0	9 26	2.0
10	6 5	17 49	0 22	1 12	22 7	2.0	9 11	2.0
20	6 17	17 36	0 23	1 15	22 24	2.0	8 54	2.0
30	6 31	17 22	0 25	1 22	22 43	2.0	8 35	2.0
35	6 39	17 14	0 26	1 26	22 55	1.9	8 24	2.0
40	6 48	17 5	0 28	1 32	23 7	1.9	8 11	2.0
45	6 58	16 55	0 31	1 40	23 23	2.0	7 56	2.0
50	7 11	16 42	0 34	1 51	23 42	2.0	7 37	2.0
55	7 27	16 26	0 39	2 5	...	.0	7 13	2.0
60	7 48	16 5	0 46	2 25	...	.0	6 40	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	312 57.4	115	20 8.2	21	354 56.1	-16 14.5	302 10.1	-22 14.9
2	341 58.5	115	20 12.4	19	25 1.6	-16 14.3	332 15.2	-22 14.9
4	10 59.6	116	20 16.3	17	55 7.2	-16 14.1	2 20.3	-22 14.9
6	40 7	116	20 19.8	16	85 12.7	-16 14.0	32 25.3	-22 14.9
8	69 1.9	116	20 22.9	14	115 18.3	-16 13.8	62 30.4	-22 14.9
10	98 3.0	116	20 25.6	12	145 23.9	-16 13.6	92 35.5	-22 15.0
12	127 4.2	116	20 27.9	10	175 29.4	-16 13.5	122 40.5	-22 15.0
14	156 5.4	116	20 29.9	8	205 35.0	-16 13.3	152 45.6	-22 15.0
16	185 6.6	116	20 31.4	6	235 40.5	-16 13.1	182 50.7	-22 15.0
18	214 7.9	116	20 32.6	4	265 46.1	-16 13.0	212 55.7	-22 15.0
20	243 9.2	117	20 33.3	2	295 51.7	-16 12.8	243 8	-22 15.0
22	272 10.5	117	20 33.7	0	325 57.2	-16 12.6	273 5.9	-22 15.0
Δ					28	1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	3 11.0	.2	15.9	T _m	3 15	2.0	54.5 14.9		
12	3 13.7	T _{m☉}	11 h 56.8 min	Starost	17.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	-3.2	♃	h min	'	°	133
♂	5 0	.1	63	-9	♄	3 51	.0	80	-2.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 49.1 16 10.4		222 48.9	151 56.1 23 18.5	285 18.4 -22 31.7		
2	210 49.2 16 11.9		252 53.8	181 54.6 23 19.5	315 20.9 -22 31.5		
4	240 49.3 16 13.3		282 58.8	211 53.0 23 20.5	345 23.4 -22 31.3		
6	270 49.5 16 14.7		313 3.7	241 51.4 23 21.5	15 25.9 -22 31.1		
8	300 49.6 16 16.1		343 8.6	271 49.8 23 22.5	45 28.4 -22 30.9		
10	330 49.7 16 17.6		13 13.6	301 48.3 23 23.4	75 30.9 -22 30.7		
12	0 49.8 16 19.0		43 18.5	331 46.7 23 24.4	105 33.5 -22 30.5		
14	30 49.9 16 20.4		73 23.4	1 45.1 23 25.4	135 36.0 -22 30.3		
16	60 50.0 16 21.8		103 28.3	31 43.6 23 26.3	165 38.5 -22 30.1		
18	90 50.1 16 23.2		133 33.3	61 42.0 23 27.3	195 41.0 -22 29.9		
20	120 50.2 16 24.6		163 38.2	91 40.4 23 28.2	225 43.5 -22 29.7		
22	150 50.3 16 26.1		193 43.1	121 38.8 23 29.2	255 46.0 -22 29.5		
Δ	1	7		-8	5	13	1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	301 11.8 117 20 33.7 -2				356 2.8 -16 12.5		303 11.0 -22 15.0	
2	330 13.3 117 20 33.4 -4				26 8.4 -16 12.3		333 16.0 -22 15.0	
4	359 14.7 118 20 32.6 -6				56 13.9 -16 12.1		3 21.1 -22 15.0	
6	28 16.2 118 20 31.4 -8				86 19.5 -16 11.9		33 26.2 -22 15.0	
8	57 17.8 118 20 29.9 -10				116 25.1 -16 11.8		63 31.3 -22 15.1	
10	86 19.4 118 20 28.0 -11				146 30.6 -16 11.6		93 36.3 -22 15.1	
12	115 21.1 119 20 25.7 -13				176 36.2 -16 11.4		123 41.4 -22 15.1	
14	144 22.8 119 20 23.0 -15				206 41.7 -16 11.3		153 46.5 -22 15.1	
16	173 24.6 119 20 20.0 -17				236 47.3 -16 11.1		183 51.6 -22 15.1	
18	202 26.4 120 20 16.6 -19				266 52.9 -16 10.9		213 56.6 -22 15.1	
20	231 28.3 120 20 12.8 -21				296 58.4 -16 10.8		244 1.7 -22 15.1	
22	260 30.3 120 20 8.6 -23				327 4.0 -16 10.6		274 6.8 -22 15.1	
Δ					28	1	25	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 48	20 8	0 56	: : :	19 56	2.5	12 60	1.6
55	4 12	19 43	0 44	3 32	20 29	2.4	12 27	1.7
50	4 30	19 25	0 38	2 26	20 53	2.3	12 3	1.7
45	4 44	19 10	0 33	2 1	21 11	2.3	11 45	1.8
40	4 55	18 59	0 30	1 46	21 26	2.2	11 30	1.8
35	5 5	18 49	0 27	1 35	21 38	2.2	11 17	1.9
30	5 14	18 40	0 26	1 28	21 49	2.1	11 6	1.9
20	5 29	18 25	0 23	1 19	22 8	2.1	10 47	1.9
10	5 41	18 12	0 22	1 14	22 24	2.0	10 30	2.0
0	5 53	18 0	0 22	1 12	22 40	2.0	10 15	2.0
10	6 5	17 48	0 22	1 12	22 55	1.9	9 59	2.0
20	6 17	17 36	0 23	1 15	23 11	1.9	9 42	2.1
30	6 31	17 22	0 25	1 22	23 30	2.0	9 23	2.1
35	6 39	17 13	0 26	1 26	23 41	2.0	9 12	2.1
40	6 49	17 4	0 28	1 32	23 54	2.0	8 59	2.1
45	6 59	16 53	0 31	1 40	.. .	.0	8 44	2.2
50	7 12	16 40	0 35	1 51	.. .	.0	8 25	2.2
55	7 29	16 24	0 39	2 5	0 6	1.8	8 1	2.3
60	7 50	16 2	0 47	2 25	0 40	1.8	7 27	2.4
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 16.5	.2	15.9	T _m	4 3	2.0	54.3 14.8
12	3 19.0	T _{m☉}	11 h 56.7 min	Starost	18.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	13 53	.1	289	-3.2	♃	0 16	.0	133	-2.0
♂	4 58	.1	62	-.9	♄	3 47	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 50.4 16 27.5		223 48.1	151 37.2 23 30.1	285 48.5 -22 29.3		
2	210 50.5 16 28.9		253 53.0	181 35.7 23 31.1	315 51.1 -22 29.1		
4	240 50.6 16 30.3		283 57.9	211 34.1 23 32.0	345 53.6 -22 28.9		
6	270 50.7 16 31.7		314 2.8	241 32.5 23 32.9	15 56.1 -22 28.7		
8	300 50.8 16 33.1		344 7.8	271 30.9 23 33.9	45 58.6 -22 28.4		
10	330 50.8 16 34.5		14 12.7	301 29.3 23 34.8	76 1.2 -22 28.2		
12	0 50.9 16 35.9		44 17.6	331 27.7 23 35.7	106 3.7 -22 28.0		
14	30 51.0 16 37.3		74 22.6	1 26.2 23 36.6	136 6.2 -22 27.8		
16	60 51.1 16 38.7		104 27.5	31 24.6 23 37.5	166 8.8 -22 27.6		
18	90 51.2 16 40.1		134 32.4	61 23.0 23 38.4	196 11.3 -22 27.4		
20	120 51.3 16 41.5		164 37.3	91 21.4 23 39.3	226 13.8 -22 27.2		
22	150 51.4 16 42.9		194 42.3	121 19.8 23 40.2	256 16.4 -22 27.0		
Δ	0	7		-8	5	13	1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	289 32.4 121 20 4.0 -25				357 9.6 -16 10.4		304 11.9 -22 15.1	
2	318 34.5 121 19 59.1 -26				27 15.1 -16 10.3		334 17.0 -22 15.1	
4	347 36.7 121 19 53.9 -28				57 20.7 -16 10.1		4 22.0 -22 15.1	
6	16 39.0 122 19 48.2 -30				87 26.3 -16 9.9		34 27.1 -22 15.2	
8	45 41.3 122 19 42.2 -32				117 31.8 -16 9.8		64 32.2 -22 15.2	
10	74 43.8 123 19 35.8 -34				147 37.4 -16 9.6		94 37.3 -22 15.2	
12	103 46.3 123 19 29.1 -35				177 43.0 -16 9.4		124 42.4 -22 15.2	
14	132 48.9 123 19 22.0 -37				207 48.5 -16 9.3		154 47.5 -22 15.2	
16	161 51.5 124 19 14.6 -39				237 54.1 -16 9.1		184 52.5 -22 15.2	
18	190 54.3 124 19 6.8 -41				267 59.7 -16 8.9		214 57.6 -22 15.2	
20	219 57.1 125 18 58.7 -42				298 5.2 -16 8.7		245 2.7 -22 15.2	
22	249 .0 125 18 50.2 -44				328 10.8 -16 8.6		275 7.8 -22 15.2	
Δ					28	1	25	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 45	20 10	0 57	: : :	20 57	2.8	13 37	1.2
55	4 10	19 45	0 45	3 43	21 27	2.6	13 7	1.4
50	4 28	19 26	0 38	2 28	21 48	2.5	12 45	1.5
45	4 42	19 12	0 33	2 2	22 5	2.4	12 28	1.6
40	4 54	18 60	0 30	1 46	22 19	2.3	12 14	1.6
35	5 4	18 49	0 27	1 36	22 30	2.2	12 2	1.7
30	5 13	18 41	0 26	1 28	22 40	2.2	11 51	1.8
20	5 28	18 25	0 23	1 19	22 58	2.1	11 33	1.8
10	5 41	18 12	0 22	1 14	23 13	1.9	11 18	1.9
0	5 53	18 0	0 22	1 12	23 27	1.9	11 3	2.0
10	6 5	17 48	0 22	1 12	23 41	1.9	10 48	2.0
20	6 18	17 35	0 23	1 15	23 56	1.9	10 32	2.1
30	6 32	17 21	0 25	1 22	.. .	.0	10 14	2.2
35	6 40	17 13	0 27	1 26	.. .	.0	10 3	2.2
40	6 50	17 3	0 29	1 33	.. .	.0	9 51	2.3
45	7 1	16 52	0 31	1 41	0 8	1.7	9 36	2.3
50	7 14	16 39	0 35	1 51	0 27	1.6	9 18	2.4
55	7 30	16 22	0 40	2 5	0 50	1.5	8 56	2.5
60	7 53	15 60	0 47	2 26	1 22	1.4	8 24	2.7
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	3 21.5	.2	15.9	T _m	4 51	2.0	54.2 14.8
12	3 23.7	T _{m☉}	11 h 56.6 min	Starost	19.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	13 54	.1	288	-3.2	♃	0 11	.0	133	-2.0
♂	4 56	.1	62	-.9	♄	3 43	.0	80	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	51.5	16	44.2	224	47.2	151	18.2	23	41.1	286	18.9	-22	26.8
2	210	51.6	16	45.6	254	52.1	181	16.6	23	42.0	316	21.5	-22	26.6
4	240	51.6	16	47.0	284	57.1	211	15.0	23	42.9	346	24.0	-22	26.4
6	270	51.7	16	48.4	315	2.0	241	13.4	23	43.8	16	26.6	-22	26.2
8	300	51.8	16	49.8	345	6.9	271	11.8	23	44.6	46	29.1	-22	26.0
10	330	51.9	16	51.1	15	11.8	301	10.2	23	45.5	76	31.7	-22	25.8
12	0	52.0	16	52.5	45	16.8	331	8.6	23	46.4	106	34.2	-22	25.6
14	30	52.0	16	53.9	75	21.7	1	7.0	23	47.2	136	36.8	-22	25.4
16	60	52.1	16	55.3	105	26.6	31	5.4	23	48.1	166	39.3	-22	25.2
18	90	52.2	16	56.6	135	31.6	61	3.8	23	48.9	196	41.9	-22	25.0
20	120	52.3	16	58.0	165	36.5	91	2.2	23	49.8	226	44.5	-22	24.8
22	150	52.3	16	59.4	195	41.4	121	.6	23	50.6	256	47.0	-22	24.6
Δ	0	7						-8	4			13		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 42	20 12	0 58	:	22 5	3.0	14 6	.9
55	4 8	19 47	0 45	:	22 30	2.8	13 40	1.1
50	4 26	19 28	0 38	2 29	22 48	2.6	13 21	1.3
45	4 41	19 13	0 33	2 2	23 2	2.5	13 6	1.4
40	4 53	19 1	0 30	1 47	23 14	1.9	12 53	1.5
35	5 3	18 50	0 28	1 36	23 24	1.9	12 43	1.6
30	5 12	18 41	0 26	1 29	23 33	1.9	12 33	1.6
20	5 28	18 26	0 23	1 19	23 48	1.9	12 17	1.7
10	5 41	18 12	0 22	1 14	23 60	2.0	12 3	1.8
0	5 53	18 0	0 22	1 12	...	.0	11 50	1.9
10	6 5	17 48	0 22	1 12	...	.0	11 36	2.0
20	6 18	17 35	0 23	1 16	...	.0	11 22	2.1
30	6 33	17 20	0 25	1 22	0 14	1.7	11 6	2.2
35	6 41	17 12	0 27	1 27	0 24	1.6	10 56	2.3
40	6 51	17 2	0 29	1 33	0 35	1.6	10 45	2.4
45	7 2	16 51	0 31	1 41	0 49	1.5	10 32	2.4
50	7 15	16 37	0 35	1 51	1 5	1.4	10 16	2.6
55	7 32	16 20	0 40	2 6	1 26	1.2	9 56	2.7
60	7 55	15 57	0 47	2 26	1 55	1.0	9 29	2.9
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ				
h	°	'	°	'	°	'	°	'	°	'				
0	278	3.0	125	18	41.4	-46	358	16.4	-16	8.4	305	12.9	-22	15.2
2	307	6.1	126	18	32.2	-48	28	21.9	-16	8.2	335	18.0	-22	15.3
4	336	9.3	126	18	22.7	-49	58	27.5	-16	8.1	5	23.1	-22	15.3
6	5	12.5	127	18	12.8	-51	88	33.1	-16	7.9	35	28.2	-22	15.3
8	34	15.8	127	18	2.7	-53	118	38.6	-16	7.7	65	33.3	-22	15.3
10	63	19.3	127	17	52.2	-54	148	44.2	-16	7.6	95	38.4	-22	15.3
12	92	22.8	128	17	41.3	-56	178	49.8	-16	7.4	125	43.4	-22	15.3
14	121	26.3	128	17	30.2	-57	208	55.3	-16	7.2	155	48.5	-22	15.3
16	150	30.0	129	17	18.7	-59	239	.9	-16	7.1	185	53.6	-22	15.3
18	179	33.7	129	17	6.9	-61	269	6.5	-16	6.9	215	58.7	-22	15.3
20	208	37.5	129	16	54.8	-62	299	12.0	-16	6.7	246	3.8	-22	15.4
22	237	41.4	130	16	42.3	-64	329	17.6	-16	6.5	276	8.9	-22	15.4
Δ							28		1		25			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	3 25.9	.2	15.9	T _m	5 38	2.0	54.3	14.8	
12	3 27.8	T _{m☉}	11 h 56.5 min	Starost	20.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	-3.2	♃	h min	'	°	133
♂	4 54	.1	62	-1.0	♄	3 39	.0	80	-2.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	52.4	17	.7	225	46.3	150	59.0	23	51.4	286	49.6	-22	24.4
2	210	52.5	17	2.1	255	51.3	180	57.4	23	52.3	316	52.2	-22	24.2
4	240	52.6	17	3.5	285	56.2	210	55.8	23	53.1	346	54.7	-22	24.0
6	270	52.6	17	4.8	316	1.1	240	54.2	23	53.9	16	57.3	-22	23.8
8	300	52.7	17	6.2	346	6.1	270	52.6	23	54.7	46	59.9	-22	23.6
10	330	52.8	17	7.5	16	11.0	300	50.9	23	55.5	77	2.5	-22	23.4
12	0	52.8	17	8.9	46	15.9	330	49.3	23	56.3	107	5.1	-22	23.2
14	30	52.9	17	10.2	76	20.8	0	47.7	23	57.1	137	7.6	-22	23.0
16	60	53.0	17	11.6	106	25.8	30	46.1	23	57.9	167	10.2	-22	22.8
18	90	53.0	17	12.9	136	30.7	60	44.5	23	58.7	197	12.8	-22	22.6
20	120	53.1	17	14.3	166	35.6	90	42.9	23	59.5	227	15.4	-22	22.4
22	150	53.2	17	15.6	196	40.5	120	41.2	24	.3	257	18.0	-22	22.2
Δ	0	7						-8	4			13		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 40	20 15	0 58	:	23 17	2.0	14 28	.7
55	4 6	19 48	0 45	:	23 36	1.9	14 7	1.0
50	4 25	19 29	0 38	2 31	23 51	1.9	13 52	1.1
45	4 40	19 14	0 33	2 3	...	.0	13 40	1.3
40	4 52	19 2	0 30	1 47	...	.0	13 29	1.4
35	5 2	18 51	0 28	1 37	...	.0	13 20	1.5
30	5 12	18 42	0 26	1 29	...	.0	13 13	1.5
20	5 27	18 26	0 23	1 19	...	.0	12 59	1.7
10	5 41	18 13	0 22	1 14	...	.0	12 47	1.8
0	5 53	17 60	0 22	1 12	0 14	1.9	12 36	1.9
10	6 5	17 47	0 22	1 13	0 26	1.8	12 25	2.0
20	6 18	17 34	0 23	1 16	0 39	1.7	12 13	2.1
30	6 33	17 19	0 25	1 22	0 54	1.6	11 59	2.3
35	6 42	17 11	0 27	1 27	1 3	1.5	11 51	2.3
40	6 52	17 1	0 29	1 33	1 13	1.4	11 42	2.4
45	7 3	16 50	0 31	1 41	1 24	1.3	11 31	2.5
50	7 17	16 36	0 35	1 52	1 38	1.2	11 18	2.7
55	7 34	16 18	0 40	2 6	1 56	1.0	11 1	2.8
60	7 57	15 55	0 47	2 27	2 20	.8	10 39	3.1
S								

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ				
h	°	'	°	'	°	'	°	'	°	'				
0	266	45.4	130	16	29.6	-65	359	23.2	-16	6.4	306	14.0	-22	15.4
2	295	49.4	131	16	16.5	-67	29	28.7	-16	6.2	336	19.1	-22	15.4
4	324	53.5	131	16	3.2	-68	59	34.3	-16	6.0	6	24.2	-22	15.4
6	353	57.7	131	15	49.5	-70	89	39.9	-16	5.9	36	29.3	-22	15.4
8	23	2.0	132	15	35.6	-71	119	45.4	-16	5.7	66	34.4	-22	15.4
10	52	6.3	132	15	21.3	-73	149	51.0	-16	5.5	96	39.5	-22	15.4
12	81	10.7	132	15	6.8	-74	179	56.6	-16	5.4	126	44.6	-22	15.4
14	110	15.1	132	14	52.0	-76	210	2.1	-16	5.2	156	49.7	-22	15.5
16	139	19.6	133	14	36.9	-77	240	7.7	-16	5.0	186	54.8	-22	15.5
18	168	24.2	133	14	21.5	-78	270	13.3	-16	4.9	216	59.9	-22	15.5
20	197	28.8	133	14	5.8	-80	300	18.8	-16	4.7	247	5.0	-22	15.5
22	226	33.4	134	13	49.9	-81	330	24.4	-16	4.5	277	10.1	-22	15.5
Δ							28		1		26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 29.7	.1	15.9	T _m	6 25	1.9	54.5	14.9
12	3 31.3	T _{m☉}	11 h 56.5 min	Starost	21.9 d	Faza	☉	
PLANETE								
Pl.	T _m	π	360-α	Vel.	Pl.	T _m		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	53.2	17	16.9	226	45.5	150	39.6	24	1.1	287	20.6	-22	22.0
2	210	53.3	17	18.3	256	50.4	180	38.0	24	1.8	317	23.2	-22	21.8
4	240	53.3	17	19.6	286	55.3	210	36.4	24	2.6	347	25.8	-22	21.6
6	270	53.4	17	21.0	317	.3	240	34.8	24	3.4	17	28.4	-22	21.4
8	300	53.5	17	22.3	347	5.2	270	33.1	24	4.1	47	31.0	-22	21.2
10	330	53.5	17	23.6	17	10.1	300	31.5	24	4.9	77	33.6	-22	21.0
12	0	53.6	17	24.9	47	15.0	330	29.9	24	5.6	107	36.2	-22	20.8
14	30	53.6	17	26.3	77	20.0	0	28.3	24	6.4	137	38.8	-22	20.6
16	60	53.7	17	27.6	107	24.9	30	26.7	24	7.1	167	41.4	-22	20.4
18	90	53.7	17	28.9	137	29.8	60	25.0	24	7.9	197	44.1	-22	20.2
20	120	53.8	17	30.2	167	34.8	90	23.4	24	8.6	227	46.7	-22	20.0
22	150	53.8	17	31.6	197	39.7	120	21.8	24	9.3	257	49.3	-22	19.8
Δ	0	7					-8	4			13	1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 37	20 17	0 59	:	:	:	14 46	.6
55	4 4	19 50	0 46	:	:	:	14 31	.9
50	4 23	19 31	0 38	2 33	:	:	14 19	1.0
45	4 38	19 15	0 34	2 4	0 2	2.6	14 10	1.2
40	4 51	19 2	0 30	1 48	0 12	2.5	14 2	1.3
35	5 2	18 52	0 28	1 37	0 20	2.4	13 55	1.4
30	5 11	18 42	0 26	1 29	0 27	2.3	13 50	1.5
20	5 27	18 27	0 23	1 19	0 39	2.1	13 39	1.6
10	5 40	18 13	0 22	1 14	0 50	2.0	13 30	1.8
0	5 53	17 60	0 22	1 12	0 60	1.9	13 22	1.9
10	6 6	17 47	0 22	1 13	1 10	1.8	13 13	2.0
20	6 19	17 34	0 23	1 16	1 20	1.7	13 4	2.2
30	6 34	17 19	0 25	1 22	1 32	1.5	12 53	2.3
35	6 43	17 10	0 27	1 27	1 39	1.4	12 47	2.4
40	6 53	16 60	0 29	1 33	1 47	1.3	12 40	2.5
45	7 4	16 48	0 31	1 41	1 56	1.2	12 32	2.6
50	7 18	16 34	0 35	1 52	2 7	1.1	12 22	2.8
55	7 36	16 16	0 40	2 6	2 21	.9	12 9	2.9
60	7 59	15 53	0 48	2 27	2 39	.7	11 53	3.2

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ				
h	°	'	°	'	°	'	°	'	°	'				
0	255	38.1	134	13	33.7	-82	0	30.0	-16	4.3	307	15.2	-22	15.5
2	284	42.9	134	13	17.2	-84	30	35.5	-16	4.2	337	20.3	-22	15.5
4	313	47.7	134	13	.5	-85	60	41.1	-16	4.0	7	25.4	-22	15.5
6	342	52.5	134	12	43.5	-86	90	46.7	-16	3.8	37	30.6	-22	15.5
8	11	57.4	134	12	26.2	-88	120	52.3	-16	3.7	67	35.7	-22	15.6
10	41	2.3	135	12	8.7	-89	150	57.8	-16	3.5	97	40.8	-22	15.6
12	70	7.2	135	11	51.0	-90	181	3.4	-16	3.3	127	45.9	-22	15.6
14	99	12.1	135	11	33.0	-91	211	9.0	-16	3.2	157	51.0	-22	15.6
16	128	17.1	135	11	14.7	-92	241	14.5	-16	3.0	187	56.1	-22	15.6
18	157	22.0	135	10	56.3	-93	271	20.1	-16	2.8	218	1.2	-22	15.6
20	186	27.0	135	10	37.6	-95	301	25.7	-16	2.7	248	6.3	-22	15.6
22	215	32.0	135	10	18.7	-96	331	31.2	-16	2.5	278	11.4	-22	15.6
Δ							28	1			26	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 32.9	.1	15.9	T _m	7 11	1.9	54.9	15.0
12	3 34.2	T _{m☉}	11 h 56.4 min	Starost	22.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°	°	h min	'	°	°	°
♀	13 58	.1	284	-3.2	♃	23 54	.0	134	-2.0
♂	4 50	.1	61	-1.0	♄	3 30	.0	80	.5

10. MAJ

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	53.9	17	32.9	227	44.6	150	20.1	24	10.0	287	51.9	-22	19.6
2	210	53.9	17	34.2	257	49.5	180	18.5	24	10.7	317	54.5	-22	19.4
4	240	54.0	17	35.5	287	54.5	210	16.9	24	11.5	347	57.2	-22	19.2
6	270	54.0	17	36.8	317	59.4	240	15.2	24	12.2	17	59.8	-22	19.0
8	300	54.1	17	38.1	348	4.3	270	13.6	24	12.9	48	2.4	-22	18.8
10	330	54.1	17	39.4	18	9.3	300	12.0	24	13.6	78	5.1	-22	18.6
12	0	54.2	17	40.7	48	14.2	330	10.3	24	14.3	108	7.7	-22	18.4
14	30	54.2	17	42.0	78	19.1	0	8.7	24	14.9	138	10.3	-22	18.2
16	60	54.2	17	43.3	108	24.0	30	7.1	24	15.6	168	13.0	-22	18.0
18	90	54.3	17	44.6	138	29.0	60	5.4	24	16.3	198	15.6	-22	17.9
20	120	54.3	17	45.9	168	33.9	90	3.8	24	17.0	228	18.3	-22	17.7
22	150	54.4	17	47.2	198	38.8	120	2.2	24	17.6	258	20.9	-22	17.5
Δ	0	7					-8	3			13	1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 35	20 20	0 60	:	:	:	15 1	.6
55	4 2	19 52	0 46	:	:	:	14 51	.8
50	4 22	19 32	0 39	2 34	0 56	2.8	14 44	1.0
45	4 37	19 16	0 34	2 5	1 4	2.7	14 38	1.1
40	4 50	19 3	0 30	1 48	1 11	2.5	14 33	1.3
35	5 1	18 53	0 28	1 37	1 17	2.4	14 29	1.4
30	5 10	18 43	0 26	1 29	1 22	2.3	14 25	1.5
20	5 26	18 27	0 23	1 20	1 30	2.2	14 18	1.6
10	5 40	18 13	0 23	1 14	1 38	2.0	14 13	1.8
0	5 53	17 60	0 22	1 12	1 45	1.9	14 7	1.9
10	6 6	17 47	0 22	1 13	1 52	1.8	14 1	2.0
20	6 19	17 33	0 23	1 16	1 60	1.6	13 55	2.2
30	6 35	17 18	0 25	1 22	1 9	1.5	13 48	2.4
35	6 43	17 9	0 27	1 27	2 13	1.4	13 44	2.5
40	6 54	16 59	0 29	1 33	2 19	1.3	13 40	2.6
45	7 5	16 47	0 31	1 41	2 26	1.2	13 35	2.7
50	7 20	16 33	0 35	1 52	2 33	1.0	13 28	2.9
55	7 38	16 15	0 40	2 7	2 43	.8	13 20	3.0
60	8 2	15 50	0 48	2 28	2 56	.6	13 10	3.3

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ				
h	°	'	°	'	°	'	°	'	°	'				
0	244	37.0	135	9	59.5	-97	1	36.8	-16	2.3	308	16.5	-22	15.6
2	273	42.0	135	9	40.1	-98	31	42.4	-16	2.1	338	21.7	-22	15.7
4	302	47.0	135	9	20.6	-99	61	47.9	-16	2.0	8	26.8	-22	15.7
6	331	51.9	135	9	.8	-100	91	53.5	-16	1.8	38	31.9	-22	15.7
8	0	56.9	135	8	40.8	-101	121	59.1	-16	1.6	68	37.0	-22	15.7
10	30	1.8	134	8	20.6	-102	152	4.6	-16	1.5	98	42.1	-22	15.7
12	59	6.7	134	8	.2	-103	182	10.2	-16	1.3	128	47.2	-22	15.7
14	88	11.5	134	7	39.6	-104	212	15.8	-16	1.1	158	52.4	-22	15.7
16	117	16.4	134	7	18.9	-105	242	21.3	-16	1.0	188	57.5	-22	15.7
18	146	21.1	134	6	57.9	-106	272	26.9	-16	.8	219	2.6	-22	15.8
20	175	25.9	133	6	36.8	-106	302	32.5	-16	.6	249	7.7	-22	15.8
22	204	30.5	133	6	15.5	-107	332	38.0	-16	.5	279	12.8	-22	15.8
Δ							28	1			26	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 35.6	.1	15.9	T _m	7 56	1.9	55.5	15.1
12	3 36.6	T _{m☉}	11 h 56.4 min	Starost	23.9 d	Faza	☉	

PLANETE							
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.4	17 48.5	228 43.8	150 .5	24 18.3	288 23.6	-22 17.3
2	210 54.4	17 49.8	258 48.7	179 58.9	24 19.0	318 26.2	-22 17.1
4	240 54.5	17 51.1	288 53.6	209 57.2	24 19.6	348 28.9	-22 16.9
6	270 54.5	17 52.4	318 58.5	239 55.6	24 20.3	18 31.5	-22 16.7
8	300 54.5	17 53.7	349 3.5	269 54.0	24 20.9	48 34.2	-22 16.5
10	330 54.6	17 54.9	19 8.4	299 52.3	24 21.6	78 36.8	-22 16.3
12	0 54.6	17 56.2	49 13.3	329 50.7	24 22.2	108 39.5	-22 16.1
14	30 54.6	17 57.5	79 18.3	359 49.0	24 22.8	138 42.2	-22 15.9
16	60 54.7	17 58.8	109 23.2	29 47.4	24 23.5	168 44.8	-22 15.7
18	90 54.7	18 .0	139 28.1	59 45.7	24 24.1	198 47.5	-22 15.5
20	120 54.7	18 1.3	169 33.0	89 44.1	24 24.7	228 50.2	-22 15.3
22	150 54.7	18 2.6	199 38.0	119 42.4	24 25.3	258 52.9	-22 15.1
Δ	0	6		-8	3	13	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 32	20 22	1 1	:::	1 51	3.4	15 14	1.5
55	3 60	19 54	0 46	:::	1 58	3.1	15 11	1.6
50	4 20	19 34	0 39	2 36	2 4	2.9	15 8	1.7
45	4 36	19 18	0 34	2 6	2 8	2.8	15 6	1.7
40	4 49	19 4	0 30	1 49	2 12	2.6	15 4	1.7
35	4 60	18 53	0 28	1 38	2 15	2.5	15 2	1.8
30	5 9	18 44	0 26	1 30	2 18	2.4	15 0	1.8
20	5 26	18 27	0 24	1 20	2 23	2.2	14 58	1.9
10	5 40	18 13	0 22	1 14	2 27	2.1	14 55	1.9
0	5 53	17 60	0 22	1 12	2 31	1.9	14 53	2.0
10	6 6	17 47	0 22	1 13	2 35	1.8	14 51	2.0
20	6 20	17 33	0 23	1 16	2 39	1.6	14 48	2.1
30	6 35	17 17	0 25	1 22	2 44	1.5	14 45	2.1
35	6 44	17 8	0 27	1 27	2 47	1.4	14 43	2.1
40	6 54	16 58	0 29	1 33	2 50	1.2	14 42	2.2
45	7 6	16 46	0 32	1 41	2 53	1.1	14 39	2.2
50	7 21	16 31	0 35	1 52	2 58	1.0	14 37	2.3
55	7 39	16 13	0 40	2 7	3 3	.8	14 33	2.4
60	8 4	15 48	0 48	2 28	3 10	.5	14 29	2.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	233 35.2	133	5 54.0	-108	2 43.6	-16 .3	309 17.9	-22 15.8
2	262 39.7	132	5 32.4	-109	32 49.2	-16 .1	339 23.1	-22 15.8
4	291 44.2	132	5 10.6	-110	62 54.7	-15 59.9	9 28.2	-22 15.8
6	320 48.6	132	4 48.7	-110	93 .3	-15 59.8	39 33.3	-22 15.8
8	349 52.9	131	4 26.6	-111	123 5.9	-15 59.6	69 38.4	-22 15.8
10	18 57.1	131	4 4.4	-112	153 11.4	-15 59.4	99 43.6	-22 15.9
12	48 1.3	130	3 42.1	-112	183 17.0	-15 59.3	129 48.7	-22 15.9
14	77 5.3	130	3 19.6	-113	213 22.6	-15 59.1	159 53.8	-22 15.9
16	106 9.2	129	2 57.0	-114	243 28.1	-15 58.9	189 58.9	-22 15.9
18	135 13.1	128	2 34.3	-114	273 33.7	-15 58.8	220 4.1	-22 15.9
20	164 16.8	128	2 11.5	-115	303 39.3	-15 58.6	250 9.2	-22 15.9
22	193 20.3	127	1 48.6	-115	333 44.8	-15 58.4	280 14.3	-22 15.9
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 37.6	.1	15.9	T _m	8 42	1.9	56.2	15.3	
12	3 38.3	T _{m☉}	11 h 56.4 min	Starost	24.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 1	.1	281	-3.3	♄	23 45	.0	134	-2.0
♂	4 46	.1	60	-1.1	♂	3 22	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.8	18 3.8	229 42.9	149 40.8	24 25.9	288 55.5	-22 14.9
2	210 54.8	18 5.1	259 47.8	179 39.1	24 26.5	318 58.2	-22 14.8
4	240 54.8	18 6.4	289 52.7	209 37.5	24 27.1	349 .9	-22 14.6
6	270 54.8	18 7.6	319 57.7	239 35.9	24 27.7	19 3.6	-22 14.4
8	300 54.9	18 8.9	350 2.6	269 34.2	24 28.3	49 6.3	-22 14.2
10	330 54.9	18 10.1	20 7.5	299 32.6	24 28.9	79 9.0	-22 14.0
12	0 54.9	18 11.4	50 12.5	329 30.9	24 29.4	109 11.7	-22 13.8
14	30 54.9	18 12.6	80 17.4	359 29.2	24 30.0	139 14.4	-22 13.6
16	60 54.9	18 13.9	110 22.3	29 27.6	24 30.6	169 17.1	-22 13.4
18	90 54.9	18 15.1	140 27.2	59 25.9	24 31.2	199 19.8	-22 13.2
20	120 55.0	18 16.4	170 32.2	89 24.3	24 31.7	229 22.5	-22 13.0
22	150 55.0	18 17.6	200 37.1	119 22.6	24 32.3	259 25.2	-22 12.9
Δ	0	6		-8	3	13	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 30	20 25	1 1	:::	3 13	1.0	15 51	3.5
55	3 58	19 56	0 47	:::	3 14	1.2	15 49	3.3
50	4 19	19 35	0 39	2 38	3 14	1.3	15 48	3.1
45	4 35	19 19	0 34	2 7	3 15	1.4	15 46	2.9
40	4 48	19 5	0 30	1 49	3 15	1.5	15 45	2.8
35	4 59	18 54	0 28	1 38	3 15	1.6	15 44	2.6
30	5 9	18 44	0 26	1 30	3 16	1.7	15 44	2.5
20	5 25	18 28	0 24	1 20	3 16	1.8	15 42	2.3
10	5 40	18 13	0 22	1 15	3 17	1.9	15 41	2.2
0	5 53	17 60	0 22	1 12	3 17	2.0	15 40	2.0
10	6 6	17 47	0 22	1 13	3 18	2.1	15 39	1.9
20	6 20	17 33	0 23	1 16	3 18	2.2	15 37	1.7
30	6 36	17 17	0 25	1 22	3 19	2.3	15 36	1.6
35	6 45	17 7	0 27	1 27	3 19	2.4	15 35	1.5
40	6 55	16 57	0 29	1 33	3 20	2.5	15 34	1.3
45	7 8	16 45	0 32	1 42	3 20	2.6	15 33	1.2
50	7 22	16 30	0 35	1 53	3 21	2.7	15 32	1.0
55	7 41	16 11	0 41	2 7	3 21	2.9	15 30	.8
60	8 6	15 46	0 49	2 29	3 22	3.1	15 28	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	222 23.8	127	1 25.6	-115	3 50.4	-15 58.3	310 19.4	-22 15.9
2	251 27.1	126	1 2.5	-116	33 56.0	-15 58.1	340 24.6	-22 16.0
4	280 30.3	125	0 39.3	-116	64 1.5	-15 57.9	10 29.7	-22 16.0
6	309 33.3	124	0 16.1	-44	94 7.1	-15 57.7	40 34.8	-22 16.0
8	338 36.1	124	0 7.3	117	124 12.7	-15 57.6	70 40.0	-22 16.0
10	7 38.8	123	0 30.6	117	154 18.2	-15 57.4	100 45.1	-22 16.0
12	36 41.4	122	0 54.0	117	184 23.8	-15 57.2	130 50.2	-22 16.0
14	65 43.7	121	1 17.5	118	214 29.4	-15 57.1	160 55.4	-22 16.0
16	94 45.9	120	1 41.0	118	244 34.9	-15 56.9	191 .5	-22 16.0
18	123 47.9	119	2 4.5	118	274 40.5	-15 56.7	221 5.6	-22 16.1
20	152 49.7	118	2 28.1	118	304 46.1	-15 56.6	251 10.8	-22 16.1
22	181 51.3	117	2 51.7	118	334 51.6	-15 56.4	281 15.9	-22 16.1
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 39.1	.0	15.9	T _m	9 28	2.0	57.0	15.5	
12	3 39.5	T _{m☉}	11 h 56.3 min	Starost	25.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 2	.1	280	-3.3	♄	23 40	.0	134	-2.0
♂	4 44	.1	59	-1.1	♂	3 18	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 55.0	18 18.9	230 42.0	149 21.0	24 32.8	289 27.9	-22 12.7
2	210 55.0	18 20.1	260 47.0	179 19.3	24 33.4	319 30.6	-22 12.5
4	240 55.0	18 21.3	290 51.9	209 17.7	24 33.9	349 33.3	-22 12.3
6	270 55.0	18 22.6	320 56.8	239 16.0	24 34.4	19 36.0	-22 12.1
8	300 55.0	18 23.8	351 1.7	269 14.4	24 35.0	49 38.7	-22 11.9
10	330 55.0	18 25.0	21 6.7	299 12.7	24 35.5	79 41.5	-22 11.7
12	0 55.0	18 26.3	51 11.6	329 11.0	24 36.0	109 44.2	-22 11.5
14	30 55.0	18 27.5	81 16.5	359 9.4	24 36.5	139 46.9	-22 11.3
16	60 55.1	18 28.7	111 21.5	29 7.7	24 37.0	169 49.6	-22 11.2
18	90 55.1	18 29.9	141 26.4	59 6.1	24 37.5	199 52.4	-22 11.0
20	120 55.1	18 31.2	171 31.3	89 4.4	24 38.0	229 55.1	-22 10.8
22	150 55.1	18 32.4	201 36.2	119 2.7	24 38.5	259 57.8	-22 10.6
Δ	0	6		-8	3	14	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 27	20 27	1 2	:::	3 37	.6	17 16	3.7
55	3 56	19 58	0 47	:::	3 42	.9	17 7	3.4
50	4 17	19 36	0 39	2 40	3 46	1.1	17 1	3.2
45	4 34	19 20	0 34	2 8	3 49	1.3	16 56	3.0
40	4 47	19 6	0 31	1 50	3 51	1.4	16 51	2.9
35	4 58	18 55	0 28	1 38	3 54	1.5	16 48	2.7
30	5 8	18 45	0 26	1 30	3 56	1.6	16 44	2.6
20	5 25	18 28	0 24	1 20	3 59	1.8	16 38	2.5
10	5 39	18 13	0 22	1 15	4 2	1.9	16 33	2.3
0	5 53	17 60	0 22	1 13	4 5	2.1	16 29	2.1
10	6 6	17 46	0 22	1 13	4 8	2.2	16 24	2.0
20	6 20	17 32	0 23	1 16	4 11	2.4	16 19	1.8
30	6 36	17 16	0 25	1 23	4 15	2.6	16 13	1.7
35	6 46	17 7	0 27	1 27	4 17	2.7	16 10	1.6
40	6 56	16 56	0 29	1 34	4 20	2.8	16 6	1.5
45	7 9	16 43	0 32	1 42	4 22	3.0	16 2	1.3
50	7 24	16 28	0 35	1 53	4 26	3.1	15 57	1.2
55	7 43	16 9	0 41	2 8	4 30	3.3	15 50	1.0
60	8 9	15 43	0 49	2 29	4 36	3.6	15 42	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	210 52.8	116	3 15.2	118	4 57.2	-15 56.2	311 21.0	-22 16.1
2	239 54.0	115	3 38.8	118	35 2.8	-15 56.1	341 26.2	-22 16.1
4	268 54.9	114	4 2.3	118	65 8.3	-15 55.9	11 31.3	-22 16.1
6	297 55.7	113	4 25.8	117	95 13.9	-15 55.7	41 36.4	-22 16.1
8	326 56.2	112	4 49.3	117	125 19.5	-15 55.6	71 41.6	-22 16.2
10	355 56.5	110	5 12.8	117	155 25.0	-15 55.4	101 46.7	-22 16.2
12	24 56.6	109	5 36.2	117	185 30.6	-15 55.2	131 51.9	-22 16.2
14	53 56.4	108	5 59.5	116	215 36.1	-15 55.0	161 57.0	-22 16.2
16	82 56.0	107	6 22.7	116	245 41.7	-15 54.9	192 2.1	-22 16.2
18	111 55.3	105	6 45.9	115	275 47.3	-15 54.7	222 7.3	-22 16.2
20	140 54.4	104	7 9.0	115	305 52.8	-15 54.5	252 12.4	-22 16.2
22	169 53.2	103	7 32.0	114	335 58.4	-15 54.4	282 17.6	-22 16.2
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 39.9	.0	15.9	T _m	10 17	2.1	57.8	15.8	
12	3 40.1	T _m ☉	11 h 56.3 min	Starost	26.9 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 3	.1	279	-3.3	♃	23 36	.0	134	-2.0
♂	4 42	.1	59	-1.1	♄	3 14	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 55.1	18 33.6	231 41.2	149 1.1	24 39.0	290 .6	-22 10.4
2	210 55.1	18 34.8	261 46.1	178 59.4	24 39.5	320 3.3	-22 10.2
4	240 55.1	18 36.0	291 51.0	208 57.7	24 40.0	350 6.0	-22 10.0
6	270 55.1	18 37.2	321 56.0	238 56.1	24 40.5	20 8.8	-22 9.9
8	300 55.1	18 38.4	352 .9	268 54.4	24 40.9	50 11.5	-22 9.7
10	330 55.0	18 39.6	22 5.8	298 52.8	24 41.4	80 14.3	-22 9.5
12	0 55.0	18 40.8	52 10.7	328 51.1	24 41.9	110 17.0	-22 9.3
14	30 55.0	18 42.0	82 15.7	358 49.4	24 42.3	140 19.8	-22 9.1
16	60 55.0	18 43.2	112 20.6	28 47.8	24 42.8	170 22.5	-22 8.9
18	90 55.0	18 44.4	142 25.5	58 46.1	24 43.2	200 25.3	-22 8.8
20	120 55.0	18 45.6	172 30.5	88 44.4	24 43.7	230 28.1	-22 8.6
22	150 55.0	18 46.8	202 35.4	118 42.8	24 44.1	260 30.8	-22 8.4
Δ	0	6		-8	2	14	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 25	20 29	1 3	:::	3 53	.8	18 44	3.7
55	3 54	19 59	0 48	:::	4 4	1.1	18 29	3.4
50	4 16	19 38	0 39	2 42	4 12	1.3	18 17	3.2
45	4 32	19 21	0 34	2 8	4 19	1.4	18 8	3.1
40	4 46	19 7	0 31	1 50	4 25	1.5	17 60	2.9
35	4 57	18 56	0 28	1 39	4 30	1.7	17 53	2.8
30	5 7	18 46	0 26	1 30	4 34	1.8	17 47	2.7
20	5 24	18 28	0 24	1 20	4 42	1.9	17 37	2.6
10	5 39	18 14	0 22	1 15	4 49	2.1	17 29	2.4
0	5 53	17 60	0 22	1 13	4 55	2.2	17 20	2.3
10	6 6	17 46	0 22	1 13	5 2	2.4	17 12	2.1
20	6 21	17 32	0 23	1 16	5 9	2.5	17 3	2.0
30	6 37	17 15	0 25	1 23	5 17	2.7	16 53	1.8
35	6 47	17 6	0 27	1 28	5 22	2.8	16 48	1.8
40	6 57	16 55	0 29	1 34	5 27	2.9	16 41	1.6
45	7 10	16 42	0 32	1 42	5 33	3.0	16 34	1.5
50	7 25	16 27	0 36	1 53	5 41	3.2	16 25	1.4
55	7 45	16 8	0 41	2 8	5 50	3.4	16 13	1.2
60	8 11	15 41	0 49	2 30	6 3	3.7	15 59	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	198 51.8	101	7 54.8	114	6 4.0	-15 54.2	312 22.7	-22 16.3
2	227 50.0	100	8 17.6	113	36 9.5	-15 54.0	342 27.9	-22 16.3
4	256 48.0	99	8 40.2	112	66 15.1	-15 53.9	12 33.0	-22 16.3
6	285 45.7	97	9 2.7	112	96 20.7	-15 53.7	42 38.1	-22 16.3
8	314 43.1	96	9 25.0	111	126 26.2	-15 53.5	72 43.3	-22 16.3
10	343 40.3	94	9 47.1	110	156 31.8	-15 53.4	102 48.4	-22 16.3
12	12 37.1	93	10 9.1	109	186 37.3	-15 53.2	132 53.6	-22 16.3
14	41 33.7	91	10 30.9	108	216 42.9	-15 53.0	162 58.7	-22 16.4
16	70 29.9	90	10 52.5	107	246 48.5	-15 52.9	193 3.9	-22 16.4
18	99 25.9	88	11 13.8	106	276 54.0	-15 52.7	223 9.0	-22 16.4
20	128 21.6	87	11 35.0	105	306 59.6	-15 52.5	253 14.2	-22 16.4
22	157 16.9	85	11 55.9	103	337 5.1	-15 52.4	283 19.3	-22 16.4
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 40.2	.0	15.9	T _m	11 8	2.3	58.6	16.0	
12	3 40.1	T _m ☉	11 h 56.3 min	Starost	27.9 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 5	.1	277	-3.3	♃	23 31	.0	134	-2.0
♂	4 40	.1	58	-1.1	♄	3 10	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 55.0	18 48.0	232 40.3	148 41.1	24 44.5	290 33.6	-22 8.2
2	210 55.0	18 49.2	262 45.2	178 39.4	24 44.9	320 36.4	-22 8.0
4	240 55.0	18 50.4	292 50.2	208 37.8	24 45.4	350 39.1	-22 7.9
6	270 54.9	18 51.6	322 55.1	238 36.1	24 45.8	20 41.9	-22 7.7
8	300 54.9	18 52.7	353 .0	268 34.4	24 46.2	50 44.7	-22 7.5
10	330 54.9	18 53.9	23 5.0	298 32.8	24 46.6	80 47.5	-22 7.3
12	0 54.9	18 55.1	53 9.9	328 31.1	24 47.0	110 50.3	-22 7.1
14	30 54.9	18 56.3	83 14.8	358 29.4	24 47.4	140 53.0	-22 7.0
16	60 54.9	18 57.4	113 19.7	28 27.8	24 47.8	170 55.8	-22 6.8
18	90 54.8	18 58.6	143 24.7	58 26.1	24 48.2	200 58.6	-22 6.6
20	120 54.8	18 59.8	173 29.6	88 24.4	24 48.6	231 1.4	-22 6.4
22	150 54.8	19 .9	203 34.5	118 22.7	24 48.9	261 4.2	-22 6.3
Δ	0	6		-8	2	14	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 23	20 32	1 4	:::	4 12	1.0	20 13	3.6
55	3 53	20 1	0 48	:::	4 29	1.3	19 51	3.4
50	4 14	19 39	0 40	2 44	4 42	1.5	19 34	3.2
45	4 31	19 22	0 34	2 9	4 53	1.6	19 21	3.0
40	4 45	19 8	0 31	1 51	5 2	1.8	19 10	2.9
35	4 57	18 57	0 28	1 39	5 10	1.9	19 1	2.8
30	5 7	18 46	0 26	1 31	5 16	2.0	18 53	2.8
20	5 24	18 29	0 24	1 20	5 28	2.1	18 39	2.6
10	5 39	18 14	0 22	1 15	5 39	2.2	18 26	2.5
0	5 53	17 60	0 22	1 13	5 49	2.4	18 15	2.4
10	6 7	17 46	0 22	1 13	5 58	2.5	18 4	2.3
20	6 21	17 31	0 23	1 16	6 9	2.6	17 51	2.2
30	6 38	17 15	0 25	1 23	6 21	2.8	17 38	2.1
35	6 47	17 5	0 27	1 28	6 28	2.8	17 30	2.0
40	6 58	16 54	0 29	1 34	6 37	2.9	17 21	1.9
45	7 11	16 41	0 32	1 42	6 46	3.1	17 10	1.8
50	7 27	16 26	0 36	1 53	6 58	3.2	16 57	1.6
55	7 46	16 6	0 41	2 9	7 12	3.4	16 41	1.5
60	8 13	15 39	0 49	2 31	7 32	3.7	16 20	1.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	186 12.0	84 12 16.6	102	7 10.7	-15 52.2	313 24.5	-22 16.4	
2	215 6.7	82 12 37.0	101	37 16.3	-15 52.0	343 29.6	-22 16.4	
4	244 1.1	81 12 57.1	99	67 21.8	-15 51.9	13 34.8	-22 16.5	
6	272 55.3	79 13 17.0	98	97 27.4	-15 51.7	43 39.9	-22 16.5	
8	301 49.1	78 13 36.5	96	127 32.9	-15 51.5	73 45.1	-22 16.5	
10	330 42.6	76 13 55.8	95	157 38.5	-15 51.4	103 50.2	-22 16.5	
12	359 35.8	75 14 14.7	93	187 44.1	-15 51.2	133 55.4	-22 16.5	
14	28 28.7	73 14 33.3	91	217 49.6	-15 51.0	164 .6	-22 16.5	
16	57 21.3	71 14 51.6	90	247 55.2	-15 50.9	194 5.7	-22 16.5	
18	86 13.6	70 15 9.5	88	278 .7	-15 50.7	224 10.9	-22 16.6	
20	115 5.6	68 15 27.1	86	308 6.3	-15 50.5	254 16.0	-22 16.6	
22	143 57.3	67 15 44.3	84	338 11.9	-15 50.4	284 21.2	-22 16.6	
Δ				28	1	26	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 40.0	.0	15.8	T _m	12 2	2.4	59.3 16.2		
12	3 39.5	T _{m☉}	11 h 56.3 min	Starost	28.9 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 6	.1	276	-3.3	♄	23 27	.0	134	-2.0
♂	4 37	.1	58	-1.1	♄	3 6	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.8	19 2.1	233 39.4	148 21.1	24 49.3	291 7.0	-22 6.1
2	210 54.7	19 3.3	263 44.4	178 19.4	24 49.7	321 9.8	-22 5.9
4	240 54.7	19 4.4	293 49.3	208 17.7	24 50.1	351 12.6	-22 5.7
6	270 54.7	19 5.6	323 54.2	238 16.1	24 50.4	21 15.4	-22 5.6
8	300 54.7	19 6.7	353 59.2	268 14.4	24 50.8	51 18.2	-22 5.4
10	330 54.6	19 7.9	24 4.1	298 12.7	24 51.1	81 21.1	-22 5.2
12	0 54.6	19 9.0	54 9.0	328 11.0	24 51.5	111 23.9	-22 5.0
14	30 54.6	19 10.2	84 13.9	358 9.4	24 51.8	141 26.7	-22 4.9
16	60 54.6	19 11.3	114 18.9	28 7.7	24 52.1	171 29.5	-22 4.7
18	90 54.5	19 12.5	144 23.8	58 6.0	24 52.5	201 32.3	-22 4.5
20	120 54.5	19 13.6	174 28.7	88 4.4	24 52.8	231 35.1	-22 4.3
22	150 54.5	19 14.7	204 33.7	118 2.7	24 53.1	261 38.0	-22 4.2
Δ	0	6		-8	2	14	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 20	20 34	1 5	:::	4 36	1.4	21 40	3.3
55	3 51	20 3	0 48	:::	5 0	1.7	21 11	3.1
50	4 13	19 41	0 40	2 47	5 18	1.8	20 50	3.0
45	4 30	19 23	0 34	2 10	5 32	1.9	20 34	2.9
40	4 44	19 9	0 31	1 51	5 44	2.0	20 20	2.8
35	4 56	18 57	0 28	1 39	5 54	2.1	20 9	2.8
30	5 6	18 47	0 26	1 31	6 3	2.2	19 59	2.7
20	5 24	18 29	0 24	1 21	6 19	2.3	19 42	2.6
10	5 39	18 14	0 22	1 15	6 32	2.4	19 27	2.6
0	5 53	17 60	0 22	1 13	6 45	2.5	19 13	2.5
10	6 7	17 46	0 22	1 13	6 58	2.6	18 59	2.4
20	6 22	17 31	0 23	1 17	7 12	2.7	18 44	2.4
30	6 38	17 14	0 25	1 23	7 27	2.8	18 27	2.3
35	6 48	17 4	0 27	1 28	7 37	2.8	18 17	2.2
40	6 59	16 53	0 29	1 34	7 47	2.9	18 6	2.2
45	7 12	16 40	0 32	1 42	7 60	3.0	17 53	2.1
50	7 28	16 24	0 36	1 54	8 15	3.1	17 37	2.0
55	7 48	16 4	0 41	2 9	8 34	3.3	17 16	1.9
60	8 15	15 37	0 50	2 31	9 1	3.5	16 48	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	172 48.7	66 16 1.1	82	8 17.4	-15 50.2	314 26.3	-22 16.6	
2	201 39.8	64 16 17.4	80	38 23.0	-15 50.0	344 31.5	-22 16.6	
4	230 30.6	63 16 33.4	78	68 28.5	-15 49.9	14 36.7	-22 16.6	
6	259 21.2	61 16 49.0	76	98 34.1	-15 49.7	44 41.8	-22 16.6	
8	288 11.5	60 17 4.1	73	128 39.6	-15 49.5	74 47.0	-22 16.7	
10	317 1.5	59 17 18.8	71	158 45.2	-15 49.4	104 52.1	-22 16.7	
12	345 51.2	57 17 33.1	69	188 50.8	-15 49.2	134 57.3	-22 16.7	
14	14 40.7	56 17 46.9	67	218 56.3	-15 49.0	165 2.5	-22 16.7	
16	43 30.0	55 18 .2	64	249 1.9	-15 48.9	195 7.6	-22 16.7	
18	72 19.0	54 18 13.0	62	279 7.4	-15 48.7	225 12.8	-22 16.7	
20	101 7.7	53 18 25.3	59	309 13.0	-15 48.5	255 17.9	-22 16.8	
22	129 56.3	52 18 37.2	57	339 18.5	-15 48.4	285 23.1	-22 16.8	
Δ				28	1	26	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 39.1	-.1	15.8	T _m	12 59	2.5	59.9 16.3		
12	3 38.4	T _{m☉}	11 h 56.4 min	Starost	.5 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 7	.1	275	-3.3	♄	23 23	.0	135	-2.0
♂	4 35	.1	57	-1.2	♄	3 2	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	54.4	19	15.9	234	38.6	148	1.0	24	53.4	291	40.8	-22	4.0
2	210	54.4	19	17.0	264	43.5	177	59.3	24	53.7	321	43.6	-22	3.8
4	240	54.3	19	18.1	294	48.4	207	57.7	24	54.0	351	46.5	-22	3.7
6	270	54.3	19	19.3	324	53.4	237	56.0	24	54.3	21	49.3	-22	3.5
8	300	54.3	19	20.4	354	58.3	267	54.3	24	54.6	51	52.2	-22	3.3
10	330	54.2	19	21.5	25	3.2	297	52.7	24	54.9	81	55.0	-22	3.1
12	0	54.2	19	22.6	55	8.2	327	51.0	24	55.2	111	57.8	-22	3.0
14	30	54.1	19	23.8	85	13.1	357	49.3	24	55.5	142	.7	-22	2.8
16	60	54.1	19	24.9	115	18.0	27	47.6	24	55.8	172	3.5	-22	2.6
18	90	54.1	19	26.0	145	22.9	57	46.0	24	56.0	202	6.4	-22	2.5
20	120	54.0	19	27.1	175	27.9	87	44.3	24	56.3	232	9.3	-22	2.3
22	150	54.0	19	28.2	205	32.8	117	42.6	24	56.5	262	12.1	-22	2.1
Δ	0	6					-8	1			14	1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 18	20 36	1 6	:::	5 10	2.0	22 59	2.7
55	3 49	20 5	0 49	:::	5 40	2.1	22 26	2.6
50	4 12	19 42	0 40	2 49	6 2	2.2	22 2	2.6
45	4 29	19 24	0 35	2 11	6 19	2.3	21 43	2.6
40	4 43	19 10	0 31	1 52	6 33	2.3	21 28	2.6
35	4 55	18 58	0 28	1 40	6 45	2.4	21 16	2.6
30	5 6	18 48	0 26	1 31	6 56	2.4	21 4	2.6
20	5 23	18 30	0 24	1 21	7 14	2.5	20 45	2.6
10	5 39	18 14	0 22	1 15	7 29	2.5	20 29	2.6
0	5 53	17 60	0 22	1 13	7 44	2.5	20 13	2.6
10	6 7	17 46	0 22	1 13	7 59	2.6	19 58	2.5
20	6 22	17 31	0 23	1 17	8 15	2.6	19 41	2.5
30	6 39	17 14	0 25	1 23	8 34	2.7	19 22	2.5
35	6 49	17 4	0 27	1 28	8 44	2.7	19 11	2.5
40	7 0	16 52	0 29	1 34	8 57	2.7	18 58	2.5
45	7 13	16 39	0 32	1 43	9 11	2.8	18 43	2.4
50	7 29	16 23	0 36	1 54	9 29	2.8	18 25	2.4
55	7 50	16 3	0 42	2 9	9 53	2.9	18 1	2.4
60	8 17	15 35	0 50	2 32	10 25	3.0	17 28	2.3
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	158	44.6	51	18	48.5	54	9	24.1	-15	48.2	315	28.3	-22	16.8
2	187	32.7	50	18	59.3	51	39	29.6	-15	48.0	345	33.4	-22	16.8
4	216	20.7	49	19	9.6	49	69	35.2	-15	47.9	15	38.6	-22	16.8
6	245	8.4	48	19	19.4	46	99	40.7	-15	47.7	45	43.8	-22	16.8
8	273	56.0	47	19	28.6	43	129	46.3	-15	47.5	75	48.9	-22	16.8
10	302	43.4	46	19	37.3	41	159	51.8	-15	47.4	105	54.1	-22	16.9
12	331	30.7	46	19	45.4	38	189	57.4	-15	47.2	135	59.3	-22	16.9
14	0	17.8	45	19	53.0	35	220	3.0	-15	47.0	166	4.4	-22	16.9
16	29	4.8	44	20	.0	32	250	8.5	-15	46.9	196	9.6	-22	16.9
18	57	51.7	44	20	6.5	29	280	14.1	-15	46.7	226	14.8	-22	16.9
20	86	38.5	44	20	12.4	27	310	19.6	-15	46.5	256	20.0	-22	16.9
22	115	25.2	43	20	17.7	24	340	25.2	-15	46.4	286	25.1	-22	17.0
Δ							28	1			26	0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	3 37.7	-.1	15.8	T _m	13 59	2.5	60.2	16.4	
12	3 36.7	T _{m☉}	11 h 56.4 min	Starost	1.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 9	.1	273	-3.3	♄	23 18	.0	135	-2.0
♂	4 33	.1	57	-1.2	♄	2 58	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	53.9	19	29.3	235	37.7	147	40.9	24	56.8	292	15.0	-22	2.0
2	210	53.9	19	30.4	265	42.7	177	39.3	24	57.1	322	17.8	-22	1.8
4	240	53.8	19	31.5	295	47.6	207	37.6	24	57.3	352	20.7	-22	1.6
6	270	53.8	19	32.6	325	52.5	237	35.9	24	57.5	22	23.6	-22	1.5
8	300	53.7	19	33.7	355	57.4	267	34.2	24	57.8	52	26.5	-22	1.3
10	330	53.7	19	34.8	26	2.4	297	32.6	24	58.0	82	29.3	-22	1.1
12	0	53.6	19	35.9	56	7.3	327	30.9	24	58.2	112	32.2	-22	1.0
14	30	53.6	19	37.0	86	12.2	357	29.2	24	58.4	142	35.1	-22	.8
16	60	53.5	19	38.1	116	17.2	27	27.5	24	58.7	172	38.0	-22	.7
18	90	53.5	19	39.2	146	22.1	57	25.9	24	58.9	202	40.9	-22	.5
20	120	53.4	19	40.3	176	27.0	87	24.2	24	59.1	232	43.8	-22	.3
22	150	53.3	19	41.4	206	31.9	117	22.5	24	59.3	262	46.6	-22	.2
Δ	0	5					-8	1			14	1		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 16	20 39	1 7	:::	5 58	2.6	. . .	.0
55	3 47	20 6	0 49	:::	6 31	2.6	23 29	2.1
50	4 10	19 43	0 40	2 51	6 55	2.6	23 5	2.2
45	4 28	19 26	0 35	2 12	7 14	2.6	22 46	2.3
40	4 42	19 11	0 31	1 52	7 29	2.6	22 31	2.3
35	4 54	18 59	0 28	1 40	7 42	2.6	22 18	2.3
30	5 5	18 48	0 26	1 32	7 53	2.6	22 7	2.4
20	5 23	18 30	0 24	1 21	8 13	2.6	21 47	2.4
10	5 38	18 14	0 22	1 15	8 30	2.6	21 30	2.5
0	5 53	17 60	0 22	1 13	8 45	2.5	21 15	2.5
10	6 7	17 46	0 22	1 14	9 1	2.5	20 59	2.6
20	6 22	17 30	0 23	1 17	9 18	2.5	20 42	2.6
30	6 40	17 13	0 26	1 23	9 38	2.5	20 22	2.6
35	6 50	17 3	0 27	1 28	9 49	2.5	20 11	2.7
40	7 1	16 52	0 29	1 34	10 2	2.5	19 57	2.7
45	7 14	16 38	0 32	1 43	10 18	2.4	19 42	2.7
50	7 31	16 22	0 36	1 54	10 37	2.4	19 23	2.8
55	7 51	16 1	0 42	2 10	11 2	2.4	18 58	2.8
60	8 20	15 33	0 50	2 32	11 36	2.3	18 24	2.9
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	144	11.9	43	20	22.4	21	10	30.7	-15	46.2	316	30.3	-22	17.0
2	172	58.5	43	20	26.5	18	40	36.3	-15	46.0	346	35.5	-22	17.0
4	201	45.0	43	20	30.1	15	70	41.8	-15	45.9	16	40.6	-22	17.0
6	230	31.5	42	20	33.0	12	100	47.4	-15	45.7	46	45.8	-22	17.0
8	259	18.0	42	20	35.4	9	130	52.9	-15	45.6	76	51.0	-22	17.0
10	288	4.5	42	20	37.2	6	160	58.5	-15	45.4	106	56.2	-22	17.0
12	316	51.0	43	20	38.4	3	191	4.0	-15	45.2	137	1.3	-22	17.1
14	345	37.5	43	20	39.0	0	221	9.6	-15	45.1	167	6.5	-22	17.1
16	14	24.0	43	20	39.1	-3	251	15.1	-15	45.9	197	11.7	-22	17.1
18	43	10.6	43	20	38.5	-6	281	20.7	-15	44.7	227	16.9	-22	17.1
20	71	57.3	44	20	37.4	-9	311	26.2	-15	44.6	257	22.0	-22	17.1
22	100	44.0	44	20	35.6	-12	341	31.7	-15	44.4	287	27.2	-22	17.1
Δ							28	1			26	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 35.7	-.1	15.8	T _m	14 60	2.5	60.3	16.4
12	3 34.4	T _{m☉}	11 h 56.4 min	Starost	2.5 d	Faza	●	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.3	19 42.4	236 36.9	147 20.9	24 59.5	292 49.5	-22 .0
2	210 53.2	19 43.5	266 41.8	177 19.2	24 59.7	322 52.4	-21 59.9
4	240 53.2	19 44.6	296 46.7	207 17.5	24 59.9	352 55.3	-21 59.7
6	270 53.1	19 45.7	326 51.6	237 15.8	25 .0	22 58.2	-21 59.5
8	300 53.1	19 46.7	356 56.6	267 14.2	25 .2	53 1.2	-21 59.4
10	330 53.0	19 47.8	27 1.5	297 12.5	25 .4	83 4.1	-21 59.2
12	0 52.9	19 48.9	57 6.4	327 10.8	25 .5	113 7.0	-21 59.1
14	30 52.9	19 49.9	87 11.4	357 9.1	25 .7	143 9.9	-21 58.9
16	60 52.8	19 51.0	117 16.3	27 7.5	25 .9	173 12.8	-21 58.7
18	90 52.7	19 52.1	147 21.2	57 5.8	25 1.0	203 15.7	-21 58.6
20	120 52.7	19 53.1	177 26.1	87 4.1	25 1.2	233 18.7	-21 58.4
22	150 52.6	19 54.2	207 31.1	117 2.5	25 1.3	263 21.6	-21 58.3
Δ	0	5		-8	1	15	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 14	20 41	1 8	: : :	7 1	3.2	0 2	2.0
55	3 46	20 8	0 49	: : :	7 34	3.0	. . .	.0
50	4 9	19 45	0 40	2 54	7 58	2.9	23 57	1.8
45	4 27	19 27	0 35	2 13	8 16	2.8	23 40	1.9
40	4 41	19 12	0 31	1 53	8 31	2.8	23 26	2.0
35	4 54	18 60	0 28	1 40	8 44	2.7	23 14	2.1
30	5 4	18 49	0 26	1 32	9 55	2.7	23 4	2.1
20	5 23	18 31	0 24	1 17	10 18	2.6	22 46	2.2
10	5 38	18 15	0 22	1 15	9 31	2.5	22 30	2.3
0	5 53	18 0	0 22	1 13	9 46	2.5	22 15	2.4
10	6 7	17 45	0 22	1 14	10 2	2.4	21 60	2.5
20	6 23	17 30	0 23	1 17	10 18	2.3	21 44	2.6
30	6 40	17 13	0 26	1 23	10 38	2.3	21 25	2.7
35	6 50	17 2	0 27	1 28	10 49	2.2	21 15	2.8
40	7 2	16 51	0 29	1 35	11 1	2.1	21 2	2.8
45	7 15	16 37	0 32	1 43	11 16	2.1	20 48	2.9
50	7 32	16 21	0 36	1 54	11 35	2.0	20 30	3.0
55	7 53	15 59	0 42	2 10	11 59	1.8	20 6	3.2
60	8 22	15 31	0 51	2 33	12 31	1.6	19 34	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	129 30.9	45 20	33.3	-14	11 37.3	-15 44.2	317 32.4	-22 17.2
2	158 17.8	45 20	30.4	-17	41 42.8	-15 44.1	347 37.6	-22 17.2
4	187 4.9	46 20	26.9	-20	71 48.4	-15 43.9	17 42.8	-22 17.2
6	215 52.1	47 20	22.9	-23	101 53.9	-15 43.8	47 47.9	-22 17.2
8	244 39.4	47 20	18.3	-26	131 59.5	-15 43.6	77 53.1	-22 17.2
10	273 26.9	48 20	13.1	-29	162 5.0	-15 43.4	107 58.3	-22 17.2
12	302 14.6	49 20	7.4	-31	192 10.6	-15 43.3	138 3.5	-22 17.3
14	331 2.4	50 20	1.1	-34	222 16.1	-15 43.1	168 8.7	-22 17.3
16	359 50.4	51 19	54.3	-37	252 21.6	-15 42.9	198 13.9	-22 17.3
18	28 38.6	52 19	46.9	-40	282 27.2	-15 42.8	228 19.0	-22 17.3
20	57 27.1	53 19	39.0	-42	312 32.7	-15 42.6	258 24.2	-22 17.3
22	86 15.7	54 19	30.6	-45	342 38.3	-15 42.5	288 29.4	-22 17.3
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 30.2	.1	15.8	T _m	16 1	2.4	60.1 16.4		
12	3 31.6	T _{m☉}	11 h 56.5 min	Starost	3.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	4 28	.1	56	-3.3	♄	23 9	.0	135	-2.0
					♂	2 49	.0	81	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 52.5	19 55.2	237 36.0	147 .8	25 1.4	293 24.5	-21 58.1
2	210 52.5	19 56.3	267 40.9	176 59.1	25 1.6	323 27.4	-21 58.0
4	240 52.4	19 57.3	297 45.9	206 57.5	25 1.7	353 30.4	-21 57.8
6	270 52.3	19 58.4	327 50.8	236 55.8	25 1.8	23 33.3	-21 57.7
8	300 52.2	19 59.4	357 55.7	266 54.1	25 1.9	53 36.2	-21 57.5
10	330 52.2	20 .4	28 .6	296 52.4	25 2.0	83 39.2	-21 57.4
12	0 52.1	20 1.5	58 5.6	326 50.8	25 2.2	113 42.1	-21 57.2
14	30 52.0	20 2.5	88 10.5	356 49.1	25 2.3	143 45.1	-21 57.1
16	60 51.9	20 3.5	118 15.4	26 47.4	25 2.4	173 48.0	-21 56.9
18	90 51.9	20 4.6	148 20.4	56 45.8	25 2.4	203 51.0	-21 56.8
20	120 51.8	20 5.6	178 25.3	86 44.1	25 2.5	233 53.9	-21 56.6
22	150 51.7	20 6.6	208 30.2	116 42.4	25 2.6	263 56.9	-21 56.5
Δ	0	5		-8	1	15	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 11	20 43	1 9	: : :	8 18	3.5	0 49	1.4
55	3 44	20 10	0 50	: : :	8 47	3.3	0 19	1.6
50	4 8	19 46	0 41	2 57	9 8	3.1	. . .	.0
45	4 26	19 28	0 35	2 14	9 24	3.0	. . .	.0
40	4 41	19 13	0 31	1 53	9 38	2.8	. . .	.0
35	4 53	19 0	0 28	1 41	9 49	2.8	. . .	.0
30	5 4	18 49	0 26	1 32	9 59	2.7	23 55	1.9
20	5 22	18 31	0 24	1 21	10 17	2.6	23 39	2.0
10	5 38	18 15	0 22	1 16	10 32	2.5	23 26	2.2
0	5 53	18 0	0 22	1 13	10 46	2.3	23 13	2.3
10	6 8	17 45	0 22	1 14	10 60	2.2	22 60	2.4
20	6 23	17 30	0 23	1 17	11 15	2.1	22 46	2.5
30	6 41	17 12	0 26	1 23	11 32	2.0	22 30	2.7
35	6 51	17 2	0 27	1 28	11 42	1.9	22 21	2.8
40	7 3	16 50	0 29	1 35	11 53	1.8	22 10	2.9
45	7 16	16 36	0 32	1 43	12 6	1.7	21 58	3.0
50	7 33	16 19	0 36	1 55	12 22	1.6	21 42	3.1
55	7 55	15 58	0 42	2 10	12 43	1.4	21 23	3.3
60	8 24	15 29	0 51	2 34	13 11	1.2	20 56	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	115 4.6	56 19	21.6	-47	12 43.8	-15 42.3	318 34.6	-22 17.4
2	143 53.7	57 19	12.1	-50	42 49.4	-15 42.1	348 39.8	-22 17.4
4	172 43.0	58 19	2.2	-52	72 54.9	-15 42.0	18 45.0	-22 17.4
6	201 32.6	59 18	51.7	-55	103 .4	-15 41.8	48 50.2	-22 17.4
8	230 22.5	61 18	40.7	-57	133 6.0	-15 41.6	78 55.3	-22 17.4
10	259 12.6	62 18	29.3	-60	163 11.5	-15 41.5	109 .5	-22 17.4
12	288 3.0	63 18	17.4	-62	193 17.1	-15 41.3	139 5.7	-22 17.5
14	316 53.6	65 18	5.0	-64	223 22.6	-15 41.2	169 10.9	-22 17.5
16	345 44.5	66 17	52.2	-66	253 28.1	-15 41.0	199 16.1	-22 17.5
18	14 35.8	68 17	38.9	-69	283 33.7	-15 40.8	229 21.3	-22 17.5
20	43 27.3	69 17	25.2	-71	313 39.2	-15 40.7	259 26.5	-22 17.5
22	72 19.1	70 17	11.1	-73	343 44.8	-15 40.5	289 31.7	-22 17.5
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	3 30.1	.1	15.8	T _m	16 59	2.3	59.8 16.3		
12	3 28.3	T _{m☉}	11 h 56.5 min	Starost	4.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	4 26	.1	56	-1.3	♄	23 5	.0	135	-2.0
					♂	2 45	.0	81	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	51.6	20	7.7	238	35.1	146	40.8	25	2.7	293	59.9	-21	56.3
2	210	51.6	20	8.7	268	40.1	176	39.1	25	2.8	324	2.8	-21	56.2
4	240	51.5	20	9.7	298	45.0	206	37.4	25	2.8	354	5.8	-21	56.0
6	270	51.4	20	10.7	328	49.9	236	35.8	25	2.9	24	8.8	-21	55.9
8	300	51.3	20	11.7	358	54.9	266	34.1	25	2.9	54	11.8	-21	55.7
10	330	51.2	20	12.7	28	59.8	296	32.4	25	3.0	84	14.7	-21	55.6
12	0	51.1	20	13.7	59	4.7	326	30.8	25	3.0	114	17.7	-21	55.4
14	30	51.1	20	14.8	89	9.6	356	29.1	25	3.1	144	20.7	-21	55.3
16	60	51.0	20	15.8	119	14.6	26	27.4	25	3.1	174	23.7	-21	55.2
18	90	50.9	20	16.8	149	19.5	56	25.8	25	3.2	204	26.7	-21	55.0
20	120	50.8	20	17.8	179	24.4	86	24.1	25	3.2	234	29.7	-21	54.9
22	150	50.7	20	18.8	209	29.4	116	22.4	25	3.2	264	32.7	-21	54.7
Δ	0		5				-8		0		15			1

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	101	11.2	72	16	56.5	-75	13	50.3	-15	40.4	319	36.9	-22	17.6
2	130	3.5	73	16	41.6	-77	43	55.8	-15	40.2	349	42.1	-22	17.6
4	158	56.2	75	16	26.2	-79	74	1.4	-15	40.0	19	47.3	-22	17.6
6	187	49.2	76	16	10.5	-81	104	6.9	-15	39.9	49	52.4	-22	17.6
8	216	42.5	78	15	54.4	-82	134	12.4	-15	39.7	79	57.6	-22	17.6
10	245	36.1	79	15	37.9	-84	164	18.0	-15	39.5	110	2.8	-22	17.6
12	274	30.0	81	15	21.0	-86	194	23.5	-15	39.4	140	8.0	-22	17.7
14	303	24.2	82	15	3.9	-88	224	29.0	-15	39.2	170	13.2	-22	17.7
16	332	18.7	84	14	46.3	-89	254	34.6	-15	39.1	200	18.4	-22	17.7
18	1	13.5	85	14	28.5	-91	284	40.1	-15	38.9	230	23.8	-22	17.7
20	30	8.5	87	14	10.3	-92	314	45.6	-15	38.8	260	28.8	-22	17.7
22	59	3.9	88	13	51.8	-94	344	51.2	-15	38.6	290	34.0	-22	17.7
Δ							28		1		26			0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 9	20 45	1 10	:	9 42	3.6	1 23	1.0
55	3 43	20 12	0 50	:	10 5	3.3	0 59	1.3
50	4 7	19 47	0 41	2	10 22	3.1	0 40	1.5
45	4 25	19 29	0 35	2	10 35	3.0	0 26	1.6
40	4 40	19 14	0 31	1	10 46	2.8	0 14	1.7
35	4 52	19 1	0 29	1	10 56	2.7	0 4	1.8
30	5 3	18 50	0 27	1	11 4	2.6	...	.0
20	5 22	18 31	0 24	1	11 18	2.5	...	.0
10	5 38	18 15	0 23	1	11 30	2.3	...	.0
0	5 53	18 0	0 22	1	11 42	2.2	...	.0
10	6 8	17 45	0 22	1	11 54	2.1	23 58	2.3
20	6 24	17 30	0 23	1	12 6	2.0	23 47	2.4
30	6 41	17 12	0 26	1	12 20	1.8	23 34	2.6
35	6 52	17 1	0 27	1	12 28	1.7	23 27	2.7
40	7 4	16 49	0 29	1	12 37	1.6	23 19	2.8
45	7 18	16 35	0 32	1	12 48	1.5	23 9	2.9
50	7 34	16 18	0 36	1	13 1	1.3	22 57	3.1
55	7 56	15 57	0 42	2	13 17	1.1	22 42	3.3
60	8 26	15 27	0 51	2	13 39	.9	22 22	3.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	3 26.5	-.2	15.8	T _m	17 55	2.2	59.4 16.2		
12	3 24.5	T _{m☉}	11 h 56.6 min	Starost	5.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 14	.1	268	-3.3	♃	23 0	.0	135	-2.0
♂	4 24	.1	55	-1.3	♄	2 41	.0	81	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	50.6	20	19.7	239	34.3	146	20.8	25	3.2	294	35.6	-21	54.6
2	210	50.5	20	20.7	269	39.2	176	19.1	25	3.2	324	38.6	-21	54.5
4	240	50.4	20	21.7	299	44.1	206	17.5	25	3.2	354	41.7	-21	54.3
6	270	50.3	20	22.7	329	49.1	236	15.8	25	3.2	24	44.7	-21	54.2
8	300	50.2	20	23.7	359	54.0	266	14.1	25	3.2	54	47.7	-21	54.0
10	330	50.2	20	24.7	29	58.9	296	12.5	25	3.2	84	50.7	-21	53.9
12	0	50.1	20	25.7	60	3.9	326	10.8	25	3.2	114	53.7	-21	53.8
14	30	50.0	20	26.6	90	8.8	356	9.2	25	3.2	144	56.7	-21	53.6
16	60	49.9	20	27.6	120	13.7	26	7.5	25	3.2	174	59.7	-21	53.5
18	90	49.8	20	28.6	150	18.6	56	5.8	25	3.2	205	2.8	-21	53.4
20	120	49.7	20	29.6	180	23.6	86	4.2	25	3.1	235	5.8	-21	53.2
22	150	49.6	20	30.5	210	28.5	116	2.5	25	3.1	265	8.8	-21	53.1
Δ	0		5				-8		0		15			1

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	87	59.6	90	13	33.1	-95	14	56.7	-15	38.4	320	39.2	-22	17.8
2	116	55.6	91	13	14.0	-97	45	2.2	-15	38.3	350	44.4	-22	17.8
4	145	51.9	93	12	54.7	-98	75	7.8	-15	38.1	20	49.6	-22	17.8
6	174	48.4	94	12	35.1	-99	105	13.3	-15	38.0	50	54.8	-22	17.8
8	203	45.2	96	12	15.2	-101	135	18.8	-15	37.8	81	.0	-22	17.8
10	232	42.4	97	11	55.1	-102	165	24.3	-15	37.6	111	5.2	-22	17.8
12	261	39.7	98	11	34.8	-103	195	29.9	-15	37.5	141	10.4	-22	17.9
14	290	37.4	100	11	14.2	-104	225	35.4	-15	37.3	171	15.6	-22	17.9
16	319	35.3	101	10	53.5	-105	255	40.9	-15	37.2	201	20.8	-22	17.9
18	348	33.5	102	10	32.5	-106	285	46.5	-15	37.0	231	26.0	-22	17.9
20	17	32.0	104	10	11.3	-107	315	52.0	-15	36.8	261	31.2	-22	17.9
22	46	30.7	105	9	49.9	-108	345	57.5	-15	36.7	291	36.4	-22	18.0
Δ							28		1		26			0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 7	20 48	1 11	:	11 9	3.6	1 47	.8
55	3 41	20 13	0 51	:	11 25	3.3	1 29	1.0
50	4 5	19 49	0 41	3	11 37	3.1	1 16	1.2
45	4 24	19 30	0 35	2	11 46	2.9	1 5	1.4
40	4 39	19 15	0 31	1	11 54	2.8	0 55	1.5
35	4 52	19 2	0 29	1	12 1	2.7	0 48	1.6
30	5 3	18 51	0 27	1	12 7	2.6	0 41	1.7
20	5 22	18 32	0 24	1	12 12	2.4	0 28	1.9
10	5 38	18 15	0 23	1	12 27	2.2	0 18	2.0
0	5 53	18 0	0 22	1	12 35	2.1	0 8	2.2
10	6 8	17 45	0 22	1	12 44	2.0	...	.0
20	6 24	17 29	0 23	1	12 53	1.8	...	.0
30	6 42	17 11	0 26	1	13 3	1.6	...	.0
35	6 52	17 1	0 27	1	13 9	1.5	...	.0
40	7 4	16 49	0 30	1	13 16	1.4	...	.0
45	7 19	16 34	0 32	1	14	1.3	...	.0
50	7 36	16 17	0 37	1	15	1.1	...	.0
55	7 58	15 55	0 42	2	11	.9	...	.0
60	8 28	15 25	0 52	2	35	.7	23 49	3.5
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	3 22.5	-.2	15.8	T _m	18 47	2.1	58.8 16.0
12	3 20.2	T _{m☉}	11 h 56.7 min	Starost	6.5 d	Faza	☉
PLANETE							
Pl.	T _m	π	360-α				

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}	δ_{\odot}	S_{Υ}	S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}			
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "			
0	180 49.5	20 31.5	240 33.4	146 .9	25 3.0	295 11.8	-21 53.0			
2	210 49.4	20 32.5	270 38.3	175 59.2	25 3.0	325 14.9	-21 52.8			
4	240 49.3	20 33.4	300 43.3	205 57.6	25 2.9	355 17.9	-21 52.7			
6	270 49.2	20 34.4	330 48.2	235 55.9	25 2.9	25 21.0	-21 52.6			
8	300 49.1	20 35.3	0 53.1	265 54.2	25 2.8	55 24.0	-21 52.4			
10	330 49.0	20 36.3	30 58.1	295 52.6	25 2.8	85 27.1	-21 52.3			
12	0 48.8	20 37.2	61 3.0	325 50.9	25 2.7	115 30.1	-21 52.2			
14	30 48.7	20 38.2	91 7.9	355 49.3	25 2.6	145 33.2	-21 52.0			
16	60 48.6	20 39.1	121 12.8	25 47.6	25 2.5	175 36.2	-21 51.9			
18	90 48.5	20 40.1	151 17.8	55 46.0	25 2.4	205 39.3	-21 51.8			
20	120 48.4	20 41.0	181 22.7	85 44.3	25 2.4	235 42.3	-21 51.7			
22	150 48.3	20 41.9	211 27.6	115 42.7	25 2.3	265 45.4	-21 51.5			
Δ	-1	5		-8	0	15	1			

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jmath}	δ_{\jmath}	S_{h}	δ_{h}
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	75 29.6	106	9 28.3	-109	16 3.0	-15 36.5	321 41.6	-22 18.0
2	104 28.8	107	9 6.6	-109	46 8.6	-15 36.4	351 46.9	-22 18.0
4	133 28.3	108	8 44.7	-110	76 14.1	-15 36.2	21 52.1	-22 18.0
6	162 27.9	109	8 22.7	-111	106 19.6	-15 36.1	51 57.3	-22 18.0
8	191 27.8	111	8 .5	-112	136 25.1	-15 35.9	82 2.5	-22 18.0
10	220 27.9	112	7 38.2	-112	166 30.7	-15 35.7	112 7.7	-22 18.1
12	249 28.3	113	7 15.7	-113	196 36.2	-15 35.6	142 12.9	-22 18.1
14	278 28.8	114	6 53.1	-113	226 41.7	-15 35.4	172 18.1	-22 18.1
16	307 29.5	115	6 30.5	-114	256 47.2	-15 35.3	202 23.3	-22 18.1
18	336 30.5	116	6 7.7	-114	286 52.7	-15 35.1	232 28.5	-22 18.1
20	5 31.6	117	5 44.8	-115	316 58.3	-15 35.0	262 33.7	-22 18.2
22	34 32.9	117	5 21.9	-115	347 3.8	-15 34.8	292 38.9	-22 18.2
Δ					28	1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 5	20 50	1 13	: : :	12 34	3.5	2 6	.6
55	3 40	20 15	0 51	: : :	12 43	3.2	1 54	.9
50	4 4	19 50	0 41	3 5	12 50	3.0	1 45	1.1
45	4 23	19 31	0 35	2 17	12 56	2.8	1 38	1.2
40	4 38	19 16	0 31	1 55	13 1	2.7	1 32	1.4
35	4 51	19 3	0 29	1 42	13 5	2.6	1 26	1.5
30	5 2	18 51	0 27	1 33	13 9	2.5	1 22	1.6
20	5 21	18 32	0 24	1 22	13 15	2.3	1 14	1.8
10	5 38	18 16	0 23	1 16	13 20	2.2	1 6	1.9
0	5 53	18 0	0 22	1 14	13 26	2.0	0 59	2.1
10	6 8	17 45	0 22	1 14	13 31	1.9	0 53	2.2
20	6 24	17 29	0 24	1 17	13 36	1.7	0 45	2.4
30	6 43	17 11	0 26	1 24	13 42	1.5	0 37	2.5
35	6 53	17 0	0 27	1 29	13 46	1.4	0 32	2.6
40	7 5	16 48	0 30	1 35	13 50	1.3	0 26	2.7
45	7 20	16 34	0 33	1 44	13 54	1.2	0 20	2.9
50	7 37	16 16	0 37	1 55	14 0	1.0	0 12	3.1
55	7 59	15 54	0 43	2 11	14 7	.8	0 2	3.3
60	8 30	15 23	0 52	2 35	14 16	.6	...	.0
S								

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min s	s /		h min	min	/	/		
00	3 17.9	-.2	15.8	T_m	19 37	2.0	58.3	15.9	
12	3 15.3	$T_{m\odot}$	11 h 56.7 min	Starost	7.5 d	Faza	☉		
PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
ζ	h min	/	°		ζ	h min	/	°	
σ	14 17	.1	265	-3.4	η	22 52	.0	135	-2.0
σ	4 19	.1	55	-1.3	η	2 33	.0	81	.4

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}	δ_{\odot}	S_{Υ}	S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}			
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "			
0	180 48.2	20 42.9	241 32.6	145 41.0	25 2.2	295 48.5	-21 51.4			
2	210 48.1	20 43.8	271 37.5	175 39.4	25 2.1	325 51.5	-21 51.3			
4	240 48.0	20 44.7	301 42.4	205 37.7	25 1.9	355 54.6	-21 51.2			
6	270 47.9	20 45.7	331 47.3	235 36.1	25 1.8	25 57.7	-21 51.0			
8	300 47.7	20 46.6	1 52.3	265 34.5	25 1.7	56 .8	-21 50.9			
10	330 47.6	20 47.5	31 57.2	295 32.8	25 1.6	86 3.9	-21 50.8			
12	0 47.5	20 48.4	62 2.1	325 31.2	25 1.4	116 6.9	-21 50.7			
14	30 47.4	20 49.4	92 7.1	355 29.5	25 1.3	146 10.0	-21 50.5			
16	60 47.3	20 50.3	122 12.0	25 27.9	25 1.2	176 13.1	-21 50.4			
18	90 47.2	20 51.2	152 16.9	55 26.2	25 1.0	206 16.2	-21 50.3			
20	120 47.0	20 52.1	182 21.8	85 24.6	25 .9	236 19.3	-21 50.2			
22	150 46.9	20 53.0	212 26.8	115 23.0	25 .7	266 22.4	-21 50.1			
Δ	-1	5		-8	-1	15	1			

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jmath}	δ_{\jmath}	S_{h}	δ_{h}
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	63 34.4	118	4 58.9	-115	17 9.3	-15 34.7	322 44.2	-22 18.2
2	92 36.1	119	4 35.8	-116	47 14.8	-15 34.5	352 49.4	-22 18.2
4	121 37.9	120	4 12.6	-116	77 20.3	-15 34.3	22 54.6	-22 18.2
6	150 39.9	121	3 49.4	-116	107 25.9	-15 34.2	52 59.8	-22 18.2
8	179 42.0	121	3 26.2	-116	137 31.4	-15 34.0	83 5.0	-22 18.3
10	208 44.3	122	3 2.9	-116	167 36.9	-15 33.9	113 10.2	-22 18.3
12	237 46.7	123	2 39.6	-117	197 42.4	-15 33.7	143 15.4	-22 18.3
14	266 49.3	123	2 16.3	-117	227 47.9	-15 33.6	173 20.6	-22 18.3
16	295 51.9	124	1 53.0	-117	257 53.4	-15 33.4	203 25.9	-22 18.3
18	324 54.7	125	1 29.7	-117	287 59.0	-15 33.3	233 31.1	-22 18.4
20	353 57.7	125	1 6.3	-117	318 4.5	-15 33.1	263 36.3	-22 18.4
22	23 .7	126	0 43.0	-116	348 10.0	-15 32.9	293 41.5	-22 18.4
Δ					28	1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 3	20 52	1 14	: : :	13 58	1.9	2 21	.7
55	3 38	20 16	0 51	: : :	14 1	1.9	2 15	.9
50	4 3	19 51	0 41	3 9	14 3	1.9	2 11	1.1
45	4 22	19 32	0 35	2 17	14 5	1.9	2 8	1.2
40	4 38	19 16	0 32	1 55	14 6	1.9	2 5	1.3
35	4 51	19 3	0 29	1 42	14 7	1.9	2 2	1.4
30	5 2	18 52	0 27	1 33	14 8	1.9	1 60	1.5
20	5 21	18 33	0 24	1 22	14 10	1.9	1 56	1.7
10	5 38	18 16	0 23	1 16	14 12	1.9	1 52	1.8
0	5 53	18 0	0 22	1 14	14 14	2.0	1 49	2.0
10	6 9	17 45	0 22	1 14	14 15	2.0	1 45	2.1
20	6 25	17 29	0 24	1 17	14 17	2.0	1 42	2.3
30	6 43	17 10	0 26	1 24	14 19	2.0	1 37	2.4
35	6 54	16 60	0 27	1 29	14 20	2.0	1 35	2.5
40	7 6	16 47	0 30	1 35	14 21	2.0	1 32	2.6
45	7 21	16 33	0 33	1 44	14 23	2.0	1 29	2.8
50	7 38	16 15	0 37	1 56	14 25	2.0	1 25	2.9
55	8 1	15 52	0 43	2 12	14 27	2.1	1 20	3.1
60	8 32	15 21	0 52	2 36	14 30	2.1	1 14	3.4
S								

SUNCE				MESEC					
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r		
h	min s	s /		h min	min	/	/		
00	3 12.8	-.2	15.8	T_m	20 25	2.0	57.7	15.7	
12	3 10.0	$T_{m\odot}$	11 h 56.8 min	Starost	8.5 d	Faza	☉		
PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
ζ	h min	/	°		ζ	h min	/	°	
σ	14 18	.1	264	-3.4	η	22 47	.0	136	-2.0
σ	4 16	.1	54	-1.4	η	2 29	.0	81	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 46.8	20 53.9	242 31.7	145 21.3	25 .6	296 25.5	-21 50.0
2	210 46.7	20 54.8	272 36.6	175 19.7	25 .4	326 28.6	-21 49.8
4	240 46.6	20 55.7	302 41.6	205 18.0	25 .2	356 31.7	-21 49.7
6	270 46.4	20 56.6	332 46.5	235 16.4	25 .0	26 34.9	-21 49.6
8	300 46.3	20 57.5	2 51.4	265 14.8	24 59.9	56 38.0	-21 49.5
10	330 46.2	20 58.4	32 56.3	295 13.1	24 59.7	86 41.1	-21 49.4
12	0 46.1	20 59.3	63 1.3	325 11.5	24 59.5	116 44.2	-21 49.3
14	30 45.9	21 .2	93 6.2	355 9.9	24 59.3	146 47.3	-21 49.2
16	60 45.8	21 1.1	123 11.1	25 8.2	24 59.1	176 50.5	-21 49.0
18	90 45.7	21 1.9	153 16.1	55 6.6	24 58.9	206 53.6	-21 48.9
20	120 45.6	21 2.8	183 21.0	85 5.0	24 58.7	236 56.7	-21 48.8
22	150 45.4	21 3.7	213 25.9	115 3.3	24 58.5	266 59.9	-21 48.7
Δ	-1	4		-8	-1	16	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 1	20 54	1 15	: : :	14 43	.6	2 37	3.4
55	3 37	20 18	0 52	: : :	14 46	.8	2 37	3.1
50	4 2	19 52	0 42	3 12	14 48	1.0	2 37	2.9
45	4 21	19 33	0 36	2 18	14 50	1.1	2 37	2.8
40	4 37	19 17	0 32	1 56	14 52	1.3	2 37	2.6
35	4 50	19 4	0 29	1 42	14 53	1.4	2 37	2.5
30	5 2	18 53	0 27	1 33	14 55	1.5	2 37	2.4
20	5 21	18 33	0 24	1 22	14 57	1.6	2 36	2.2
10	5 38	18 16	0 23	1 16	14 59	1.8	2 36	2.1
0	5 53	18 1	0 22	1 14	15 1	1.9	2 36	1.9
10	6 9	17 45	0 22	1 14	15 2	2.1	2 36	1.8
20	6 25	17 29	0 24	1 17	15 4	2.2	2 36	1.6
30	6 44	17 10	0 26	1 24	15 7	2.4	2 36	1.5
35	6 55	16 59	0 27	1 29	15 8	2.5	2 36	1.4
40	7 7	16 47	0 30	1 35	15 10	2.6	2 35	1.3
45	7 22	16 32	0 33	1 44	15 11	2.7	2 35	1.1
50	7 39	16 14	0 37	1 56	15 14	2.9	2 35	1.0
55	8 2	15 51	0 43	2 12	15 16	3.1	2 35	.8
60	8 34	15 20	0 53	2 37	15 20	3.4	2 35	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	52 3.8	126 0	19.7	-81	18 15.5	-15 32.8	323 46.7	-22 18.4
2	81 7.0	127 0	3.5	116	48 21.0	-15 32.6	353 51.9	-22 18.4
4	110 10.3	127 0	26.8	116	78 26.5	-15 32.5	23 57.2	-22 18.4
6	139 13.7	127 0	50.0	116	108 32.0	-15 32.3	54 2.4	-22 18.5
8	168 17.2	128 1	13.1	115	138 37.5	-15 32.2	84 7.6	-22 18.5
10	197 20.7	128 1	36.2	115	168 43.1	-15 32.0	114 12.8	-22 18.5
12	226 24.3	128 1	59.2	115	198 48.6	-15 31.9	144 18.0	-22 18.5
14	255 28.0	129 2	22.2	114	228 54.1	-15 31.7	174 23.3	-22 18.5
16	284 31.7	129 2	45.1	114	258 59.6	-15 31.6	204 28.5	-22 18.6
18	313 35.5	129 3	7.9	114	289 5.1	-15 31.4	234 33.7	-22 18.6
20	342 39.3	129 3	30.6	113	319 10.6	-15 31.3	264 38.9	-22 18.6
22	11 43.1	129 3	53.2	113	349 16.1	-15 31.1	294 44.2	-22 18.6
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s / ' / "	h min	h min	min / ' / "	° / ' / "	h min		
00	3 7.2	-.3	15.8	T _m	21 12	1.9	57.1	15.6	
12	3 4.2	T _{m☉}	11 h 56.9 min	Starost	9.5 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	4 14	.1	54	-1.4	♄	2 24	.0	81	-2.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 45.3	21 4.6	243 30.8	145 1.7	24 58.2	297 3.0	-21 48.6
2	210 45.2	21 5.5	273 35.8	175 .1	24 58.0	327 6.2	-21 48.5
4	240 45.0	21 6.3	303 40.7	204 58.4	24 57.8	357 9.3	-21 48.4
6	270 44.9	21 7.2	333 45.6	234 56.8	24 57.6	27 12.5	-21 48.3
8	300 44.8	21 8.1	3 50.5	264 55.2	24 57.3	57 15.6	-21 48.2
10	330 44.6	21 8.9	33 55.5	294 53.6	24 57.1	87 18.8	-21 48.1
12	0 44.5	21 9.8	64 .4	324 51.9	24 56.8	117 21.9	-21 48.0
14	30 44.4	21 10.6	94 5.3	354 50.3	24 56.6	147 25.1	-21 47.9
16	60 44.2	21 11.5	124 10.3	24 48.7	24 56.3	177 28.3	-21 47.8
18	90 44.1	21 12.3	154 15.2	54 47.1	24 56.1	207 31.4	-21 47.7
20	120 43.9	21 13.2	184 20.1	84 45.5	24 55.8	237 34.6	-21 47.6
22	150 43.8	21 14.0	214 25.0	114 43.8	24 55.5	267 37.8	-21 47.5
Δ	-1	4		-8	-1	16	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 59	20 56	1 16	: : :	14 57	.6	3 58	3.3
55	3 36	20 19	0 52	: : :	15 5	.9	3 52	3.1
50	4 1	19 54	0 42	3 16	15 12	1.0	3 47	2.9
45	4 21	19 34	0 36	2 19	15 18	1.2	3 43	2.7
40	4 36	19 18	0 32	1 56	15 22	1.3	3 40	2.6
35	4 50	19 5	0 29	1 43	15 26	1.4	3 37	2.5
30	5 1	18 53	0 27	1 33	15 30	1.5	3 34	2.4
20	5 21	18 33	0 24	1 22	15 36	1.7	3 30	2.2
10	5 38	18 16	0 23	1 16	15 42	1.8	3 26	2.1
0	5 53	18 1	0 22	1 14	15 47	1.9	3 23	1.9
10	6 9	17 45	0 22	1 14	15 52	2.1	3 19	1.8
20	6 26	17 28	0 24	1 17	15 58	2.2	3 15	1.7
30	6 44	17 10	0 26	1 24	16 4	2.4	3 11	1.5
35	6 55	16 59	0 28	1 29	16 8	2.5	3 9	1.4
40	7 8	16 46	0 30	1 36	16 12	2.6	3 6	1.3
45	7 23	16 31	0 33	1 44	16 17	2.7	3 3	1.2
50	7 41	16 13	0 37	1 56	16 23	2.8	2 59	1.0
55	8 4	15 50	0 43	2 13	16 31	3.0	2 54	.8
60	8 36	15 18	0 53	2 37	16 40	3.3	2 48	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	40 47.0	129 4	15.7	112	19 21.6	-15 31.0	324 49.4	-22 18.6
2	69 50.9	130 4	38.1	111	49 27.1	-15 30.8	354 54.6	-22 18.6
4	98 54.8	130 5	.4	111	79 32.6	-15 30.7	24 59.8	-22 18.7
6	127 58.7	130 5	22.5	110	109 38.1	-15 30.5	55 5.1	-22 18.7
8	157 2.6	130 5	44.6	109	139 43.6	-15 30.4	85 10.3	-22 18.7
10	186 6.6	130 6	6.5	109	169 49.1	-15 30.2	115 15.5	-22 18.7
12	215 10.5	130 6	28.2	108	199 54.6	-15 30.1	145 20.7	-22 18.7
14	244 14.4	130 6	49.8	107	230 .1	-15 29.9	175 26.0	-22 18.8
16	273 18.4	130 7	11.2	106	260 5.6	-15 29.7	205 31.2	-22 18.8
18	302 22.3	129 7	32.5	106	290 11.1	-15 29.6	235 36.4	-22 18.8
20	331 26.2	129 7	53.6	105	320 16.6	-15 29.4	265 41.6	-22 18.8
22	0 30.1	129 8	14.6	104	350 22.1	-15 29.3	295 46.9	-22 18.8
Δ					28	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s / ' / "	h min	h min	min / ' / "	° / ' / "	h min		
00	3 1.2	-.3	15.8	T _m	21 58	2.0	56.6	15.4	
12	2 57.9	T _{m☉}	11 h 57.0 min	Starost	10.5 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	4 11	.1	54	-1.4	♄	2 20	.0	81	-2.0

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	180	43.7	21	14.9	244	30.0	144	42.2	24	55.2	297	41.0 -21 47.4	
2	210	43.5	21	15.7	274	34.9	174	40.6	24	55.0	327	44.2 -21 47.3	
4	240	43.4	21	16.6	304	39.8	204	39.0	24	54.7	357	47.3 -21 47.2	
6	270	43.2	21	17.4	334	44.8	234	37.4	24	54.4	27	50.5 -21 47.1	
8	300	43.1	21	18.2	4	49.7	264	35.8	24	54.1	57	53.7 -21 47.0	
10	330	43.0	21	19.1	34	54.6	294	34.1	24	53.8	87	56.9 -21 46.9	
12	0	42.8	21	19.9	64	59.5	324	32.5	24	53.5	118	.1 -21 46.8	
14	30	42.7	21	20.7	95	4.5	354	30.9	24	53.1	148	3.3 -21 46.7	
16	60	42.5	21	21.6	125	9.4	24	29.3	24	52.8	178	6.5 -21 46.6	
18	90	42.4	21	22.4	155	14.3	54	27.7	24	52.5	208	9.7 -21 46.5	
20	120	42.2	21	23.2	185	19.3	84	26.1	24	52.2	238	12.9 -21 46.4	
22	150	42.1	21	24.0	215	24.2	114	24.5	24	51.9	268	16.2 -21 46.3	
Δ		-1		4			-8		-2		16		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 58	20 58	1 18	:	15 12	.7	5 18	3.3
55	3 34	20 21	0 53	:	15 26	1.0	5 6	3.0
50	4 0	19 55	0 42	:	15 37	1.2	4 56	2.8
45	4 20	19 35	0 36	2 20	15 46	1.3	4 48	2.7
40	4 36	19 19	0 32	1 57	15 54	1.4	4 42	2.5
35	4 49	19 5	0 29	1 43	16 0	1.5	4 36	2.4
30	5 1	18 54	0 27	1 34	16 6	1.6	4 32	2.4
20	5 21	18 34	0 24	1 22	16 16	1.7	4 23	2.2
10	5 38	18 17	0 23	1 16	16 25	1.8	4 16	2.1
0	5 54	18 1	0 22	1 14	16 33	2.0	4 9	1.9
10	6 9	17 45	0 22	1 14	16 42	2.1	4 2	1.8
20	6 26	17 28	0 24	1 18	16 51	2.2	3 55	1.7
30	6 45	17 9	0 26	1 24	17 1	2.3	3 47	1.5
35	6 56	16 58	0 28	1 29	17 7	2.4	3 42	1.5
40	7 9	16 45	0 30	1 36	17 14	2.5	3 37	1.4
45	7 23	16 31	0 33	1 45	17 22	2.6	3 30	1.2
50	7 42	16 12	0 37	1 56	17 31	2.8	3 23	1.1
55	8 5	15 49	0 43	2 13	17 43	3.0	3 14	.9
60	8 38	15 16	0 53	2 38	17 59	3.2	3 2	.7
S								

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	29	33.9	129	8	35.3	103	20	27.6	-15	29.1	325	52.1 -22 18.9	
2	58	37.7	129	8	55.9	102	50	33.1	-15	29.0	355	57.3 -22 18.9	
4	87	41.5	129	9	16.3	101	80	38.6	-15	28.8	26	2.6 -22 18.9	
6	116	45.2	129	9	36.5	100	110	44.1	-15	28.7	56	7.8 -22 18.9	
8	145	48.9	128	9	56.5	99	140	49.6	-15	28.6	86	13.0 -22 18.9	
10	174	52.6	128	10	16.2	98	170	55.1	-15	28.4	116	18.3 -22 19.0	
12	203	56.2	128	10	35.8	97	201	.6	-15	28.3	146	23.5 -22 19.0	
14	232	59.8	128	10	55.1	96	231	6.1	-15	28.1	176	28.7 -22 19.0	
16	262	3.3	127	11	14.2	94	261	11.6	-15	28.0	206	34.0 -22 19.0	
18	291	6.7	127	11	33.1	93	291	17.1	-15	27.8	236	39.2 -22 19.0	
20	320	10.1	127	11	51.7	92	321	22.6	-15	27.7	266	44.4 -22 19.1	
22	349	13.5	126	12	10.1	91	351	28.1	-15	27.5	296	49.7 -22 19.1	
Δ							27		1		26		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	2 54.7	-.3	15.8	T _m	22 45	2.0	56.1 15.3		
12	2 51.2	T _{m☉}	11 h 57.1 min	Starost	11.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 22	.1	260	-3.4	♄	22 34	.0	136	-2.0
♂	4 9	.1	53	-1.4	♂	2 16	.0	81	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	180	41.9	21	24.8	245	29.1	144	22.9	24	51.5	298	19.4 -21 46.2	
2	210	41.8	21	25.6	275	34.0	174	21.3	24	51.2	328	22.6 -21 46.1	
4	240	41.6	21	26.4	305	39.0	204	19.7	24	50.8	358	25.8 -21 46.1	
6	270	41.5	21	27.3	335	43.9	234	18.1	24	50.5	28	29.1 -21 46.0	
8	300	41.3	21	28.1	5	48.8	264	16.5	24	50.1	58	32.3 -21 45.9	
10	330	41.2	21	28.9	35	53.8	294	14.9	24	49.8	88	35.5 -21 45.8	
12	0	41.0	21	29.7	65	58.7	324	13.3	24	49.4	118	38.8 -21 45.7	
14	30	40.8	21	30.5	96	3.6	354	11.7	24	49.0	148	42.0 -21 45.6	
16	60	40.7	21	31.2	126	8.5	24	10.1	24	48.6	178	45.2 -21 45.5	
18	90	40.5	21	32.0	156	13.5	54	8.5	24	48.3	208	48.5 -21 45.5	
20	120	40.4	21	32.8	186	18.4	84	6.9	24	47.9	238	51.7 -21 45.4	
22	150	40.2	21	33.6	216	23.3	114	5.3	24	47.5	268	55.0 -21 45.3	
Δ		-1		4			-8		-2		16		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 56	21 0	1 19	:	15 29	.9	6 36	3.1
55	3 33	20 22	0 53	:	15 50	1.2	6 18	2.9
50	3 59	19 56	0 42	3 26	16 5	1.3	6 3	2.7
45	4 19	19 36	0 36	2 21	16 17	1.4	5 52	2.6
40	4 35	19 20	0 32	1 57	16 28	1.5	5 43	2.5
35	4 49	19 6	0 29	1 43	16 36	1.6	5 35	2.4
30	5 1	18 54	0 27	1 34	16 44	1.7	5 28	2.3
20	5 20	18 34	0 24	1 22	16 57	1.8	5 16	2.2
10	5 38	18 17	0 23	1 16	17 9	1.9	5 6	2.1
0	5 54	18 1	0 22	1 14	17 20	2.0	4 56	2.0
10	6 9	17 45	0 23	1 14	17 31	2.1	4 46	1.9
20	6 26	17 28	0 24	1 18	17 43	2.2	4 36	1.8
30	6 45	17 9	0 26	1 24	17 57	2.3	4 24	1.6
35	6 57	16 58	0 28	1 29	18 5	2.4	4 17	1.6
40	7 9	16 45	0 30	1 36	18 14	2.4	4 9	1.5
45	7 24	16 30	0 33	1 45	18 25	2.5	4 0	1.4
50	7 43	16 11	0 37	1 57	18 38	2.7	3 49	1.2
55	8 6	15 48	0 43	2 13	18 54	2.8	3 36	1.1
60	8 39	15 15	0 54	2 38	19 16	3.1	3 18	.8
S								

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	18	16.7	126	12	28.3	89	21	33.6	-15	27.4	326	54.9 -22 19.1	
2	47	19.9	126	12	46.2	88	51	39.1	-15	27.2	357	.1 -22 19.1	
4	76	23.1	125	13	3.8	87	81	44.6	-15	27.1	27	5.4 -22 19.1	
6	105	26.1	125	13	21.2	85	111	50.0	-15	26.9	57	10.6 -22 19.1	
8	134	29.1	125	13	38.2	84	141	55.5	-15	26.8	87	15.8 -22 19.2	
10	163	32.0	124	13	55.1	83	172	1.0	-15	26.6	117	21.1 -22 19.2	
12	192	34.9	124	14	11.6	81	202	6.5	-15	26.5	147	26.3 -22 19.2	
14	221	37.7	124	14	27.8	80	232	12.0	-15	26.3	177	31.5 -22 19.2	
16	250	40.4	123	14	43.8	78	262	17.5	-15	26.2	207	36.8 -22 19.2	
18	279	43.0	123	14	59.5	77	292	23.0	-15	26.0	237	42.0 -22 19.3	
20	308	45.6	122	15	14.8	75	322	28.5	-15	25.9	267	47.3 -22 19.3	
22	337	48.1	122	15	29.9	74	352	33.9	-15	25.8	297	52.5 -22 19.3	
Δ							27		1		26		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	2 47.7	-.3	15.8	T _m	23 32	2.0	55.6 15.2		
12	2 44.0	T _{m☉}	11 h 57.3 min	Starost	12.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 23	.1	259	-3.4	♄	22 30	.0		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	40.1	21	34.4	246	28.3	144	3.7	24	47.1	298	58.3	-21	45.2	
2	210	39.9	21	35.2	276	33.2	174	2.1	24	46.7	329	1.5	-21	45.1	
4	240	39.7	21	35.9	306	38.1	204	.5	24	46.3	359	4.8	-21	45.1	
6	270	39.6	21	36.7	336	43.0	233	58.9	24	45.9	29	8.0	-21	45.0	
8	300	39.4	21	37.5	6	48.0	263	57.4	24	45.5	59	11.3	-21	44.9	
10	330	39.2	21	38.3	36	52.9	293	55.8	24	45.0	89	14.6	-21	44.8	
12	0	39.1	21	39.0	66	57.8	323	54.2	24	44.6	119	17.9	-21	44.8	
14	30	38.9	21	39.8	97	2.8	353	52.6	24	44.2	149	21.2	-21	44.7	
16	60	38.8	21	40.6	127	7.7	23	51.0	24	43.8	179	24.4	-21	44.6	
18	90	38.6	21	41.3	157	12.6	53	49.5	24	43.3	209	27.7	-21	44.5	
20	120	38.4	21	42.1	187	17.5	83	47.9	24	42.9	239	31.0	-21	44.5	
22	150	38.3	21	42.8	217	22.5	113	46.3	24	42.4	269	34.3	-21	44.4	
Δ		-1		4				-8		-2		16			0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	6	50.5	122	15	44.7	72	22	39.4	-15	25.6	327	57.7	-22	19.3		
2	35	52.8	121	15	59.1	71	52	44.9	-15	25.5	358	3.0	-22	19.3		
4	64	55.1	121	16	13.2	69	82	50.4	-15	25.3	28	8.2	-22	19.4		
6	93	57.2	121	16	27.0	67	112	55.9	-15	25.2	58	13.5	-22	19.4		
8	122	59.3	120	16	40.5	66	143	1.3	-15	25.0	88	18.7	-22	19.4		
10	152	1.4	120	16	53.6	64	173	6.8	-15	24.9	118	24.0	-22	19.4		
12	181	3.4	119	17	6.4	62	203	12.3	-15	24.7	148	29.2	-22	19.4		
14	210	5.2	119	17	18.9	61	233	17.8	-15	24.6	178	34.4	-22	19.5		
16	239	7.1	119	17	31.0	59	263	23.3	-15	24.5	208	39.7	-22	19.5		
18	268	8.8	118	17	42.8	57	293	28.7	-15	24.3	238	44.9	-22	19.5		
20	297	10.5	118	17	54.3	55	323	34.2	-15	24.2	268	50.2	-22	19.5		
22	326	12.2	118	18	5.4	54	353	39.7	-15	24.0	298	55.4	-22	19.5		
Δ								27		1		26				0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 54	21 2	1 20	: : :	15 52	1.2	7 52	2.9
55	3 32	20 24	0 53	: : :	16 18	1.4	7 27	2.7
50	3 58	19 57	0 42	3 32	16 37	1.5	7 9	2.6
45	4 18	19 37	0 36	2 22	16 52	1.6	6 54	2.5
40	4 35	19 20	0 32	1 58	17 4	1.7	6 43	2.4
35	4 48	19 7	0 29	1 44	17 15	1.7	6 33	2.3
30	5 0	18 55	0 27	1 34	17 24	1.8	6 24	2.3
20	5 20	18 35	0 24	1 23	17 41	1.9	6 9	2.2
10	5 38	18 17	0 23	1 17	17 55	2.0	5 56	2.1
0	5 54	18 1	0 22	1 14	18 8	2.0	5 43	2.0
10	6 10	17 45	0 23	1 15	18 21	2.1	5 31	1.9
20	6 27	17 28	0 24	1 18	18 36	2.2	5 18	1.8
30	6 46	17 9	0 26	1 24	18 52	2.2	5 3	1.7
35	6 57	16 57	0 28	1 29	19 2	2.3	4 54	1.7
40	7 10	16 44	0 30	1 36	19 13	2.3	4 44	1.6
45	7 25	16 29	0 33	1 45	19 26	2.4	4 33	1.5
50	7 44	16 11	0 37	1 57	19 42	2.5	4 19	1.4
55	8 8	15 47	0 44	2 14	20 2	2.6	4 1	1.3
60	8 41	15 13	0 54	2 39	20 30	2.8	3 38	1.0
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	'	h min	min	'	'
00	2 40.2	-.3	15.8	T _m	1.0	55.2	15.0
12	2 36.3	T _{m☉}	11 h 57.4 min	Starost	13.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 25	.1	258	-3.4	♄	22 25	.0	136	-2.0
♂	4 4	.1	52	-1.5	♅	2 8	.0	81	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	38.1	21	43.6	247	27.4	143	44.7	24	42.0	299	37.6	-21	44.3	
2	210	37.9	21	44.3	277	32.3	173	43.1	24	41.5	329	40.9	-21	44.3	
4	240	37.7	21	45.1	307	37.2	203	41.6	24	41.1	359	44.2	-21	44.2	
6	270	37.6	21	45.8	337	42.2	233	40.0	24	40.6	29	47.5	-21	44.1	
8	300	37.4	21	46.6	7	47.1	263	38.4	24	40.1	59	50.8	-21	44.1	
10	330	37.2	21	47.3	37	52.0	293	36.9	24	39.6	89	54.2	-21	44.0	
12	0	37.1	21	48.0	67	57.0	323	35.3	24	39.2	119	57.5	-21	43.9	
14	30	36.9	21	48.8	98	1.9	353	33.7	24	38.7	150	.8	-21	43.9	
16	60	36.7	21	49.5	128	6.8	23	32.2	24	38.2	180	4.1	-21	43.8	
18	90	36.5	21	50.2	158	11.7	53	30.6	24	37.7	210	7.5	-21	43.8	
20	120	36.4	21	51.0	188	16.7	83	29.0	24	37.2	240	10.8	-21	43.7	
22	150	36.2	21	51.7	218	21.6	113	27.5	24	36.7	270	14.1	-21	43.6	
Δ		-1		4				-8		-2		17			0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	355	13.7	118	18	16.1	52	23	45.2	-15	23.9	329	.7	-22	19.6		
2	24	15.3	117	18	26.5	50	53	50.6	-15	23.7	359	5.9	-22	19.6		
4	53	16.7	117	18	36.5	48	83	56.1	-15	23.6	29	11.2	-22	19.6		
6	82	18.1	117	18	46.1	46	114	1.6	-15	23.5	59	16.4	-22	19.6		
8	111	19.5	117	18	55.4	45	144	7.1	-15	23.3	89	21.7	-22	19.6		
10	140	20.8	116	19	4.3	43	174	12.5	-15	23.2	119	26.9	-22	19.7		
12	169	22.0	116	19	12.9	41	204	18.0	-15	23.0	149	32.2	-22	19.7		
14	198	23.3	116	19	21.0	39	234	23.5	-15	22.9	179	37.4	-22	19.7		
16	227	24.4	116	19	28.8	37	264	28.9	-15	22.7	209	42.6	-22	19.7		
18	256	25.6	116	19	36.2	35	294	34.4	-15	22.6	239	47.9	-22	19.7		
20	285	26.7	115	19	43.3	33	324	39.9	-15	22.5	269	53.1	-22	19.8		
22	314	27.8	115	19	49.9	31	354	45.3	-15	22.3	299	58.4	-22	19.8		
Δ								27		1		26				0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 53	21 4	1 22	: : :	16 21	1.6	9 2	2.6
55	3 31	20 25	0 54	: : :	16 51	1.7	8 33	2.5
50	3 58	19 58	0 43	3 40	17 13	1.8	8 11	2.4
45	4 18	19 38	0 36	2 23	17 31	1.8	7 54	2.3
40	4 34	19 21	0 32	1 58	17 45	1.9	7 40	2.3
35	4 48	19 7	0 29	1 44	17 57	1.9	7 29	2.2
30	4 60	18 55	0 27	1 34	18 8	1.9	7 18	2.2
20	5 20	18 35	0 24	1 23	18 26	2.0	7 1	2.1
10	5 38	18 17	0 24	1 17	18 42	2.0	6 46	2.1
0	5 54	18 1	0 22	1 14	18 57	2.0	6 31	2.0
10	6 10	17 45	0 23	1 15	19 12	2.1	6 17	2.0
20	6 27	17 28	0 24	1 18	19 28	2.1	6 2	1.9
30	6 47	17 8	0 26	1 24	19 46	2.1	5 45	1.9
35	6 58	16 57	0 28	1 30	19 57	2.2	5 34	1.8
40	7 11	16 44	0 30	1 36	20 9	2.2	5 23	1.8
45	7 26	16 29	0 33	1 45	20 24	2.2	5 9	1.7
50	7 45	16 10	0 37	1 57	20 42	2.3	4 53	1.6
55	8 9	15 46	0 44	2 14	21 5	2.3	4 32	1.5
60	8 43	15 12	0 54					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	36.0	21	52.4	248	26.5	143	25.9	24	36.2	300	17.5	-21	43.6	
2	210	35.8	21	53.1	278	31.5	173	24.4	24	35.7	330	20.8	-21	43.5	
4	240	35.6	21	53.8	308	36.4	203	22.8	24	35.1	0	24.2	-21	43.5	
6	270	35.5	21	54.5	338	41.3	233	21.2	24	34.6	30	27.5	-21	43.4	
8	300	35.3	21	55.3	8	46.2	263	19.7	24	34.1	60	30.9	-21	43.4	
10	330	35.1	21	56.0	38	51.2	293	18.1	24	33.6	90	34.2	-21	43.3	
12	0	34.9	21	56.7	68	56.1	323	16.6	24	33.0	120	37.6	-21	43.2	
14	30	34.7	21	57.4	99	1.0	353	15.0	24	32.5	150	40.9	-21	43.2	
16	60	34.6	21	58.1	129	6.0	23	13.5	24	31.9	180	44.3	-21	43.1	
18	90	34.4	21	58.8	159	10.9	53	11.9	24	31.4	210	47.7	-21	43.1	
20	120	34.2	21	59.5	189	15.8	83	10.4	24	30.8	240	51.1	-21	43.0	
22	150	34.0	22	.1	219	20.7	113	8.9	24	30.3	270	54.4	-21	43.0	
Δ		-1		4				-8		-3		17			0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 51	21 6	1 23	:::	16 58	2.0	10 5	2.2
55	3 30	20 26	0 54	:::	17 32	2.0	9 32	2.2
50	3 57	19 59	0 43	:::	17 56	2.0	9 8	2.1
45	4 17	19 39	0 36	2 24	18 14	2.0	8 50	2.1
40	4 34	19 22	0 32	1 59	18 29	2.0	8 35	2.1
35	4 48	19 8	0 29	1 44	18 42	2.0	8 22	2.1
30	4 60	18 56	0 27	1 35	18 54	2.0	8 11	2.1
20	5 20	18 35	0 24	1 23	19 13	2.0	7 52	2.1
10	5 38	18 18	0 23	1 17	19 30	2.0	7 36	2.0
0	5 54	18 1	0 22	1 14	19 45	2.0	7 20	2.0
10	6 10	17 45	0 23	1 15	20 1	2.0	7 5	2.0
20	6 27	17 28	0 24	1 18	20 18	2.0	6 48	2.0
30	6 47	17 8	0 26	1 25	20 37	2.0	6 29	2.0
35	6 59	16 57	0 28	1 30	20 49	2.0	6 18	2.0
40	7 12	16 44	0 30	1 36	21 2	2.0	6 6	1.9
45	7 27	16 28	0 33	1 45	21 17	2.0	5 51	1.9
50	7 46	16 9	0 37	1 57	21 36	2.0	5 32	1.9
55	8 10	15 45	0 44	2 14	22 1	2.0	5 9	1.8
60	8 45	15 10	0 54	2 40	22 35	2.0	4 36	1.8

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	343	28.8	115	19	56.2	29	24	50.8	-15	22.2	330	3.7	-22	19.8	
2	12	29.9	115	20	2.1	27	54	56.3	-15	22.0	0	8.9	-22	19.8	
4	41	30.9	115	20	7.6	26	85	1.7	-15	21.9	30	14.2	-22	19.8	
6	70	31.9	115	20	12.7	24	115	7.2	-15	21.8	60	19.4	-22	19.9	
8	99	32.9	115	20	17.4	22	145	12.7	-15	21.6	90	24.7	-22	19.9	
10	128	33.9	115	20	21.8	20	175	18.1	-15	21.5	120	29.9	-22	19.9	
12	157	34.9	115	20	25.7	18	205	23.6	-15	21.3	150	35.2	-22	19.9	
14	186	35.9	115	20	29.3	16	235	29.0	-15	21.2	180	40.4	-22	19.9	
16	215	36.9	115	20	32.4	14	265	34.5	-15	21.1	210	45.7	-22	20.0	
18	244	37.9	115	20	35.2	12	295	40.0	-15	20.9	240	50.9	-22	20.0	
20	273	38.9	115	20	37.6	10	325	45.4	-15	20.8	270	56.2	-22	20.0	
22	302	40.0	115	20	39.5	8	355	50.9	-15	20.7	301	1.4	-22	20.0	
Δ								27		1		26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	2 24.0	.4	15.8	T _m	1 8	2.0	54.5	14.9
12	2 19.6	T _{m☉}	11 h 57.7 min	Starost	15.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h min	'	°	°	°
♀	14 27	.1	255	-3.4	♃	22 17	.0	136	-2.0
♂	3 58	.1	52	-1.5	♄	1 59	.0	82	.4

1. JUN

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	33.8	22	.8	249	25.7	143	7.3	24	29.7	300	57.8	-21	43.0	
2	210	33.6	22	1.5	279	30.6	173	5.8	24	29.1	331	1.2	-21	42.9	
4	240	33.4	22	2.2	309	35.5	203	4.2	24	28.5	1	4.6	-21	42.9	
6	270	33.3	22	2.9	339	40.5	233	2.7	24	28.0	31	8.0	-21	42.8	
8	300	33.1	22	3.6	9	45.4	263	1.2	24	27.4	61	11.4	-21	42.8	
10	330	32.9	22	4.2	39	50.3	292	59.6	24	26.8	91	14.8	-21	42.7	
12	0	32.7	22	4.9	69	55.2	322	58.1	24	26.2	121	18.2	-21	42.7	
14	30	32.5	22	5.6	100	.2	352	56.6	24	25.6	151	21.6	-21	42.7	
16	60	32.3	22	6.2	130	5.1	22	55.0	24	25.0	181	25.0	-21	42.6	
18	90	32.1	22	6.9	160	10.0	52	53.5	24	24.4	211	28.4	-21	42.6	
20	120	31.9	22	7.6	190	15.0	82	52.0	24	23.8	241	31.8	-21	42.5	
22	150	31.7	22	8.2	220	19.9	112	50.5	24	23.1	271	35.3	-21	42.5	
Δ		-1		3				-8		-3		17			0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 49	21 7	1 25	:::	17 46	2.4	10 57	1.7
55	3 29	20 28	0 54	:::	18 20	2.3	10 24	1.8
50	3 56	20 0	0 43	:::	18 44	2.2	9 59	1.9
45	4 17	19 39	0 36	2 24	19 3	2.2	9 41	1.9
40	4 33	19 23	0 32	1 59	19 18	2.2	9 25	1.9
35	4 47	19 9	0 29	1 44	19 31	2.1	9 12	1.9
30	4 59	18 56	0 27	1 35	19 42	2.1	9 1	1.9
20	5 20	18 36	0 24	1 23	20 1	2.1	8 42	2.0
10	5 38	18 18	0 23	1 17	20 18	2.0	8 25	2.0
0	5 54	18 1	0 22	1 14	20 34	2.0	8 9	2.0
10	6 11	17 45	0 23	1 15	20 50	2.0	7 53	2.0
20	6 28	17 28	0 24	1 18	21 6	1.9	7 36	2.1
30	6 48	17 8	0 26	1 25	21 26	1.9	7 17	2.1
35	6 59	16 56	0 28	1 30	21 37	1.8	7 5	2.1
40	7 12	16 43	0 30	1 36	21 50	1.8	6 52	2.1
45	7 28	16 28	0 33	1 45	22 5	1.8	6 37	2.1
50	7 47	16 8	0 38	1 57	22 24	1.7	6 18	2.1
55	8 12	15 44	0 44	2 14	22 48	1.6	5 53	2.2
60	8 46	15 9	0 55	2 40	23 22	2.0	5 19	2.2

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	331	41.1	115	20	41.1	6	25	56.3	-15	20.5	331	6.7	-22	20.1	
2	0	42.1	116	20	42.3	4	56	1.8	-15	20.4	1	12.0	-22	20.1	
4	29	43.3	116	20	43.2	2	86	7.3	-15	20.2	31	17.2	-22	20.1	
6	58	44.4	116	20	43.6	0	116	12.7	-15	20.1	61	22.5	-22	20.1	
8	87	45.6	116	20	43.6	-2	146	18.2	-15	20.0	91	27.7	-22	20.1	
10	116	46.9	116	20	43.3	-4	176	23.6	-15	19.8	121	33.0	-22	20.2	
12	145	48.2	117	20	42.5	-6	206	29.1	-15	19.7	151	38.2	-22	20.2	
14	174	49.5	117	20	41.4	-8	236	34.5	-15	19.6	181	43.5	-22	20.2	
16	203	50.9	117	20	39.9	-10	266	40.0	-15	19.4	211	48.8	-22	20.2	
18	232	52.4	118	20	37.9	-11	296	45.4	-15	19.3	241	54.0	-22	20.2	
20	261	53.9	118	20	35.7	-13	326	50.9	-15	19.2	271	59.3	-22	20.3	
22	290	55.5	118	20	33.0	-15	356	56.3	-15	19.0	302	4.5	-22	20.3	
Δ								27		1		26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	2 15.3	.4	15.8	T _m	1 57	2.0	54.3	14.8
12	2 10.7	T _{m☉}	11 h 57.8 min	Starost	16.5 d	Faza	☉	

PLANETE							
Pl.	T _m </						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	31.5	22	8.9	250	24.8	142	48.9	24	22.5	301	38.7	-21	42.5	
2	210	31.3	22	9.5	280	29.7	172	47.4	24	21.9	331	42.1	-21	42.4	
4	240	31.1	22	10.2	310	34.7	202	45.9	24	21.3	1	45.6	-21	42.4	
6	270	30.9	22	10.8	340	39.6	232	44.4	24	20.6	31	49.0	-21	42.4	
8	300	30.7	22	11.5	10	44.5	262	42.9	24	20.0	61	52.4	-21	42.3	
10	330	30.5	22	12.1	40	49.4	292	41.4	24	19.3	91	55.9	-21	42.3	
12	0	30.3	22	12.8	70	54.4	322	39.8	24	18.7	121	59.3	-21	42.3	
14	30	30.1	22	13.4	100	59.3	352	38.3	24	18.0	152	2.8	-21	42.3	
16	60	29.9	22	14.0	131	4.2	22	36.8	24	17.4	182	6.2	-21	42.2	
18	90	29.7	22	14.7	161	9.2	52	35.3	24	16.7	212	9.7	-21	42.2	
20	120	29.5	22	15.3	191	14.1	82	33.8	24	16.0	242	13.2	-21	42.2	
22	150	29.3	22	15.9	221	19.0	112	32.3	24	15.3	272	16.6	-21	42.2	
Δ		-1		3				-8		-3			17		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 48	21 9	1 26	:::	18 44	2.7	11 39	1.3
55	3 28	20 29	0 55	:::	19 15	2.5	11 7	1.5
50	3 55	20 1	0 43	:::	19 38	2.4	10 44	1.6
45	4 16	19 40	0 36	2 25	19 56	2.3	10 26	1.7
40	4 33	19 23	0 32	1 59	20 10	2.3	10 11	1.7
35	4 47	19 9	0 29	1 45	20 22	2.2	9 59	1.8
30	4 59	18 57	0 27	1 35	20 33	2.2	9 48	1.8
20	5 20	18 36	0 24	1 23	20 51	2.1	9 29	1.9
10	5 38	18 18	0 23	1 17	21 7	2.0	9 13	1.9
0	5 54	18 2	0 22	1 14	21 22	2.0	8 57	2.0
10	6 11	17 45	0 23	1 15	21 37	1.9	8 42	2.0
20	6 28	17 28	0 24	1 18	21 52	1.8	8 25	2.1
30	6 48	17 8	0 26	1 25	22 11	1.7	8 6	2.1
35	6 60	16 56	0 28	1 30	22 21	1.7	7 55	2.2
40	7 13	16 43	0 30	1 37	22 33	1.6	7 43	2.2
45	7 29	16 27	0 33	1 45	22 48	1.6	7 27	2.3
50	7 48	16 8	0 38	1 58	23 5	1.5	7 9	2.3
55	8 13	15 43	0 44	2 15	23 27	1.9	6 45	2.4
60	8 48	15 8	0 55	2 41	...	.0	6 12	2.6

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	319	57.1	119	20	29.9	-17	27	1.8	-15	18.9	332	9.8	-22	20.3	
2	348	58.9	119	20	26.5	-19	57	7.2	-15	18.7	2	15.1	-22	20.3	
4	18	.7	119	20	22.7	-21	87	12.7	-15	18.6	32	20.3	-22	20.3	
6	47	2.5	120	20	18.5	-23	117	18.1	-15	18.5	62	25.6	-22	20.4	
8	76	4.5	120	20	14.0	-25	147	23.6	-15	18.3	92	30.8	-22	20.4	
10	105	6.5	121	20	9.0	-26	177	29.0	-15	18.2	122	36.1	-22	20.4	
12	134	8.6	121	20	3.7	-28	207	34.4	-15	18.1	152	41.4	-22	20.4	
14	163	10.9	122	19	58.1	-30	237	39.9	-15	17.9	182	46.6	-22	20.4	
16	192	13.2	122	19	52.0	-32	267	45.3	-15	17.8	212	51.9	-22	20.5	
18	221	15.6	122	19	45.6	-34	297	50.8	-15	17.7	242	57.2	-22	20.5	
20	250	18.1	123	19	38.9	-36	327	56.2	-15	17.5	273	2.4	-22	20.5	
22	279	20.6	123	19	31.8	-37	358	1.7	-15	17.4	303	7.7	-22	20.5	
Δ								27		1			26		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	2 6.1	.4	15.8	T _m	2 46	2.0	54.1 14.7
12	2 1.3	T _{m☉}	11 h 58.0 min	Starost	17.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	14 29	.1	252	-3.5	♃	22 8	.0	137	-2.0
♂	3 53	.1	51	-1.6	♄	1 51	.0	82	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	29.1	22	16.5	251	23.9	142	30.8	24	14.7	302	20.1	-21	42.1	
2	210	28.9	22	17.2	281	28.9	172	29.3	24	14.0	332	23.6	-21	42.1	
4	240	28.7	22	17.8	311	33.8	202	27.8	24	13.3	1	27.0	-21	42.1	
6	270	28.5	22	18.4	341	38.7	232	26.3	24	12.6	32	30.5	-21	42.1	
8	300	28.3	22	19.0	11	43.7	262	24.8	24	11.9	62	34.0	-21	42.1	
10	330	28.1	22	19.6	41	48.6	292	23.3	24	11.2	92	37.5	-21	42.0	
12	0	27.9	22	20.2	71	53.5	322	21.8	24	10.5	122	41.0	-21	42.0	
14	30	27.7	22	20.8	101	58.4	352	20.3	24	9.8	152	44.5	-21	42.0	
16	60	27.5	22	21.4	132	3.4	22	18.8	24	9.1	182	48.0	-21	42.0	
18	90	27.3	22	22.0	162	8.3	52	17.4	24	8.3	212	51.5	-21	42.0	
20	120	27.1	22	22.6	192	13.2	82	15.9	24	7.6	242	55.0	-21	42.0	
22	150	26.9	22	23.2	222	18.2	112	14.4	24	6.9	272	58.5	-21	42.0	
Δ		-1		3				-7		-4			17		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 47	21 11	1 27	:::	19 49	2.9	12 11	1.0
55	3 27	20 30	0 55	:::	20 16	2.7	11 43	1.2
50	3 55	20 2	0 43	:::	20 36	2.6	11 22	1.4
45	4 16	19 41	0 37	2 26	20 52	2.4	11 6	1.5
40	4 33	19 24	0 32	1 60	21 4	2.3	10 52	1.5
35	4 47	19 10	0 29	1 45	21 15	2.3	10 41	1.6
30	4 59	18 57	0 27	1 35	21 25	2.2	10 31	1.7
20	5 20	18 37	0 24	1 23	21 41	2.1	10 14	1.8
10	5 38	18 19	0 24	1 17	21 55	2.0	9 59	1.9
0	5 54	18 2	0 22	1 14	22 9	1.9	9 45	1.9
10	6 11	17 45	0 23	1 15	22 22	1.8	9 30	2.0
20	6 29	17 28	0 24	1 18	22 36	1.7	9 15	2.1
30	6 49	17 7	0 26	1 25	22 52	1.6	8 58	2.2
35	7 0	16 56	0 28	1 30	23 2	1.5	8 48	2.2
40	7 14	16 42	0 30	1 37	23 12	1.5	8 36	2.3
45	7 29	16 27	0 33	1 46	23 25	1.9	8 22	2.4
50	7 49	16 7	0 38	1 58	23 40	1.9	8 5	2.5
55	8 14	15 42	0 44	2 15	...	.0	7 44	2.6
60	8 49	15 7	0 55	2 41	0 -2	1.1	7 14	2.8

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	308	23.3	124	19	24.3	-39	28	7.1	-15	17.3	333	13.0	-22	20.6	
2	337	26.1	124	19	16.5	-41	58	12.5	-15	17.1	3	18.2	-22	20.6	
4	6	29.0	125	19	8.4	-43	88	18.0	-15	17.0	33	23.5	-22	20.6	
6	35	32.0	125	18	59.8	-44	118	23.4	-15	16.9	63	28.8	-22	20.6	
8	64	35.1	126	18	51.0	-46	148	28.8	-15	16.8	93	34.0	-22	20.6	
10	93	38.3	127	18	41.8	-48	178	34.3	-15	16.6	123	39.3	-22	20.7	
12	122	41.6	127	18	32.3	-49	208	39.7	-15	16.5	153	44.6	-22	20.7	
14	151	45.0	128	18	22.4	-51	238	45.1	-15	16.4	183	49.8	-22	20.7	
16	180	48.5	128	18	12.2	-53	268	50.6	-15	16.2	213	55.1	-22	20.7	
18	209	52.1	129	18	1.7	-54	298	56.0	-15	16.1	244	.4	-22	20.7	
20	238	55.9	129	17	50.9	-56	329	1.4	-15	16.0	274	5.6	-22	20.8	
22	267	59.7	130	17	39.7	-57	359	6.9	-15	15.8	304	10.9	-22	20.8	
Δ								27		1			26		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	1 56.6	.4	15.8	T _m	3 33	2.0	54.1

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	26.7	22	23.8	252	23.1	142	12.9	24	6.2	303	2.0	-21	41.9	
2	210	26.4	22	24.4	282	28.0	172	11.4	24	5.4	333	5.6	-21	41.9	
4	240	26.2	22	25.0	312	32.9	202	9.9	24	4.7	3	9.1	-21	41.9	
6	270	26.0	22	25.6	342	37.9	232	8.5	24	3.9	33	12.6	-21	41.9	
8	300	25.8	22	26.2	12	42.8	262	7.0	24	3.2	63	16.1	-21	41.9	
10	330	25.6	22	26.7	42	47.7	292	5.5	24	2.4	93	19.7	-21	41.9	
12	0	25.4	22	27.3	72	52.7	322	4.1	24	1.6	123	23.2	-21	41.9	
14	30	25.2	22	27.9	102	57.6	352	2.6	24	.9	153	26.8	-21	41.9	
16	60	24.9	22	28.5	133	2.5	22	1.1	24	.1	183	30.3	-21	41.9	
18	90	24.7	22	29.0	163	7.4	51	59.7	23	59.3	213	33.9	-21	41.9	
20	120	24.5	22	29.6	193	12.4	81	58.2	23	58.6	243	37.4	-21	41.9	
22	150	24.3	22	30.2	223	17.3	111	56.7	23	57.8	273	41.0	-21	41.9	
Δ		-1		3				-7		-4		18			0

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 45	21 12	1 29	:	20 59	3.1	12 35	.8
55	3 26	20 31	0 55	:	21 21	2.8	12 12	1.0
50	3 54	20 3	0 43	:	21 37	2.6	11 54	1.2
45	4 15	19 42	0 37	2 27	21 50	2.5	11 41	1.3
40	4 32	19 25	0 32	2 0	22 1	2.4	11 29	1.4
35	4 46	19 10	0 29	1 45	22 10	2.3	11 20	1.5
30	4 59	18 58	0 27	1 35	22 18	2.2	11 11	1.6
20	5 20	18 37	0 24	1 23	22 31	2.1	10 56	1.7
10	5 38	18 19	0 23	1 17	22 43	2.0	10 43	1.8
0	5 55	18 2	0 22	1 15	22 54	1.9	10 31	1.9
10	6 11	17 45	0 23	1 15	23 6	1.8	10 19	2.0
20	6 29	17 28	0 24	1 18	23 17	1.6	10 5	2.1
30	6 49	17 7	0 26	1 25	23 31	1.9	9 50	2.2
35	7 1	16 56	0 28	1 30	23 39	1.9	9 42	2.3
40	7 14	16 42	0 30	1 37	23 47	1.9	9 31	2.4
45	7 30	16 26	0 33	1 46	...	.0	9 20	2.5
50	7 50	16 7	0 38	1 58	...	.0	9 5	2.6
55	8 15	15 41	0 44	2 15	0 -1	1.1	8 47	2.8
60	8 51	15 5	0 55	2 42	0 25	.9	8 22	3.0

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	297	3.6	130	17	28.3	-59	29	12.3	-15	15.7	334	16.2	-22	20.8	
2	326	7.7	131	17	16.5	-60	59	17.7	-15	15.6	4	21.5	-22	20.8	
4	355	11.8	131	17	4.4	-62	89	23.1	-15	15.5	34	26.7	-22	20.9	
6	24	16.0	132	16	52.0	-64	119	28.6	-15	15.3	64	32.0	-22	20.9	
8	53	20.4	132	16	39.3	-65	149	34.0	-15	15.2	94	37.3	-22	20.9	
10	82	24.8	133	16	26.2	-67	179	39.4	-15	15.1	124	42.5	-22	20.9	
12	111	29.4	133	16	12.9	-68	209	44.8	-15	14.9	154	47.8	-22	20.9	
14	140	34.0	134	15	59.3	-69	239	50.3	-15	14.8	184	53.1	-22	21.0	
16	169	38.7	134	15	45.5	-71	269	55.7	-15	14.7	214	58.4	-22	21.0	
18	198	43.6	135	15	31.3	-72	300	1.1	-15	14.6	245	3.6	-22	21.0	
20	227	48.5	135	15	16.8	-74	330	6.5	-15	14.4	275	8.9	-22	21.0	
22	256	53.5	135	15	2.1	-75	0	12.0	-15	14.3	305	14.2	-22	21.0	
Δ								27		1		26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	'	h min	min	'	
00	1 46.6	-.4	15.8	T _m	4 20	1.9	54.2	14.8
12	1 41.5	T _{m☉}	11 h 58.3 min	Starost	19.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 32	.1	250	-3.5	♄	21 59	.0	137	-2.0
♂	3 47	.1	51	-1.7	♂	1 43	.0	82	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	24.1	22	30.7	253	22.2	141	55.3	23	57.0	303	44.5	-21	41.9	
2	210	23.9	22	31.3	283	27.2	171	53.8	23	56.2	333	48.1	-21	41.9	
4	240	23.6	22	31.8	313	32.1	201	52.4	23	55.4	3	51.7	-21	41.9	
6	270	23.4	22	32.4	343	37.0	231	50.9	23	54.6	33	55.3	-21	41.9	
8	300	23.2	22	32.9	13	41.9	261	49.4	23	53.8	63	58.8	-21	41.9	
10	330	23.0	22	33.5	43	46.9	291	48.0	23	53.0	94	2.4	-21	42.0	
12	0	22.8	22	34.0	73	51.8	321	46.6	23	52.1	124	6.0	-21	42.0	
14	30	22.5	22	34.5	103	56.7	351	45.1	23	51.3	154	9.6	-21	42.0	
16	60	22.3	22	35.1	134	1.7	21	43.7	23	50.5	184	13.2	-21	42.0	
18	90	22.1	22	35.6	164	6.6	51	42.2	23	49.7	214	16.8	-21	42.0	
20	120	21.9	22	36.2	194	11.5	81	40.8	23	48.8	244	20.4	-21	42.0	
22	150	21.6	22	36.7	224	16.4	111	39.3	23	48.0	274	24.0	-21	42.0	
Δ		-1		3				-7		-4		18			0

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 44	21 14	1 30	:	22 13	3.2	12 54	.6
55	3 25	20 32	0 56	:	22 29	2.9	12 36	.9
50	3 53	20 4	0 44	:	22 41	2.7	12 23	1.0
45	4 15	19 43	0 37	2 27	22 51	2.6	12 12	1.2
40	4 32	19 25	0 32	2 1	22 59	2.5	12 3	1.3
35	4 46	19 11	0 29	1 45	23 5	2.4	11 55	1.4
30	4 59	18 58	0 27	1 35	23 11	1.9	11 48	1.5
20	5 20	18 37	0 24	1 23	23 22	1.9	11 36	1.6
10	5 38	18 19	0 24	1 17	23 31	1.9	11 26	1.7
0	5 55	18 2	0 22	1 15	23 39	1.9	11 16	1.9
10	6 12	17 45	0 23	1 15	23 48	1.9	11 6	2.0
20	6 29	17 28	0 24	1 18	23 57	1.9	10 56	2.1
30	6 50	17 7	0 26	1 25	...	.0	10 44	2.2
35	7 1	16 55	0 28	1 30	...	.0	10 37	2.3
40	7 15	16 42	0 30	1 37	...	.0	10 29	2.4
45	7 31	16 26	0 33	1 46	0 -2	1.2	10 19	2.5
50	7 51	16 6	0 38	1 58	0 10	1.1	10 8	2.7
55	8 16	15 40	0 45	2 16	0 26	.9	9 53	2.9
60	8 52	15 4	0 56	2 42	0 47	.7	9 34	3.1

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	285	58.6	136	14	47.1	-76	30	17.4	-15	14.2	335	19.5	-22	21.1	
2	315	3.7	136	14	31.8	-78	60	22.8	-15	14.1	5	24.7	-22	21.1	
4	344	9.0	137	14	16.3	-79	90	28.2	-15	13.9	35	30.0	-22	21.1	
6	13	14.3	137	14	.5	-80	120	33.6	-15	13.8	65	35.3	-22	21.1	
8	42	19.7	137	13	44.4	-82	150	39.0	-15	13.7	95	40.6	-22	21.2	
10	71	25.2	138	13	28.1	-83	180	44.5	-15	13.6	125	45.8	-22	21.2	
12	100	30.7	138	13	11.5	-84	210	49.9	-15	13.4	155	51.1	-22	21.2	
14	129	36.3	138	12	54.7	-85	240	55.3	-15	13.3	185	56.4	-22	21.2	
16	158	42.0	139	12	37.6	-87	271	.7	-15	13.2	216	1.7	-22	21.2	
18	187	47.7	139	12	20.3	-88	301	6.1	-15	13.1	246	7.0	-22	21.3	
20	216	53.5	139	12	2.8	-89	331	11.5	-15	12.9	276	12.2	-22	21.3	
22	245	59.3	139	11	45.0	-90	1	16.9	-15	12.8	306	17.5	-22	21.3	
Δ								27		1		26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	'	h min	min	'	
00	1 36.3	-.4	15.8	T _m	5 5	1.9	54.5	14.8
12	1 31.0	T _{m☉}	11 h 58.5 min	Starost	20.5 d	Faza	☉	

PLANETE							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 21.4	22 37.2	254 21.4	141 37.9	23 47.1	304 27.6	-21 42.1
2	210 21.2	22 37.7	284 26.3	171 36.5	23 46.3	334 31.2	-21 42.1
4	240 21.0	22 38.2	314 31.2	201 35.0	23 45.4	4 34.8	-21 42.1
6	270 20.7	22 38.8	344 36.1	231 33.6	23 44.6	34 38.5	-21 42.1
8	300 20.5	22 39.3	14 41.1	261 32.2	23 43.7	64 42.1	-21 42.1
10	330 20.3	22 39.8	44 46.0	291 30.8	23 42.9	94 45.7	-21 42.2
12	0 20.1	22 40.3	74 50.9	321 29.3	23 42.0	124 49.4	-21 42.2
14	30 19.8	22 40.8	104 55.9	351 27.9	23 41.1	154 53.0	-21 42.2
16	60 19.6	22 41.3	135 .8	21 26.5	23 40.2	184 56.6	-21 42.2
18	90 19.4	22 41.8	165 5.7	51 25.1	23 39.3	215 .3	-21 42.3
20	120 19.1	22 42.3	195 10.6	81 23.6	23 38.5	245 3.9	-21 42.3
22	150 18.9	22 42.8	225 15.6	111 22.2	23 37.6	275 7.6	-21 42.3
Δ	-1	3		-7	-4	18	0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	275 5.1	139	11 27.0	-91	31 22.3	-15 12.7	336 22.8	-22 21.3
2	304 11.0	140	11 8.8	-92	61 27.7	-15 12.6	6 28.1	-22 21.3
4	333 17.0	140	10 50.4	-93	91 33.1	-15 12.4	36 33.3	-22 21.4
6	2 22.9	140	10 31.7	-94	121 38.5	-15 12.3	66 38.6	-22 21.4
8	31 28.9	140	10 12.8	-95	151 44.0	-15 12.2	96 43.9	-22 21.4
10	60 34.9	140	9 53.8	-96	181 49.4	-15 12.1	126 49.2	-22 21.4
12	89 40.9	140	9 34.5	-97	211 54.8	-15 12.0	156 54.5	-22 21.5
14	118 47.0	140	9 15.0	-98	242 .2	-15 11.8	186 59.8	-22 21.5
16	147 53.0	140	8 55.3	-99	272 5.6	-15 11.7	217 5.0	-22 21.5
18	176 59.0	140	8 35.5	-100	302 11.0	-15 11.6	247 10.3	-22 21.5
20	206 5.1	140	8 15.4	-101	332 16.4	-15 11.5	277 15.6	-22 21.5
22	235 11.1	140	7 55.2	-102	2 21.8	-15 11.4	307 20.9	-22 21.6
Δ					27	1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 43	21 15	1 32	:::	23 28	1.9	13 9	.6
55	3 24	20 33	0 56	:::	23 39	1.9	12 57	.8
50	3 53	20 5	0 44	:::	23 46	1.9	12 48	1.0
45	4 14	19 43	0 37	2 28	23 52	1.9	12 40	1.1
40	4 32	19 26	0 32	2 1	23 58	1.9	12 34	1.2
35	4 46	19 11	0 29	1 46	...	.0	12 29	1.3
30	4 59	18 59	0 27	1 36	23 56	2.3	12 24	1.4
20	5 20	18 38	0 24	1 23	...	.0	12 15	1.6
10	5 38	18 19	0 23	1 17	...	.0	12 8	1.7
0	5 55	18 2	0 22	1 15	...	.0	12 1	1.9
10	6 12	17 45	0 23	1 15	...	.0	11 54	2.0
20	6 30	17 28	0 24	1 18	...	.0	11 46	2.1
30	6 50	17 7	0 26	1 25	0 7	1.5	11 38	2.3
35	7 2	16 55	0 28	1 30	0 13	1.4	11 33	2.4
40	7 16	16 42	0 30	1 37	0 20	1.3	11 27	2.5
45	7 32	16 25	0 33	1 46	0 28	1.1	11 20	2.6
50	7 52	16 6	0 38	1 58	0 37	1.0	11 12	2.8
55	8 17	15 40	0 45	2 16	0 49	.8	11 2	2.9
60	8 54	15 3	0 56	2 43	1 4	.6	10 49	3.2
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	T _m	h min	min	'
00	1 25.7	-.5	15.8	T _m	5 50	1.9	54.9
12	1 20.2	T _m ☉	11 h 58.7 min	Starost	21.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 34	.1	247	-3.5	♃	21 51	.0	137	-2.0
♂	3 42	.1	50	-1.7	♄	1 34	.0	82	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 18.7	22 43.3	255 20.5	141 20.8	23 36.7	305 11.3	-21 42.4
2	210 18.4	22 43.8	285 25.4	171 19.4	23 35.8	335 14.9	-21 42.4
4	240 18.2	22 44.3	315 30.4	201 18.0	23 34.9	5 18.6	-21 42.4
6	270 18.0	22 44.8	345 35.3	231 16.6	23 33.9	35 22.3	-21 42.5
8	300 17.7	22 45.2	15 40.2	261 15.2	23 33.0	65 25.9	-21 42.5
10	330 17.5	22 45.7	45 45.1	291 13.8	23 32.1	95 29.6	-21 42.5
12	0 17.3	22 46.2	75 50.1	321 12.4	23 31.2	125 33.3	-21 42.6
14	30 17.0	22 46.7	105 55.0	351 11.0	23 30.3	155 37.0	-21 42.6
16	60 16.8	22 47.1	135 59.9	21 9.6	23 29.3	185 40.7	-21 42.6
18	90 16.6	22 47.6	166 4.9	51 8.2	23 28.4	215 44.4	-21 42.7
20	120 16.3	22 48.1	196 9.8	81 6.8	23 27.4	245 48.1	-21 42.7
22	150 16.1	22 48.5	226 14.7	111 5.4	23 26.5	275 51.8	-21 42.8
Δ	-1	2		-7	-5	18	0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	264 17.1	140	7 34.8	-103	32 27.2	-15 11.2	337 26.2	-22 21.6
2	293 23.0	140	7 14.2	-104	62 32.6	-15 11.1	7 31.5	-22 21.6
4	322 29.0	140	6 53.4	-105	92 38.0	-15 11.0	37 36.7	-22 21.6
6	351 34.9	139	6 32.5	-105	122 43.3	-15 10.9	67 42.0	-22 21.7
8	20 40.7	139	6 11.4	-106	152 48.7	-15 10.8	97 47.3	-22 21.7
10	49 46.6	139	5 50.2	-107	182 54.1	-15 10.6	127 52.6	-22 21.7
12	78 52.3	139	5 28.8	-108	212 59.5	-15 10.5	157 57.9	-22 21.7
14	107 58.0	138	5 7.3	-108	243 4.9	-15 10.4	188 3.2	-22 21.7
16	137 3.7	138	4 45.7	-109	273 10.3	-15 10.3	218 8.5	-22 21.8
18	166 9.2	137	4 23.9	-110	303 15.7	-15 10.2	248 13.7	-22 21.8
20	195 14.7	137	4 1.9	-110	333 21.1	-15 10.0	278 19.0	-22 21.8
22	224 20.1	137	3 39.9	-111	3 26.5	-15 9.9	308 24.3	-22 21.8
Δ					27	1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 42	21 17	1 33	:::	...	.0	13 23	.5
55	3 24	20 35	0 56	:::	...	.0	13 16	.8
50	3 52	20 6	0 44	:::	...	.0	13 11	1.0
45	4 14	19 44	0 37	2 29	...	.0	13 7	1.1
40	4 31	19 27	0 33	2 1	...	.0	13 4	1.2
35	4 46	19 12	0 29	1 46	0 2	2.4	13 1	1.3
30	4 58	18 59	0 27	1 36	...	.0	12 58	1.4
20	5 20	18 38	0 24	1 24	0 13	2.1	12 53	1.6
10	5 38	18 20	0 23	1 17	0 19	2.0	12 49	1.7
0	5 55	18 3	0 22	1 15	0 24	1.9	12 45	1.9
10	6 12	17 46	0 23	1 15	0 30	1.7	12 42	2.0
20	6 30	17 28	0 24	1 18	0 35	1.6	12 37	2.2
30	6 51	17 7	0 26	1 25	0 42	1.4	12 33	2.3
35	7 3	16 55	0 28	1 30	0 46	1.3	12 30	2.4
40	7 16	16 41	0 30	1 37	0 50	1.2	12 27	2.6
45	7 32	16 25	0 34	1 46	0 55	1.1	12 23	2.7
50	7 52	16 5	0 38	1 58	1 1	1.0	12 18	2.8
55	8 18	15 39	0 45	2 16	1 9	.8	12 13	3.0
60	8 55	15 2	0 56	2 43	1 18	.6	12 6	3.3
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	T _m	h min	min	'
00	1 14.7	-.5	15.8	T _m	6 35	1.9	55.5
12	1 9.1	T _m ☉	11 h 58.8 min	Starost	22.5 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 35	.1	246	-3.5	♃	21 46	.0	137	-2.0
♂	3 39	.1	50	-1.7	♄	1 30	.0	82	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 15.9	22 49.0	256 19.6	141 4.0	23 25.5	305 55.5	-21 42.8
2	210 15.6	22 49.5	286 24.6	171 2.6	23 24.6	335 59.2	-21 42.9
4	240 15.4	22 49.9	316 29.5	201 1.3	23 23.6	6 2.9	-21 42.9
6	270 15.1	22 50.4	346 34.4	230 59.9	23 22.7	36 6.7	-21 43.0
8	300 14.9	22 50.8	16 39.4	260 58.5	23 21.7	66 10.4	-21 43.0
10	330 14.7	22 51.3	46 44.3	290 57.1	23 20.7	96 14.1	-21 43.1
12	0 14.4	22 51.7	76 49.2	320 55.7	23 19.8	126 17.8	-21 43.1
14	30 14.2	22 52.1	106 54.1	350 54.4	23 18.8	156 21.6	-21 43.2
16	60 13.9	22 52.6	136 59.1	20 53.0	23 17.8	186 25.3	-21 43.2
18	90 13.7	22 53.0	167 4.0	50 51.6	23 16.8	216 29.1	-21 43.3
20	120 13.5	22 53.4	197 8.9	80 50.3	23 15.8	246 32.8	-21 43.3
22	150 13.2	22 53.9	227 13.9	110 48.9	23 14.8	276 36.6	-21 43.4
Δ	-1	2		-7	-5	19	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 41	21 18	1 35	:	0 47	2.4	13 35	3.0
55	3 23	20 35	0 57	:	0 51	2.3	13 35	2.8
50	3 52	20 7	0 44	:	0 54	2.2	13 34	2.6
45	4 14	19 45	0 37	2 29	0 56	2.2	13 34	2.5
40	4 31	19 27	0 33	2 2	0 58	2.1	13 33	2.4
35	4 46	19 13	0 30	1 46	0 60	2.1	13 33	2.3
30	4 58	18 60	0 27	1 36	1 2	2.1	13 32	2.3
20	5 20	18 38	0 24	1 24	1 4	2.0	13 32	2.2
10	5 38	18 20	0 23	1 17	1 7	2.0	13 31	2.0
0	5 55	18 3	0 22	1 15	1 9	1.9	13 31	1.9
10	6 12	17 46	0 23	1 15	1 11	1.9	13 30	1.8
20	6 30	17 28	0 24	1 18	1 14	1.8	13 30	1.7
30	6 51	17 7	0 26	1 25	1 16	1.8	13 29	1.6
35	7 3	16 55	0 28	1 30	1 18	1.7	13 28	1.6
40	7 17	16 41	0 30	1 37	1 20	1.7	13 28	1.5
45	7 33	16 25	0 34	1 46	1 22	1.7	13 27	1.4
50	7 53	16 5	0 38	1 59	1 24	1.6	13 27	1.3
55	8 19	15 39	0 45	2 16	1 27	1.6	13 26	1.2
60	8 56	15 2	0 56	2 44	1 31	1.5	13 25	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	253 25.4	136	3 17.7	-111	33 31.9	-15 9.8	338 29.6	-22 21.9
2	282 30.6	135	2 55.4	-112	63 37.2	-15 9.7	8 34.9	-22 21.9
4	311 35.7	135	2 33.0	-112	93 42.6	-15 9.6	38 40.2	-22 21.9
6	340 40.7	134	2 10.5	-113	123 48.0	-15 9.5	68 45.5	-22 21.9
8	9 45.5	134	1 47.9	-113	153 53.4	-15 9.3	98 50.8	-22 21.9
10	38 50.3	133	1 25.3	-114	183 58.8	-15 9.2	128 56.0	-22 22.0
12	67 54.9	132	1 2.5	-114	214 4.2	-15 9.1	159 1.3	-22 22.0
14	96 59.3	132	0 39.6	-115	244 9.5	-15 9.0	189 6.6	-22 22.0
16	126 3.6	131	0 16.7	-52	274 14.9	-15 8.9	219 11.9	-22 22.0
18	155 7.8	130	0 6.3	115	304 20.3	-15 8.8	249 17.2	-22 22.1
20	184 11.7	129	0 29.3	115	334 25.7	-15 8.7	279 22.5	-22 22.1
22	213 15.6	128	0 52.4	116	4 31.1	-15 8.5	309 27.8	-22 22.1
Δ					27	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min		
00	1 3.4	- .5	15.8	T _m	7 20	1.9	56.2	15.3	
12	0 57.7	T _{m☉}	11 h 59.0 min	Starost	23.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	14 36	.1	245	-3.5	♃	21 42	.0	137	-2.0
♂	3 36	.1	50	-1.8	♄	1 26	.0	82	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 13.0	22 54.3	257 18.8	140 47.5	23 13.8	306 40.4	-21 43.5
2	210 12.7	22 54.7	287 23.7	170 46.2	23 12.8	336 44.1	-21 43.5
4	240 12.5	22 55.1	317 28.6	200 44.8	23 11.8	6 47.9	-21 43.6
6	270 12.2	22 55.6	347 33.6	230 43.5	23 10.8	36 51.7	-21 43.7
8	300 12.0	22 56.0	17 38.5	260 42.1	23 9.7	66 55.4	-21 43.7
10	330 11.7	22 56.4	47 43.4	290 40.8	23 8.7	96 59.2	-21 43.8
12	0 11.5	22 56.8	77 48.4	320 39.4	23 7.7	127 3.0	-21 43.9
14	30 11.2	22 57.2	107 53.3	350 38.1	23 6.7	157 6.8	-21 43.9
16	60 11.0	22 57.6	137 58.2	20 36.7	23 5.6	187 10.6	-21 44.0
18	90 10.8	22 58.0	168 3.1	50 35.4	23 4.6	217 14.4	-21 44.1
20	120 10.5	22 58.4	198 8.1	80 34.0	23 3.5	247 18.2	-21 44.1
22	150 10.3	22 58.8	228 13.0	110 32.7	23 2.5	277 22.0	-21 44.2
Δ	-1	2		-7	-5	19	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 40	21 19	1 36	:	1 44	.6	14 46	3.6
55	3 23	20 36	0 57	:	1 46	.8	14 41	3.3
50	3 52	20 7	0 44	:	1 47	1.0	14 37	3.1
45	4 13	19 45	0 37	2 30	1 49	1.2	14 34	2.9
40	4 31	19 28	0 33	2 2	1 49	1.3	14 31	2.8
35	4 46	19 13	0 30	1 46	1 50	1.4	14 29	2.6
30	4 58	19 0	0 27	1 36	1 51	1.5	14 27	2.5
20	5 20	18 39	0 24	1 24	1 52	1.7	14 24	2.4
10	5 38	18 20	0 23	1 17	1 54	1.9	14 20	2.2
0	5 56	18 3	0 22	1 15	1 55	2.0	14 17	2.1
10	6 13	17 46	0 23	1 15	1 56	2.1	14 15	1.9
20	6 31	17 28	0 24	1 18	1 57	2.3	14 11	1.8
30	6 51	17 7	0 26	1 25	1 59	2.5	14 8	1.6
35	7 4	16 55	0 28	1 30	1 60	2.6	14 6	1.5
40	7 17	16 41	0 30	1 37	2 1	2.7	14 3	1.4
45	7 34	16 25	0 34	1 46	2 2	2.8	14 1	1.2
50	7 54	16 4	0 38	1 59	2 3	3.0	13 58	1.1
55	8 20	15 38	0 45	2 17	2 5	3.2	13 54	.9
60	8 57	15 1	0 57	2 44	2 8	3.5	13 49	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	242 19.2	127	1 15.6	116	34 36.4	-15 8.4	339 33.1	-22 22.1
2	271 22.7	126	1 38.7	116	64 41.8	-15 8.3	9 38.4	-22 22.1
4	300 25.9	125	2 2.0	116	94 47.2	-15 8.2	39 43.7	-22 22.2
6	329 29.0	124	2 25.2	116	124 52.6	-15 8.1	69 49.0	-22 22.2
8	358 31.8	123	2 48.5	116	154 57.9	-15 8.0	99 54.2	-22 22.2
10	27 34.5	122	3 11.7	116	185 3.3	-15 7.9	129 59.5	-22 22.2
12	56 36.9	121	3 35.0	116	215 8.7	-15 7.8	160 4.8	-22 22.3
14	85 39.1	120	3 58.3	116	245 14.0	-15 7.6	190 10.1	-22 22.3
16	114 41.1	119	4 21.5	116	275 19.4	-15 7.5	220 15.4	-22 22.3
18	143 42.8	117	4 44.8	116	305 24.8	-15 7.4	250 20.7	-22 22.3
20	172 44.2	116	5 8.0	116	335 30.1	-15 7.3	280 26.0	-22 22.3
22	201 45.4	115	5 31.1	116	5 35.5	-15 7.2	310 31.3	-22 22.4
Δ					27	1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min		
00	0 51.9	- .5	15.8	T _m	8 6	2.0	57.1	15.5	
12	0 46.0	T _{m☉}	11 h 59.2 min	Starost	24.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	14 37	.1	243	-3.6	♃	21 38	.0	137	-2.0
♂	3 33	.1	49	-1.8	♄	1 22	.0	82	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	10.0	22	59.2	258	17.9	140	31.4	23	1.4	307	25.8	-21	44.3	
2	210	9.8	22	59.6	288	22.8	170	30.0	23	.4	337	29.6	-21	44.4	
4	240	9.5	23	.0	318	27.8	200	28.7	22	59.3	7	33.5	-21	44.5	
6	270	9.3	23	.4	348	32.7	230	27.4	22	58.2	37	37.3	-21	44.5	
8	300	9.0	23	.7	18	37.6	260	26.1	22	57.2	67	41.1	-21	44.6	
10	330	8.8	23	1.1	48	42.6	290	24.7	22	56.1	97	45.0	-21	44.7	
12	0	8.5	23	1.5	78	47.5	320	23.4	22	55.0	127	48.8	-21	44.8	
14	30	8.3	23	1.9	108	52.4	350	22.1	22	53.9	157	52.6	-21	44.9	
16	60	8.0	23	2.2	138	57.3	20	20.8	22	52.8	187	56.5	-21	44.9	
18	90	7.7	23	2.6	169	2.3	50	19.5	22	51.7	218	.3	-21	45.0	
20	120	7.5	23	3.0	199	7.2	80	18.1	22	50.6	248	4.2	-21	45.1	
22	150	7.2	23	3.3	229	12.1	110	16.8	22	49.5	278	8.1	-21	45.2	
Δ		-1		2				-7		-5			19		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 39	21 20	1 38	: : :	1 58	.7	16 12	3.7
55	3 22	20 37	0 57	: : :	2 6	.9	15 60	3.4
50	3 51	20 8	0 44	: : :	2 12	1.1	15 51	3.2
45	4 13	19 46	0 37	2 31	2 17	1.3	15 44	3.0
40	4 31	19 28	0 33	2 2	2 21	1.4	15 38	2.9
35	4 46	19 13	0 30	1 46	2 24	1.6	15 32	2.8
30	4 58	19 1	0 27	1 36	2 28	1.7	15 28	2.7
20	5 20	18 39	0 24	1 24	2 33	1.8	15 20	2.5
10	5 39	18 20	0 23	1 17	2 38	2.0	15 13	2.3
0	5 56	18 3	0 22	1 15	2 43	2.1	15 7	2.2
10	6 13	17 46	0 23	1 15	2 48	2.3	15 0	2.1
20	6 31	17 28	0 24	1 18	2 53	2.4	14 53	1.9
30	6 52	17 7	0 26	1 25	2 58	2.6	14 46	1.7
35	7 4	16 55	0 28	1 30	3 2	2.7	14 41	1.6
40	7 18	16 41	0 30	1 37	3 6	2.8	14 36	1.5
45	7 34	16 24	0 34	1 46	3 10	3.0	14 30	1.4
50	7 55	16 4	0 38	1 59	3 16	3.1	14 23	1.2
55	8 21	15 38	0 45	2 17	3 23	3.3	14 14	1.0
60	8 58	15 0	0 57	2 44	3 31	3.6	14 3	.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	230	46.4	113	5	54.2	115	35	40.9	-15	7.1	340	36.6	-22	22.4		
2	259	47.1	112	6	17.3	115	65	46.2	-15	7.0	10	41.9	-22	22.4		
4	288	47.5	111	6	40.3	115	95	51.6	-15	6.9	40	47.2	-22	22.4		
6	317	47.6	109	7	3.2	114	125	56.9	-15	6.8	70	52.5	-22	22.5		
8	346	47.4	108	7	26.0	114	156	2.3	-15	6.7	100	57.8	-22	22.5		
10	15	47.0	106	7	48.8	113	186	7.7	-15	6.6	131	3.1	-22	22.5		
12	44	46.2	105	8	11.4	113	216	13.0	-15	6.4	161	8.4	-22	22.5		
14	73	45.1	103	8	33.9	112	246	18.4	-15	6.3	191	13.7	-22	22.5		
16	102	43.8	101	8	56.3	111	276	23.7	-15	6.2	221	19.0	-22	22.6		
18	131	42.1	100	9	18.6	111	306	29.1	-15	6.1	251	24.3	-22	22.6		
20	160	40.0	98	9	40.7	110	336	34.4	-15	6.0	281	29.6	-22	22.6		
22	189	37.7	97	10	2.7	109	6	39.8	-15	5.9	311	34.9	-22	22.6		
Δ								27		1			26		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	0 40.0	- .5	15.8	T _m	8 55	2.1	58.0	15.8
12	0 34.0	T _{m☉}	11 h 59.4 min	Starost	25.5 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 39	.1	242	-3.6	♄	21 33	.0	137	-2.0
♂	3 30	.1	49	-1.8	♂	1 17	.0	82	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	7.0	23	3.7	259	17.1	140	15.5	22	48.4	308	11.9	-21	45.3	
2	210	6.7	23	4.0	289	22.0	170	14.2	22	47.3	338	15.8	-21	45.4	
4	240	6.5	23	4.4	319	26.9	200	12.9	22	46.2	8	19.7	-21	45.5	
6	270	6.2	23	4.7	349	31.8	230	11.6	22	45.1	38	23.6	-21	45.6	
8	300	6.0	23	5.1	19	36.8	260	10.3	22	44.0	68	27.4	-21	45.7	
10	330	5.7	23	5.4	49	41.7	290	9.0	22	42.9	98	31.3	-21	45.8	
12	0	5.5	23	5.8	79	46.6	320	7.7	22	41.7	128	35.2	-21	45.9	
14	30	5.2	23	6.1	109	51.6	350	6.4	22	40.6	158	39.1	-21	46.0	
16	60	4.9	23	6.5	139	56.5	20	5.1	22	39.4	188	43.0	-21	46.1	
18	90	4.7	23	6.8	170	1.4	50	3.9	22	38.3	218	46.9	-21	46.2	
20	120	4.4	23	7.1	200	6.3	80	2.6	22	37.2	248	50.9	-21	46.3	
22	150	4.2	23	7.4	230	11.3	110	1.3	22	36.0	278	54.8	-21	46.4	
Δ		-1		2				-6		-6			19		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 22	1 39	: : :	2 15	.9	17 40	3.7
55	3 22	20 38	0 57	: : :	2 29	1.1	17 21	3.4
50	3 51	20 9	0 44	: : :	2 39	1.3	17 7	3.2
45	4 13	19 46	0 37	2 31	2 48	1.5	16 56	3.1
40	4 31	19 29	0 33	2 2	2 55	1.6	16 47	3.0
35	4 46	19 14	0 30	1 46	3 2	1.7	16 39	2.8
30	4 58	19 1	0 27	1 36	3 7	1.8	16 32	2.8
20	5 20	18 39	0 25	1 24	3 17	2.0	16 20	2.6
10	5 39	18 21	0 23	1 17	3 26	2.1	16 9	2.5
0	5 56	18 3	0 22	1 15	3 34	2.3	15 59	2.4
10	6 13	17 46	0 23	1 15	3 42	2.4	15 49	2.2
20	6 31	17 28	0 24	1 19	3 51	2.6	15 39	2.1
30	6 52	17 7	0 26	1 25	4 1	2.7	15 27	1.9
35	7 4	16 55	0 28	1 30	4 7	2.8	15 20	1.9
40	7 18	16 41	0 30	1 37	4 14	2.9	15 12	1.8
45	7 35	16 24	0 34	1 46	4 21	3.1	15 3	1.6
50	7 55	16 4	0 38	1 59	4 31	3.2	14 53	1.5
55	8 22	15 37	0 45	2 17	4 43	3.4	14 39	1.3
60	8 59	14 60	0 57	2 45	4 59	3.7	14 21	1.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	218	35.0	95	10	24.5	108	36	45.2	-15	5.8	341	40.2	-22	22.7		
2	247	32.0	93	10	46.1	107	66	50.5	-15	5.7	11	45.5	-22	22.7		
4	276	28.6	91	11	7.5	106	96	55.9	-15	5.6	41	50.8	-22	22.7		
6	305	24.9	90	11	28.7	105	127	1.2	-15	5.5	71	56.1	-22	22.7		
8	334	20.8	88	11	49.7	104	157	6.6	-15	5.4	102	1.4	-22	22.7		
10	3	16.4	86	12	10.5	103	187	11.9	-15	5.3	132	6.7	-22	22.8		
12	32	11.6	84	12	31.1	101	217	17.2	-15	5.2	162	12.0	-22	22.8		
14	61	6.5	83	12	51.4	100	247	22.6	-15	5.1	192	17.3	-22	22.8		
16	90	1.0	81	13	11.4	99	277	27.9	-15	5.0	222	22.6	-22	22.8		
18	118	55.2	79	13	31.2	97	307	33.3	-15	4.9	252	27.9	-22	22.9		
20	147	48.9	77	13	50.6	96	337	38.6	-15	4.8	282	33.2	-22	22.9		
22	176	42.4	75	14	9.8	94	7	44.0	-15	4.6	312	38.5	-22	22.9		
Δ								27		1			27		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	0 27.9	- .5	15.8	T _m	9 46		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	3.9	23	7.8	260	16.2	140	.0	22	34.9	308	58.7	-21	46.5	
2	210	3.6	23	8.1	290	21.1	169	58.7	22	33.7	339	2.6	-21	46.6	
4	240	3.4	23	8.4	320	26.1	199	57.5	22	32.5	9	6.5	-21	46.7	
6	270	3.1	23	8.7	350	31.0	229	56.2	22	31.4	39	10.5	-21	46.8	
8	300	2.9	23	9.0	20	35.9	259	54.9	22	30.2	69	14.4	-21	47.0	
10	330	2.6	23	9.4	50	40.8	289	53.6	22	29.0	99	18.4	-21	47.1	
12	0	2.3	23	9.7	80	45.8	319	52.4	22	27.8	129	22.3	-21	47.2	
14	30	2.1	23	10.0	110	50.7	349	51.1	22	26.6	159	26.3	-21	47.3	
16	60	1.8	23	10.3	140	55.6	19	49.8	22	25.5	189	30.2	-21	47.4	
18	90	1.6	23	10.6	171	.6	49	48.6	22	24.3	219	34.2	-21	47.5	
20	120	1.3	23	10.9	201	5.5	79	47.3	22	23.1	249	38.2	-21	47.7	
22	150	1.0	23	11.2	231	10.4	109	46.1	22	21.9	279	42.1	-21	47.8	
Δ		-1		2				-6		-6		20			-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 23	1 40	:	2 36	1.2	19 9	3.6
55	3 21	20 39	0 57	:	2 56	1.5	18 44	3.3
50	3 51	20 9	0 44	:	3 12	1.6	18 25	3.2
45	4 13	19 47	0 37	2 32	3 24	1.8	18 10	3.0
40	4 31	19 29	0 33	2 3	3 35	1.9	17 57	2.9
35	4 45	19 14	0 30	1 47	3 43	2.0	17 47	2.9
30	4 58	19 1	0 27	1 36	3 51	2.1	17 38	2.8
20	5 20	18 40	0 25	1 24	4 5	2.2	17 22	2.7
10	5 39	18 21	0 23	1 18	4 17	2.3	17 9	2.6
0	5 56	18 4	0 22	1 15	4 28	2.4	16 56	2.5
10	6 13	17 46	0 23	1 15	4 40	2.5	16 43	2.4
20	6 32	17 28	0 24	1 19	4 52	2.7	16 29	2.3
30	6 53	17 7	0 26	1 25	5 6	2.8	16 14	2.2
35	7 5	16 55	0 28	1 31	5 14	2.9	16 5	2.1
40	7 19	16 41	0 30	1 37	5 24	3.0	15 54	2.0
45	7 35	16 24	0 34	1 47	5 35	3.1	15 42	2.0
50	7 56	16 4	0 38	1 59	5 48	3.2	15 28	1.8
55	8 22	15 37	0 45	2 17	6 5	3.4	15 10	1.7
60	9 0	14 59	0 57	2 45	6 28	3.7	14 45	1.4
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	205	35.4	73	14	28.7	93	37	49.3	-15	4.5	342	43.8	-22	22.9		
2	234	28.1	72	14	47.3	91	67	54.6	-15	4.4	12	49.1	-22	23.0		
4	263	20.4	70	15	5.5	89	97	60.0	-15	4.3	42	54.4	-22	23.0		
6	292	12.4	68	15	23.3	88	128	5.3	-15	4.2	72	59.7	-22	23.0		
8	321	4.0	66	15	40.9	86	158	10.7	-15	4.1	103	5.0	-22	23.0		
10	349	55.2	64	15	58.0	84	188	16.0	-15	4.0	133	10.3	-22	23.0		
12	18	46.1	63	16	14.7	82	218	21.3	-15	3.9	163	15.6	-22	23.1		
14	47	36.6	61	16	31.1	80	248	26.7	-15	3.8	193	20.9	-22	23.1		
16	76	26.8	59	16	47.1	78	278	32.0	-15	3.7	223	26.2	-22	23.1		
18	105	16.6	57	17	2.6	75	308	37.3	-15	3.6	253	31.5	-22	23.1		
20	134	6.1	56	17	17.7	73	338	42.6	-15	3.5	283	36.8	-22	23.2		
22	162	55.3	54	17	32.3	71	8	48.0	-15	3.4	313	42.1	-22	23.2		
Δ								27		1			27			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	0 15.6	- .5	15.8	T _m	10 42	2.5	59.7	16.3	
12	0 9.4			T _{m☉}	11 h 59.8 min	Starost 27.5 d	Faza ●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 41	.1	240	-3.6	♃	21 25	.0	138	-2.0
♂	3 24	.1	49	-1.9	♄	1 9	.0	82	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	.8	23	11.4	261	15.3	139	44.8	22	20.7	309	46.1	-21	47.9	
2	210	.5	23	11.7	291	20.3	169	43.6	22	19.5	339	50.1	-21	48.0	
4	240	.2	23	12.0	321	25.2	199	42.3	22	18.2	9	54.1	-21	48.2	
6	270	.0	23	12.3	351	30.1	229	41.1	22	17.0	39	58.1	-21	48.3	
8	299	59.7	23	12.6	21	35.0	259	39.8	22	15.8	70	2.1	-21	48.4	
10	329	59.5	23	12.9	51	40.0	289	38.6	22	14.6	100	6.1	-21	48.5	
12	359	59.2	23	13.1	81	44.9	319	37.4	22	13.4	130	10.1	-21	48.7	
14	29	58.9	23	13.4	111	49.8	349	36.1	22	12.1	160	14.1	-21	48.8	
16	59	58.7	23	13.7	141	54.8	19	34.9	22	10.9	190	18.1	-21	48.9	
18	89	58.4	23	13.9	171	59.7	49	33.7	22	9.6	220	22.1	-21	49.1	
20	119	58.1	23	14.2	202	4.6	79	32.4	22	8.4	250	26.1	-21	49.2	
22	149	57.9	23	14.5	232	9.5	109	31.2	22	7.1	280	30.1	-21	49.4	
Δ		-1		1				-6		-6		20			-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 24	1 42	:	3 4	1.7	20 35	3.1
55	3 21	20 40	0 58	:	3 31	1.9	20 3	3.0
50	3 50	20 10	0 44	:	3 51	2.0	19 40	2.9
45	4 13	19 48	0 37	2 32	4 7	2.1	19 23	2.8
40	4 31	19 30	0 33	2 3	4 20	2.2	19 8	2.8
35	4 45	19 15	0 30	1 47	4 31	2.3	18 56	2.8
30	4 58	19 2	0 27	1 36	4 41	2.3	18 45	2.7
20	5 20	18 40	0 25	1 24	4 58	2.4	18 27	2.7
10	5 39	18 21	0 23	1 18	5 13	2.5	18 11	2.6
0	5 56	18 4	0 23	1 15	5 27	2.6	17 56	2.6
10	6 14	17 46	0 23	1 15	5 41	2.6	17 41	2.6
20	6 32	17 28	0 24	1 19	5 56	2.7	17 25	2.5
30	6 53	17 7	0 26	1 25	6 13	2.8	17 7	2.5
35	7 5	16 55	0 28	1 31	6 23	2.8	16 56	2.4
40	7 19	16 41	0 31	1 37	6 35	2.9	16 44	2.4
45	7 36	16 24	0 34	1 47	6 49	3.0	16 29	2.3
50	7 56	16 4	0 38	1 59	7 6	3.0	16 12	2.3
55	8 23	15 37	0 45	2 17	7 27	3.2	15 49	2.2
60	9 1	14 59	0 57	2 45	7 57	3.4	15 19	2.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	191	44.1	53	17	46.5	69	38	53.3	-15	3.3	343	47.4	-22	23.2		
2	220	32.6	51	18	.2	66	68	58.6	-15	3.2	13	52.7	-22	23.2		
4	249	20.8	49	18	13.5	64	99	4.0	-15	3.1	43	58.0	-22	23.2		
6	278	8.6	48	18	26.2	61	129	9.3	-15	3.0	74	3.3	-22	23.3		
8	306	56.2	46	18	38.5	59	159	14.6	-15	2.9	104	8.6	-22	23.3		
10	335	43.5	45	18	50.2	56	189	19.9	-15	2.8	134	13.9	-22	23.3		
12	4	30.5	44	19	1.5	53	219	25.2	-15	2.8	164	19.2	-22	23.3		
14	33	17.3	42	19	12.2	51	249	30.6	-15	2.7	194	24.5	-22	23.4		
16	62	3.8	41	19	22.3	48	279	35.9	-15	2.6	224	29.8	-22	23.4		
18	90	50.0	40	19	31.9	45	309	41.2	-15	2.5	254	35.1	-22	23.4		
20	119	36.1	39	19	41.0	42	339	46.5	-15	2.4	284	40.5	-22	23.4		
22	148	21.9	38	19	49.4	40	9	51.8	-15	2.3	314	45.8	-22	23.5		
Δ								27		0			27			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 57.6	23 14.7	262 14.5	139 30.0	22 5.9	310 34.2	-21 49.5
2	209 57.3	23 15.0	292 19.4	169 28.8	22 4.6	340 38.2	-21 49.6
4	239 57.1	23 15.2	322 24.3	199 27.6	22 3.4	10 42.3	-21 49.8
6	269 56.8	23 15.5	352 29.3	229 26.3	22 2.1	40 46.3	-21 49.9
8	299 56.5	23 15.7	22 34.2	259 25.1	22 .8	70 50.4	-21 50.1
10	329 56.3	23 16.0	52 39.1	289 23.9	21 59.6	100 54.4	-21 50.2
12	359 56.0	23 16.2	82 44.0	319 22.7	21 58.3	130 58.5	-21 50.4
14	29 55.7	23 16.4	112 49.0	349 21.5	21 57.0	161 2.5	-21 50.5
16	59 55.5	23 16.7	142 53.9	19 20.3	21 55.7	191 6.6	-21 50.7
18	89 55.2	23 16.9	172 58.8	49 19.1	21 54.4	221 10.7	-21 50.8
20	119 54.9	23 17.1	203 3.8	79 17.9	21 53.1	251 14.8	-21 51.0
22	149 54.7	23 17.4	233 8.7	109 16.7	21 51.8	281 18.9	-21 51.1
Δ	-1	1		-6	-6	20	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 24	1 43	:	3 45	2.4	21 48	2.4
55	3 21	20 40	0 58	:	4 17	2.5	21 14	2.4
50	3 50	20 10	0 44	:	4 40	2.5	20 50	2.5
45	4 13	19 48	0 37	2 32	4 58	2.5	20 31	2.5
40	4 31	19 30	0 33	2 3	5 13	2.5	20 15	2.5
35	4 45	19 15	0 30	1 47	5 26	2.6	20 2	2.6
30	4 58	19 2	0 27	1 36	5 37	2.6	19 51	2.6
20	5 20	18 40	0 25	1 24	5 56	2.6	19 31	2.6
10	5 39	18 21	0 23	1 18	6 13	2.6	19 14	2.6
0	5 57	18 4	0 23	1 15	6 28	2.6	18 58	2.6
10	6 14	17 47	0 23	1 15	6 44	2.6	18 42	2.6
20	6 32	17 28	0 24	1 19	7 1	2.7	18 25	2.7
30	6 53	17 7	0 26	1 25	7 20	2.7	18 6	2.7
35	7 6	16 55	0 28	1 31	7 31	2.7	17 54	2.7
40	7 20	16 41	0 31	1 38	7 44	2.7	17 41	2.7
45	7 36	16 24	0 34	1 47	7 60	2.7	17 25	2.7
50	7 57	16 3	0 38	1 59	8 19	2.7	17 6	2.7
55	8 24	15 37	0 45	2 17	8 43	2.7	16 41	2.7
60	9 2	14 58	0 57	2 45	9 17	2.7	16 7	2.7
S								

UT	MESEC				JUPITER				SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 7.5	37 19	57.3	37	39 57.2	-15 2.2		344 51.1	-22 23.5				
2	205 52.9	36 20	4.7	34	70 2.5	-15 2.1		14 56.4	-22 23.5				
4	234 38.1	35 20	11.4	31	100 7.8	-15 2.0		45 1.7	-22 23.5				
6	263 23.2	35 20	17.5	28	130 13.1	-15 1.9		75 7.0	-22 23.5				
8	292 8.1	34 20	23.1	25	160 18.4	-15 1.8		105 12.3	-22 23.6				
10	320 52.9	33 20	28.0	22	190 23.7	-15 1.7		135 17.6	-22 23.6				
12	349 37.5	33 20	32.3	19	220 29.0	-15 1.6		165 22.9	-22 23.6				
14	18 22.1	32 20	36.0	15	250 34.3	-15 1.5		195 28.2	-22 23.6				
16	47 6.6	32 20	39.1	12	280 39.6	-15 1.4		225 33.5	-22 23.7				
18	75 51.0	32 20	41.6	9	310 44.9	-15 1.3		255 38.8	-22 23.7				
20	104 35.4	32 20	43.4	6	340 50.2	-15 1.2		285 44.1	-22 23.7				
22	133 19.7	32 20	44.7	3	10 55.5	-15 1.1		315 49.5	-22 23.7				
Δ					27	0		27	0				

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 0 9.6	- .5	15.8	T _m	12 43	2.6	60.8 16.6
12	- 0 16.0	T _m ☉	12 h .3 min	Starost	.2 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 43	.1	237	-3.6	♃	21 16	.0	138	-2.0
♂	3 17	.1	48	-1.9	♃	1 0	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 54.4	23 17.6	263 13.6	139 15.5	21 50.5	311 22.9	-21 51.3
2	209 54.1	23 17.8	293 18.5	169 14.3	21 49.2	341 27.0	-21 51.4
4	239 53.9	23 18.0	323 23.5	199 13.1	21 47.9	11 31.1	-21 51.6
6	269 53.6	23 18.2	353 28.4	229 12.0	21 46.6	41 35.2	-21 51.8
8	299 53.3	23 18.4	23 33.3	259 10.8	21 45.3	71 39.3	-21 51.9
10	329 53.0	23 18.6	53 38.3	289 9.6	21 44.0	101 43.5	-21 52.1
12	359 52.8	23 18.9	83 43.2	319 8.4	21 42.7	131 47.6	-21 52.3
14	29 52.5	23 19.1	113 48.1	349 7.3	21 41.3	161 51.7	-21 52.4
16	59 52.2	23 19.3	143 53.0	19 6.1	21 40.0	191 55.8	-21 52.6
18	89 52.0	23 19.5	173 58.0	49 4.9	21 38.7	221 60.0	-21 52.8
20	119 51.7	23 19.6	204 2.9	79 3.7	21 37.3	252 4.1	-21 52.9
22	149 51.4	23 19.8	234 7.8	109 2.6	21 36.0	282 8.2	-21 53.1
Δ	-1	1		-6	-7	21	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 25	1 44	:	4 42	3.1	22 45	1.7
55	3 20	20 41	0 58	:	5 16	3.0	22 13	1.9
50	3 50	20 11	0 45	:	5 40	2.9	21 49	2.0
45	4 13	19 48	0 37	2 33	5 59	2.8	21 31	2.1
40	4 31	19 31	0 33	2 3	6 14	2.8	21 16	2.2
35	4 46	19 16	0 30	1 47	6 28	2.8	21 4	2.3
30	4 58	19 3	0 27	1 36	6 39	2.7	20 52	2.3
20	5 20	18 41	0 25	1 24	6 58	2.7	20 33	2.4
10	5 39	18 22	0 23	1 18	7 15	2.6	20 17	2.5
0	5 57	18 4	0 23	1 15	7 31	2.6	20 1	2.6
10	6 14	17 47	0 23	1 15	7 47	2.6	19 46	2.6
20	6 33	17 28	0 24	1 19	8 4	2.5	19 29	2.7
30	6 54	17 7	0 26	1 25	8 24	2.4	19 10	2.8
35	7 6	16 55	0 28	1 31	8 36	2.4	18 58	2.8
40	7 20	16 41	0 31	1 38	8 49	2.4	18 45	2.9
45	7 37	16 24	0 34	1 47	9 4	2.3	18 30	3.0
50	7 57	16 3	0 38	1 59	9 24	2.2	18 11	3.0
55	8 24	15 36	0 45	2 17	9 48	2.1	17 47	3.2
60	9 3	14 58	0 57	2 46	10 23	2.0	17 13	3.4
S								

UT	MESEC				JUPITER				SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ	S _♃	δ _♃	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	162 4.1	32 20	45.3	0	41 .8	-15 1.1		345 54.8	-22 23.8				
2	190 48.4	32 20	45.2	-3	71 6.2	-15 1.0		16 .1	-22 23.8				
4	219 32.7	32 20	44.6	-6	101 11.5	-15 .9		46 5.4	-22 23.8				
6	248 17.1	32 20	43.3	-9	131 16.7	-15 .8		76 10.7	-22 23.8				
8	277 1.5	32 20	41.4	-13	161 22.0	-15 .7		106 16.0	-22 23.8				
10	305 46.0	33 20	38.9	-16	191 27.3	-15 .6		136 21.3	-22 23.9				
12	334 30.6	33 20	35.8	-19	221 32.6	-15 .5		166 26.6	-22 23.9				
14	3 15.3	34 20	32.0	-22	251 37.9	-15 .4		196 31.9	-22 23.9				
16	32 .1	35 20	27.7	-25	281 43.2	-15 .3		226 37.3	-22 23.9				
18	60 45.0	35 20	22.7	-28	311 48.5	-15 .3		256 42.6	-22 24.0				
20	89 30.1	36 20	17.2	-31	341 53.8	-15 .2		286 47.9	-22 24.0				
22	118 15.3	37 20	11.0	-34	11 59.1	-15 .1		316 53.2	-22 24.0				
Δ					26	0		27	0				

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 0 22.4	- .5	15.8	T _m	13 46	2.6	61.0 16.6
12	- 0 28.9	T _m ☉	12 h .5 min	Starost	1.2 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 44	.1	236	-3.6	♃	21 12	.0	138	-2.0
♂	3 14	.1	48	-1.9	♃	0 56	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 51.2	23 20.0	264 12.8	139 1.4	21 34.6	312 12.4	-21 53.3
2	209 50.9	23 20.2	294 17.7	169 .3	21 33.3	342 16.5	-21 53.5
4	239 50.6	23 20.4	324 22.6	198 59.1	21 31.9	12 20.7	-21 53.6
6	269 50.3	23 20.6	354 27.5	228 58.0	21 30.6	42 24.9	-21 53.8
8	299 50.1	23 20.8	24 32.5	258 56.8	21 29.2	72 29.0	-21 54.0
10	329 49.8	23 20.9	54 37.4	288 55.7	21 27.8	102 33.2	-21 54.2
12	359 49.5	23 21.1	84 42.3	318 54.5	21 26.5	132 37.4	-21 54.3
14	29 49.3	23 21.3	114 47.3	348 53.4	21 25.1	162 41.6	-21 54.5
16	59 49.0	23 21.4	144 52.2	18 52.2	21 23.7	192 45.7	-21 54.7
18	89 48.7	23 21.6	174 57.1	48 51.1	21 22.3	222 49.9	-21 54.9
20	119 48.4	23 21.8	205 2.0	78 50.0	21 21.0	252 54.1	-21 55.1
22	149 48.2	23 21.9	235 7.0	108 48.8	21 19.6	282 58.3	-21 55.3
Δ	-1	1		-6	-7	21	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 26	1 45	: : :	5 55	3.5	23 25	1.2
55	3 20	20 41	0 58	: : :	6 27	3.3	22 58	1.4
50	3 50	20 11	0 45	: : :	6 50	3.1	22 38	1.6
45	4 13	19 49	0 37	2 33	7 7	3.0	22 22	1.8
40	4 31	19 31	0 33	2 3	7 22	2.9	22 9	1.9
35	4 46	19 16	0 30	1 47	7 34	2.9	21 58	2.0
30	4 59	19 3	0 27	1 37	7 45	2.8	21 48	2.1
20	5 21	18 41	0 25	1 24	8 3	2.7	21 31	2.2
10	5 39	18 22	0 23	1 18	8 19	2.6	21 17	2.3
0	5 57	18 4	0 23	1 15	8 34	2.5	21 3	2.4
10	6 14	17 47	0 23	1 15	8 49	2.4	20 49	2.5
20	6 33	17 28	0 24	1 19	9 5	2.3	20 34	2.6
30	6 54	17 7	0 26	1 25	9 23	2.2	20 16	2.8
35	7 6	16 55	0 28	1 31	9 34	2.1	20 6	2.9
40	7 21	16 41	0 31	1 38	9 46	2.0	19 55	3.0
45	7 37	16 24	0 34	1 47	10 0	1.9	19 41	3.1
50	7 58	16 3	0 38	1 59	10 17	1.8	19 24	3.2
55	8 25	15 36	0 45	2 18	10 40	1.6	19 3	3.4
60	9 4	14 58	0 58	2 46	11 10	1.4	18 33	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	147 .7	38 20	4.2	-37	42 4.4	-14 60.0	346 58.5	-22 24.0
2	175 46.4	39 19	56.9	-40	72 9.7	-14 59.9	17 3.8	-22 24.1
4	204 32.2	40 19	49.0	-42	102 15.0	-14 59.8	47 9.1	-22 24.1
6	233 18.2	41 19	40.5	-45	132 20.3	-14 59.7	77 14.4	-22 24.1
8	262 4.5	42 19	31.5	-48	162 25.5	-14 59.6	107 19.8	-22 24.1
10	290 50.9	44 19	21.9	-51	192 30.8	-14 59.6	137 25.1	-22 24.1
12	319 37.7	45 19	11.7	-53	222 36.1	-14 59.5	167 30.4	-22 24.2
14	348 24.7	46 19	1.0	-56	252 41.4	-14 59.4	197 35.7	-22 24.2
16	17 12.0	48 18	49.8	-59	282 46.7	-14 59.3	227 41.0	-22 24.2
18	45 59.6	49 18	38.1	-61	312 51.9	-14 59.2	257 46.3	-22 24.2
20	74 47.4	51 18	25.9	-64	342 57.2	-14 59.1	287 51.6	-22 24.3
22	103 35.6	52 18	13.1	-66	13 2.5	-14 59.0	317 57.0	-22 24.3
Δ					26	0	27	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min	
00	- 0 35.4	-.5	15.8	T _m	14 48	2.5	60.8	16.6
12	- 0 41.9	T _m ☉	12 h .7 min	Starost	2.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min / ' / "	°	°	°	h min / ' / "	°	°	°	°
♀	14 44	.1	235	-3.6	♃	21 8	.0	138	-2.0
♂	3 11	.1	48	-2.0	♄	0 52	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 47.9	23 22.1	265 11.9	138 47.7	21 18.2	313 2.5	-21 55.5
2	209 47.6	23 22.2	295 16.8	168 46.6	21 16.8	343 6.7	-21 55.7
4	239 47.4	23 22.4	325 21.7	198 45.4	21 15.4	13 11.0	-21 55.9
6	269 47.1	23 22.5	355 26.7	228 44.3	21 14.0	43 15.2	-21 56.1
8	299 46.8	23 22.7	25 31.6	258 43.2	21 12.6	73 19.4	-21 56.2
10	329 46.5	23 22.8	55 36.5	288 42.1	21 11.2	103 23.6	-21 56.4
12	359 46.3	23 22.9	85 41.5	318 41.0	21 9.7	133 27.9	-21 56.6
14	29 46.0	23 23.1	115 46.4	348 39.9	21 8.3	163 32.1	-21 56.8
16	59 45.7	23 23.2	145 51.3	18 38.7	21 6.9	193 36.4	-21 57.0
18	89 45.5	23 23.3	175 56.2	48 37.6	21 5.5	223 40.6	-21 57.2
20	119 45.2	23 23.4	206 1.2	78 36.5	21 4.0	253 44.9	-21 57.5
22	149 44.9	23 23.6	236 6.1	108 35.4	21 2.6	283 49.1	-21 57.7
Δ	-1	1		-6	-7	21	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 26	1 45	: : :	7 20	3.7	23 53	.9
55	3 20	20 42	0 58	: : :	7 46	3.4	23 32	1.1
50	3 50	20 12	0 45	: : :	8 5	3.2	23 17	1.3
45	4 13	19 49	0 37	2 33	8 20	3.1	23 5	1.5
40	4 31	19 31	0 33	2 3	8 32	2.9	22 54	1.6
35	4 46	19 16	0 30	1 47	8 43	2.8	22 45	1.7
30	4 59	19 3	0 27	1 37	8 52	2.7	22 38	1.8
20	5 21	18 41	0 25	1 24	9 7	2.6	22 24	2.0
10	5 40	18 22	0 23	1 18	9 21	2.5	22 12	2.1
0	5 57	18 5	0 23	1 15	9 34	2.3	22 1	2.3
10	6 15	17 47	0 23	1 15	9 46	2.2	21 49	2.4
20	6 33	17 29	0 24	1 19	9 60	2.1	21 37	2.5
30	6 54	17 7	0 26	1 26	10 15	1.9	21 23	2.7
35	7 7	16 55	0 28	1 31	10 24	1.8	21 15	2.8
40	7 21	16 41	0 31	1 38	10 35	1.7	21 6	2.9
45	7 38	16 24	0 34	1 47	10 47	1.6	20 55	3.1
50	7 58	16 3	0 38	1 59	11 1	1.5	20 41	3.2
55	8 25	15 36	0 46	2 18	11 19	1.3	20 24	3.4
60	9 4	14 58	0 58	2 46	11 43	1.0	20 1	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	132 24.0	54 17	59.9	-68	43 7.8	-14 59.0	348 2.3	-22 24.3
2	161 12.8	55 17	46.2	-71	73 13.1	-14 58.9	18 7.6	-22 24.3
4	190 1.9	57 17	32.1	-73	103 18.3	-14 58.8	48 12.9	-22 24.4
6	218 51.3	59 17	17.5	-75	133 23.6	-14 58.7	78 18.2	-22 24.4
8	247 41.1	60 17	2.4	-77	163 28.9	-14 58.6	108 23.5	-22 24.4
10	276 31.2	62 16	46.9	-80	193 34.1	-14 58.6	138 28.8	-22 24.4
12	305 21.6	64 16	31.0	-82	223 39.4	-14 58.5	168 34.2	-22 24.4
14	334 12.4	66 16	14.7	-84	253 44.7	-14 58.4	198 39.5	-22 24.5
16	3 3.5	67 15	58.0	-85	283 50.0	-14 58.3	228 44.8	-22 24.5
18	31 55.0	69 15	40.9	-87	313 55.2	-14 58.2	258 50.1	-22 24.5
20	60 46.8	71 15	23.4	-89	344 .5	-14 58.2	288 55.4	-22 24.5
22	89 38.9	73 15	5.6	-91	14 5.7	-14 58.1	319 .7	-22 24.6
Δ					26	0	27	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min	
00	- 0 48.4	-.5	15.8	T _m	15 47	2.3	60.4	16.5
12	- 0 54.9	T _m ☉	12 h .9 min	Starost	3.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min / ' / "	°	°	°	h min / ' / "	°	°	°	°
♀	14 45	.1	234	-3.7	♃	21 4	.0	138	-1.9
♂	3 7	.1	48	-2.0	♄	0 48	.0	83	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	44.6	23	23.7	266	11.0	138	34.3	21	1.2	313	53.4	-21	57.9	
2	209	44.4	23	23.8	296	16.0	168	33.2	20	59.7	343	57.7	-21	58.1	
4	239	44.1	23	23.9	326	20.9	198	32.2	20	58.3	14	1.9	-21	58.3	
6	269	43.8	23	24.0	356	25.8	228	31.1	20	56.8	44	6.2	-21	58.5	
8	299	43.5	23	24.1	26	30.7	258	30.0	20	55.4	74	10.5	-21	58.7	
10	329	43.3	23	24.2	56	35.7	288	28.9	20	53.9	104	14.8	-21	58.9	
12	359	43.0	23	24.3	86	40.6	318	27.8	20	52.5	134	19.1	-21	59.1	
14	29	42.7	23	24.4	116	45.5	348	26.7	20	51.0	164	23.4	-21	59.4	
16	59	42.4	23	24.5	146	50.5	18	25.7	20	49.5	194	27.7	-21	59.6	
18	89	42.2	23	24.6	176	55.4	48	24.6	20	48.1	224	32.0	-21	59.8	
20	119	41.9	23	24.7	207	.3	78	23.5	20	46.6	254	36.3	-22	.0	
22	149	41.6	23	24.8	237	5.2	108	22.4	20	45.1	284	40.6	-22	.2	
Δ		-1		1				-5		-7			21		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 27	1 46	:::	8 50	3.7	..	.0
55	3 20	20 42	0 58	:::	9 8	3.4	23 60	.9
50	3 50	20 12	0 45	:::	9 22	3.2	23 49	1.1
45	4 13	19 50	0 37	2 33	9 33	3.0	23 41	1.3
40	4 31	19 32	0 33	2 3	9 43	2.9	23 33	1.4
35	4 46	19 16	0 30	1 47	9 51	2.8	23 27	1.6
30	4 59	19 3	0 27	1 37	10 58	2.7	23 21	1.7
20	5 21	18 41	0 25	1 24	10 10	2.5	23 12	1.8
10	5 40	18 22	0 23	1 18	10 20	2.3	23 3	2.0
0	5 57	18 5	0 23	1 15	10 30	2.2	22 55	2.1
10	6 15	17 47	0 23	1 15	10 40	2.1	22 47	2.3
20	6 33	17 29	0 24	1 19	10 50	1.9	22 38	2.4
30	6 55	17 8	0 26	1 26	11 2	1.7	22 28	2.6
35	7 7	16 55	0 28	1 31	11 9	1.6	22 22	2.7
40	7 21	16 41	0 31	1 38	11 16	1.5	22 16	2.8
45	7 38	16 24	0 34	1 47	11 25	1.4	22 8	3.0
50	7 59	16 3	0 39	1 60	11 36	1.2	21 58	3.1
55	8 26	15 36	0 46	2 18	11 50	1.0	21 47	3.4
60	9 5	14 58	0 58	2 46	12 7	.7	21 31	3.6
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	118	31.4	74	14 47.4	-93	44	11.0	-14 58.0	349	6.1	-22	24.6
2	147	24.3	76	14 28.9	-94	74	16.3	-14 57.9	19	11.4	-22	24.6
4	176	17.5	78	14 10.1	-96	104	21.5	-14 57.8	49	16.7	-22	24.6
6	205	11.1	80	13 51.0	-97	134	26.8	-14 57.8	79	22.0	-22	24.7
8	234	5.0	81	13 31.5	-99	164	32.1	-14 57.7	109	27.3	-22	24.7
10	262	59.2	83	13 11.8	-100	194	37.3	-14 57.6	139	32.6	-22	24.7
12	291	53.8	85	12 51.7	-101	224	42.6	-14 57.5	169	38.0	-22	24.7
14	320	48.7	86	12 31.5	-103	254	47.8	-14 57.4	199	43.3	-22	24.7
16	349	44.0	88	12 10.9	-104	284	53.1	-14 57.4	229	48.6	-22	24.8
18	18	39.6	90	11 50.1	-105	314	58.3	-14 57.3	259	53.9	-22	24.8
20	47	35.5	91	11 29.1	-106	345	3.6	-14 57.2	289	59.2	-22	24.8
22	76	31.8	93	11 7.9	-107	15	8.8	-14 57.1	320	4.5	-22	24.8
Δ						26		0		27		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 1	1.5	- .5	15.8	T _m	16 43	2.1	59.8	16.3
12	- 1	8.0	T _{m☉}	12 h 1.1 min	Starost	4.2 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 46	.1	232	-3.7	♄	20 60	.0	138	-1.9
♂	3 4	.1	48	-2.0	♄	0 43	.0	83	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	41.4	23	24.9	267	10.2	138	21.4	20	43.6	314	45.0	-22	.5	
2	209	41.1	23	25.0	297	15.1	168	20.3	20	42.1	344	49.3	-22	.7	
4	239	40.8	23	25.1	327	20.0	198	19.3	20	40.7	14	53.6	-22	.9	
6	269	40.5	23	25.1	357	25.0	228	18.2	20	39.2	44	58.0	-22	1.2	
8	299	40.3	23	25.2	27	29.9	258	17.1	20	37.7	75	2.3	-22	1.4	
10	329	40.0	23	25.3	57	34.8	288	16.1	20	36.2	105	6.6	-22	1.6	
12	359	39.7	23	25.4	87	39.7	318	15.0	20	34.7	135	11.0	-22	1.9	
14	29	39.4	23	25.4	117	44.7	348	14.0	20	33.2	165	15.4	-22	2.1	
16	59	39.2	23	25.5	147	49.6	18	13.0	20	31.6	195	19.7	-22	2.3	
18	89	38.9	23	25.5	177	54.5	48	11.9	20	30.1	225	24.1	-22	2.6	
20	119	38.6	23	25.6	207	59.5	78	10.9	20	28.6	255	28.5	-22	2.8	
22	149	38.4	23	25.6	238	4.4	108	9.8	20	27.1	285	32.9	-22	3.0	
Δ		-1		0				-5		-8			22		-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 27	1 46	:::	10 18	3.6	0 14	.7
55	3 20	20 43	0 58	:::	10 30	3.3	..	.0
50	3 50	20 12	0 45	:::	10 39	3.1	..	.0
45	4 13	19 50	0 37	2 33	10 46	2.9	..	.0
40	4 31	19 32	0 33	2 3	10 52	2.8	..	.0
35	4 46	19 17	0 30	1 47	10 57	2.7	..	.0
30	4 59	19 4	0 27	1 37	11 1	2.6	..	.0
20	5 21	18 42	0 25	1 24	11 9	2.4	23 56	1.7
10	5 40	18 23	0 23	1 18	11 16	2.2	23 51	1.9
0	5 58	18 5	0 23	1 15	11 22	2.1	23 46	2.0
10	6 15	17 48	0 23	1 15	11 29	1.9	23 42	2.2
20	6 34	17 29	0 24	1 19	11 36	1.8	23 37	2.3
30	6 55	17 8	0 26	1 26	11 43	1.6	23 31	2.5
35	7 7	16 55	0 28	1 31	11 48	1.5	23 27	2.6
40	7 21	16 41	0 31	1 38	11 53	1.4	23 24	2.7
45	7 38	16 24	0 34	1 47	11 59	1.2	23 19	2.9
50	7 59	16 4	0 39	1 60	12 5	1.1	23 14	3.0
55	8 26	15 36	0 46	2 18	12 14	.9	23 7	3.3
60	9 5	14 58	0 58	2 46	12 25	.6	22 58	3.5
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	105	28.4	94	10 46.4	-108	45	14.1	-14 57.1	350	9.9	-22	24.9
2	134	25.2	96	10 24.8	-109	75	19.3	-14 57.0	20	15.2	-22	24.9
4	163	22.4	98	10 2.9	-110	105	24.6	-14 56.9	50	20.5	-22	24.9
6	192	19.9	99	9 40.9	-111	135	29.8	-14 56.8	80	25.8	-22	24.9
8	221	17.8	101	9 18.7	-112	165	35.1	-14 56.8	110	31.1	-22	25.0
10	250	15.9	102	8 56.4	-112	195	40.3	-14 56.7	140	36.5	-22	25.0
12	279	14.2	103	8 33.9	-113	225	45.6	-14 56.6	170	41.8	-22	25.0
14	308	12.9	105	8 11.3	-114	255	50.8	-14 56.5	200	47.1	-22	25.0
16	337	11.9	106	7 48.5	-114	285	56.0	-14 56.5	230	52.4	-22	25.0
18	6	11.1	107	7 25.7	-115	316	1.3	-14 56.4	260	57.7	-22	25.1
20	35	10.6	109	7 2.7	-115	346	6.5	-14 56.3	291	3.1	-22	25.1
22	64	10.3	110	6 39.6	-116	16	11.8	-14 56.3	321	8.4	-22	25.1
Δ						26		0		27		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 1	14.6	- .5	15.8	T _m	17 34	2.0	59.1	16.1
12	- 1	21.1	T _{m☉}	12 h 1.4 min	Starost	5.2 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 38.1	23 25.7	268 9.3	138 8.8	20 25.6	315 37.2	-22 3.3
2	209 37.8	23 25.7	298 14.2	168 7.8	20 24.0	345 41.6	-22 3.5
4	239 37.5	23 25.8	328 19.2	198 6.8	20 22.5	15 46.0	-22 3.8
6	269 37.3	23 25.8	358 24.1	228 5.7	20 21.0	45 50.4	-22 4.0
8	299 37.0	23 25.9	28 29.0	258 4.7	20 19.4	75 54.8	-22 4.3
10	329 36.7	23 25.9	58 33.9	288 3.7	20 17.9	105 59.2	-22 4.5
12	359 36.4	23 25.9	88 38.9	318 2.7	20 16.3	136 3.7	-22 4.8
14	29 36.2	23 26.0	118 43.8	348 1.7	20 14.8	166 8.1	-22 5.0
16	59 35.9	23 26.0	148 48.7	18 .6	20 13.2	196 12.5	-22 5.3
18	89 35.6	23 26.0	178 53.7	47 59.6	20 11.7	226 16.9	-22 5.5
20	119 35.4	23 26.0	208 58.6	77 58.6	20 10.1	256 21.4	-22 5.8
22	149 35.1	23 26.1	239 3.5	107 57.6	20 8.6	286 25.8	-22 6.0
Δ	-1	0		-5	-8	22	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	11 44	2.9	0 31	1.4
55	3 20	20 43	0 58	:::	11 49	2.7	0 23	1.5
50	3 50	20 13	0 45	:::	11 53	2.6	0 17	1.6
45	4 13	19 50	0 37	2 33	11 56	2.5	0 12	1.7
40	4 31	19 32	0 33	2 3	11 58	2.4	0 8	1.7
35	4 46	19 17	0 30	1 47	12 1	2.3	0 4	1.8
30	4 59	19 4	0 27	1 37	12 3	2.3	0 1	1.8
20	5 21	18 42	0 25	1 24	12 6	2.2	...	.0
10	5 40	18 23	0 23	1 18	12 9	2.1	...	.0
0	5 58	18 5	0 23	1 15	12 12	2.0	...	.0
10	6 15	17 48	0 23	1 15	12 15	1.9	...	.0
20	6 34	17 29	0 24	1 19	12 18	1.8	...	.0
30	6 55	17 8	0 26	1 26	12 21	1.7	...	.0
35	7 8	16 56	0 28	1 31	12 23	1.6	...	.0
40	7 22	16 41	0 31	1 38	12 26	1.6	...	.0
45	7 39	16 25	0 34	1 47	12 28	1.5	...	.0
50	7 59	16 4	0 39	1 60	12 31	1.4	...	.0
55	8 27	15 37	0 46	2 18	12 35	1.3	...	.0
60	9 5	14 58	0 58	2 46	12 40	1.1	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	93 10.3	111	6 16.4	-116	46 17.0	-14 56.2	351 13.7	-22 25.1
2	122 10.5	112	5 53.2	-117	76 22.2	-14 56.1	21 19.0	-22 25.2
4	151 11.0	113	5 29.9	-117	106 27.5	-14 56.0	51 24.3	-22 25.2
6	180 11.7	115	5 6.5	-117	136 32.7	-14 56.0	81 29.7	-22 25.2
8	209 12.6	116	4 43.1	-117	166 37.9	-14 55.9	111 35.0	-22 25.2
10	238 13.7	117	4 19.6	-118	196 43.2	-14 55.8	141 40.3	-22 25.3
12	267 15.1	118	3 56.1	-118	226 48.4	-14 55.8	171 45.6	-22 25.3
14	296 16.6	119	3 32.5	-118	256 53.6	-14 55.7	201 50.9	-22 25.3
16	325 18.4	120	3 9.0	-118	286 58.8	-14 55.6	231 56.3	-22 25.3
18	354 20.3	121	2 45.4	-118	317 4.1	-14 55.6	262 1.6	-22 25.4
20	23 22.4	121	2 21.8	-118	347 9.3	-14 55.5	292 6.9	-22 25.4
22	52 24.7	122	1 58.2	-118	17 14.5	-14 55.4	322 12.2	-22 25.4
Δ					26	0	27	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 27.7	- .5	15.8	T _m	18 23	2.0	58.3 15.9
12	- 1 34.2	T _{m☉}	12 h 1.6 min	Starost	6.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 48	.1	230	-3.7	♃	20 51	.0	138	-1.9
♂	2 57	.1	47	-2.0	♄	0 35	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 34.8	23 26.1	269 8.4	137 56.6	20 7.0	316 30.2	-22 6.3
2	209 34.5	23 26.1	299 13.4	167 55.6	20 5.4	346 34.7	-22 6.6
4	239 34.3	23 26.1	329 18.3	197 54.6	20 3.8	16 39.2	-22 6.8
6	269 34.0	23 26.1	359 23.2	227 53.7	20 2.3	46 43.6	-22 7.1
8	299 33.7	23 26.1	29 28.2	257 52.7	20 .7	76 48.1	-22 7.4
10	329 33.5	23 26.1	59 33.1	287 51.7	19 59.1	106 52.6	-22 7.6
12	359 33.2	23 26.1	89 38.0	317 50.7	19 57.5	136 57.0	-22 7.9
14	29 32.9	23 26.1	119 42.9	347 49.7	19 55.9	167 1.5	-22 8.2
16	59 32.6	23 26.1	149 47.9	17 48.7	19 54.3	197 6.0	-22 8.4
18	89 32.4	23 26.1	179 52.8	47 47.8	19 52.7	227 10.5	-22 8.7
20	119 32.1	23 26.1	209 57.7	77 46.8	19 51.1	257 15.0	-22 9.0
22	149 31.8	23 26.1	240 2.7	107 45.8	19 49.5	287 19.5	-22 9.3
Δ	-1	0		-5	-8	22	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 47	:::	12 53	.5	1 4	1.7
55	3 21	20 43	0 58	:::	12 54	.8	0 59	1.8
50	3 51	20 13	0 45	:::	12 55	1.0	0 55	1.8
45	4 13	19 50	0 37	2 33	12 56	1.1	0 52	1.8
40	4 31	19 32	0 33	2 3	12 56	1.3	0 49	1.8
35	4 46	19 17	0 30	1 47	12 57	1.4	0 47	1.9
30	4 59	19 4	0 27	1 37	12 57	1.5	0 45	1.9
20	5 21	18 42	0 25	1 24	12 58	1.6	0 41	1.9
10	5 40	18 23	0 23	1 18	12 59	1.8	0 38	1.9
0	5 58	18 5	0 23	1 15	12 59	1.9	0 35	2.0
10	6 16	17 48	0 23	1 15	13 0	2.1	0 32	2.0
20	6 34	17 29	0 24	1 19	13 1	2.2	0 28	2.0
30	6 55	17 8	0 26	1 26	13 2	2.4	0 25	2.0
35	7 8	16 56	0 28	1 31	13 2	2.5	0 22	2.1
40	7 22	16 42	0 31	1 38	13 3	2.6	0 20	2.1
45	7 39	16 25	0 34	1 47	13 4	2.8	0 17	2.1
50	7 60	16 4	0 39	1 60	13 4	2.9	0 14	2.1
55	8 27	15 37	0 46	2 18	13 6	3.1	0 10	2.2
60	9 6	14 58	0 58	2 46	13 7	3.4	0 4	2.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	81 27.1	123	1 34.7	-118	47 19.7	-14 55.4	352 17.6	-22 25.4
2	110 29.7	124	1 11.1	-118	77 25.0	-14 55.3	22 22.9	-22 25.4
4	139 32.5	124	0 47.6	-117	107 30.2	-14 55.2	52 28.2	-22 25.5
6	168 35.4	125	0 24.1	-117	137 35.4	-14 55.2	82 33.5	-22 25.5
8	197 38.4	126	0 .7	110	167 40.6	-14 55.1	112 38.8	-22 25.5
10	226 41.5	126	0 22.7	117	197 45.8	-14 55.0	142 44.2	-22 25.5
12	255 44.8	127	0 46.0	116	227 51.0	-14 55.0	172 49.5	-22 25.6
14	284 48.2	128	1 9.3	116	257 56.3	-14 54.9	202 54.8	-22 25.6
16	313 51.7	128	1 32.5	116	288 1.5	-14 54.8	233 .1	-22 25.6
18	342 55.3	128	1 55.6	115	318 6.7	-14 54.8	263 5.5	-22 25.6
20	11 59.0	129	2 18.7	115	348 11.9	-14 54.7	293 10.8	-22 25.7
22	41 2.8	129	2 41.7	114	18 17.1	-14 54.7	323 16.1	-22 25.7
Δ					26	0	27	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 40.7	- .5	15.8	T _m	19 11	1.9	57.5 15.7
12	- 1 47.3	T _{m☉}	12 h 1.8 min	Starost	7.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 49	.1	229	-3.7	♃	20 47	.0	138	-1.9
♂	2 54	.1	47	-2.1	♄	0 31	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 31.6	23 26.0	270 7.6	137 44.9	19 47.9	317 24.0	-22 9.5
2	209 31.3	23 26.0	300 12.5	167 43.9	19 46.3	347 28.5	-22 9.8
4	239 31.0	23 26.0	330 17.4	197 42.9	19 44.7	17 33.0	-22 10.1
6	269 30.7	23 26.0	0 22.4	227 42.0	19 43.1	47 37.5	-22 10.4
8	299 30.5	23 25.9	30 27.3	257 41.0	19 41.5	77 42.1	-22 10.7
10	329 30.2	23 25.9	60 32.2	287 40.1	19 39.8	107 46.6	-22 10.9
12	359 29.9	23 25.9	90 37.2	317 39.1	19 38.2	137 51.1	-22 11.2
14	29 29.7	23 25.8	120 42.1	347 38.2	19 36.6	167 55.7	-22 11.5
16	59 29.4	23 25.8	150 47.0	17 37.2	19 34.9	198 .2	-22 11.8
18	89 29.1	23 25.8	180 51.9	47 36.3	19 33.3	228 4.8	-22 12.1
20	119 28.8	23 25.7	210 56.9	77 35.4	19 31.7	258 9.3	-22 12.4
22	149 28.6	23 25.7	241 1.8	107 34.4	19 30.0	288 13.9	-22 12.7
Δ	-1	0		-5	-8	23	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	70 6.7	130 3	4.5	114 48	22.3	-14 54.6	353 21.4	-22 25.7
2	99 10.6	130 3	27.3	113 78	27.5	-14 54.5	23 26.7	-22 25.7
4	128 14.6	130 3	49.9	113 108	32.7	-14 54.5	53 32.1	-22 25.7
6	157 18.7	131 4	12.5	112 138	37.9	-14 54.4	83 37.4	-22 25.8
8	186 22.8	131 4	34.9	111 168	43.1	-14 54.3	113 42.7	-22 25.8
10	215 27.0	131 4	57.2	111 198	48.3	-14 54.3	143 48.0	-22 25.8
12	244 31.2	131 5	19.3	110 228	53.5	-14 54.2	173 53.4	-22 25.8
14	273 35.4	131 5	41.4	109 258	58.7	-14 54.2	203 58.7	-22 25.9
16	302 39.7	132 6	3.3	109 289	3.9	-14 54.1	234 4.0	-22 25.9
18	331 44.0	132 6	25.0	108 319	9.1	-14 54.0	264 9.3	-22 25.9
20	0 48.3	132 6	46.6	107 349	14.3	-14 54.0	294 14.7	-22 25.9
22	29 52.7	132 7	8.0	106 19	19.5	-14 53.9	324 20.0	-22 26.0
Δ					26	0	27	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 46	:::	13 6	.6	1 46	3.3
55	3 21	20 43	0 58	:::	13 13	.8	1 42	3.1
50	3 51	20 13	0 45	:::	13 18	1.0	1 38	2.9
45	4 13	19 51	0 37	2 33	13 23	1.2	1 35	2.7
40	4 32	19 32	0 33	2 3	13 26	1.3	1 33	2.6
35	4 47	19 17	0 30	1 47	13 30	1.4	1 31	2.5
30	4 60	19 4	0 27	1 37	13 32	1.5	1 30	2.4
20	5 22	18 42	0 25	1 24	13 37	1.6	1 27	2.2
10	5 41	18 23	0 23	1 18	13 42	1.8	1 24	2.1
0	5 58	18 6	0 23	1 15	13 46	1.9	1 22	1.9
10	6 16	17 48	0 23	1 15	13 50	2.0	1 19	1.8
20	6 34	17 30	0 24	1 19	13 54	2.2	1 17	1.6
30	6 56	17 8	0 26	1 26	13 59	2.4	1 14	1.5
35	7 8	16 56	0 28	1 31	14 2	2.5	1 12	1.4
40	7 22	16 42	0 31	1 38	14 6	2.6	1 10	1.3
45	7 39	16 25	0 34	1 47	14 10	2.7	1 8	1.1
50	7 60	16 4	0 39	1 60	14 14	2.8	1 5	1.0
55	8 27	15 37	0 46	2 18	14 20	3.0	1 2	.8
60	9 6	14 58	0 58	2 46	14 28	3.3	0 58	.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 1 53.8	-.5	15.8	T _m	19 57	1.9	56.8 15.5		
12	- 2 .3	T _{m☉}	12 h 2.0 min	Starost	8.2 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 49	.1	228	-3.7	♄	20 43	.0	138	-1.9
	2 50	.1	47	-2.1	♅	0 26	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 28.3	23 25.6	271 6.7	137 33.5	19 28.4	318 18.5	-22 13.0
2	209 28.0	23 25.5	301 11.7	167 32.6	19 26.7	348 23.1	-22 13.3
4	239 27.8	23 25.5	331 16.6	197 31.6	19 25.1	18 27.6	-22 13.6
6	269 27.5	23 25.4	1 21.5	227 30.7	19 23.4	48 32.2	-22 13.9
8	299 27.2	23 25.4	31 26.4	257 29.8	19 21.7	78 36.8	-22 14.2
10	329 27.0	23 25.3	61 31.4	287 28.9	19 20.1	108 41.4	-22 14.5
12	359 26.7	23 25.2	91 36.3	317 28.0	19 18.4	138 46.0	-22 14.8
14	29 26.4	23 25.2	121 41.2	347 27.1	19 16.7	168 50.6	-22 15.1
16	59 26.2	23 25.1	151 46.2	17 26.1	19 15.1	198 55.2	-22 15.4
18	89 25.9	23 25.0	181 51.1	47 25.2	19 13.4	228 59.8	-22 15.7
20	119 25.6	23 24.9	211 56.0	77 24.3	19 11.7	259 4.5	-22 16.0
22	149 25.4	23 24.8	242 .9	107 23.4	19 10.0	289 9.1	-22 16.3
Δ	-1	0		-5	-8	23	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	58 57.0	132 7	29.2	105 49	24.7	-14 53.9	354 25.3	-22 26.0
2	88 1.4	132 7	50.3	104 79	29.9	-14 53.8	24 30.6	-22 26.0
4	117 5.7	132 8	11.2	104 109	35.1	-14 53.7	54 35.9	-22 26.0
6	146 10.0	132 8	31.9	103 139	40.3	-14 53.7	84 41.3	-22 26.0
8	175 14.4	132 8	52.4	102 169	45.5	-14 53.6	114 46.6	-22 26.1
10	204 18.7	131 9	12.7	101 199	50.7	-14 53.6	144 51.9	-22 26.1
12	233 23.0	131 9	32.9	100 229	55.9	-14 53.5	174 57.2	-22 26.1
14	262 27.2	131 9	52.8	99 260	1.0	-14 53.5	205 2.6	-22 26.1
16	291 31.4	131 10	12.5	97 290	6.2	-14 53.4	235 7.9	-22 26.2
18	320 35.6	131 10	32.0	96 320	11.4	-14 53.4	265 13.2	-22 26.2
20	349 39.8	131 10	51.3	95 350	16.6	-14 53.3	295 18.5	-22 26.2
22	18 43.9	130 11	10.3	94 20	21.8	-14 53.2	325 23.9	-22 26.2
Δ					26	0	27	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 36	21 28	1 46	:::	13 20	.7	3 6	3.3
55	3 21	20 43	0 58	:::	13 33	.9	2 55	3.0
50	3 51	20 13	0 45	:::	13 43	1.1	2 47	2.8
45	4 14	19 51	0 37	2 33	13 51	1.2	2 41	2.7
40	4 32	19 33	0 33	2 3	13 57	1.4	2 35	2.5
35	4 47	19 18	0 30	1 47	14 3	1.4	2 31	2.4
30	4 60	19 5	0 27	1 37	14 8	1.5	2 27	2.3
20	5 22	18 42	0 25	1 24	14 17	1.7	2 20	2.2
10	5 41	18 23	0 23	1 18	14 24	1.8	2 13	2.0
0	5 59	18 6	0 23	1 15	14 32	1.9	2 8	1.9
10	6 16	17 48	0 23	1 15	14 39	2.0	2 2	1.8
20	6 35	17 30	0 24	1 19	14 47	2.2	1 56	1.7
30	6 56	17 9	0 26	1 26	14 56	2.3	1 49	1.5
35	7 8	16 56	0 28	1 31	15 1	2.4	1 45	1.4
40	7 22	16 42	0 31	1 38	15 7	2.5	1 40	1.3
45	7 39	16 25	0 34	1 47	15 14	2.6	1 35	1.2
50	7 60	16 4	0 39	1 60	15 22	2.8	1 29	1.0
55	8 27	15 37	0 46	2 18	15 33	3.0	1 21	.9
60	9 6	14 59	0 58	2 46	15 47	3.2	1 12	.6
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 2 6.8	-.5	15.8	T _m	20 43	1.9	56.2 15.3		
12	- 2 13.2	T _{m☉}	12 h 2.2 min	Starost	9.2 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 50	.1	226	-3.7	♄	20 39	.0	138	-1.9
	2 46	.1	47	-2.1	♅	0 22	.0	83	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 25.1	23 24.7	272 5.9	137 22.5	19 8.3	319 13.7	-22 16.6
2	209 24.8	23 24.7	302 10.8	167 21.6	19 6.6	349 18.4	-22 16.9
4	239 24.6	23 24.6	332 15.7	197 20.8	19 5.0	19 23.0	-22 17.2
6	269 24.3	23 24.5	2 20.6	227 19.9	19 3.3	49 27.6	-22 17.5
8	299 24.0	23 24.4	32 25.6	257 19.0	19 1.6	79 32.3	-22 17.9
10	329 23.8	23 24.3	62 30.5	287 18.1	18 59.9	109 37.0	-22 18.2
12	359 23.5	23 24.2	92 35.4	317 17.2	18 58.1	139 41.6	-22 18.5
14	29 23.2	23 24.1	122 40.4	347 16.3	18 56.4	169 46.3	-22 18.8
16	59 23.0	23 23.9	152 45.3	17 15.5	18 54.7	199 51.0	-22 19.1
18	89 22.7	23 23.8	182 50.2	47 14.6	18 53.0	229 55.6	-22 19.5
20	119 22.4	23 23.7	212 55.1	77 13.7	18 51.3	260 .3	-22 19.8
22	149 22.2	23 23.6	243 .1	107 12.9	18 49.6	290 5.0	-22 20.1
Δ	-1	-1		-4	-9	23	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 28	1 45	:::	13 37	.8	4 24	3.2
55	3 21	20 43	0 58	:::	13 55	1.1	4 7	2.9
50	3 51	20 13	0 45	:::	14 9	1.2	3 55	2.7
45	4 14	19 51	0 37	2 33	14 20	1.4	3 45	2.6
40	4 32	19 33	0 33	2 3	14 30	1.5	3 36	2.5
35	4 47	19 18	0 30	1 47	14 38	1.5	3 29	2.4
30	5 0	19 5	0 27	1 37	14 45	1.6	3 23	2.3
20	5 22	18 43	0 25	1 24	14 57	1.7	3 12	2.2
10	5 41	18 24	0 23	1 18	15 8	1.9	3 3	2.1
0	5 59	18 6	0 23	1 15	15 18	2.0	2 54	1.9
10	6 16	17 49	0 23	1 15	15 28	2.1	2 45	1.8
20	6 35	17 30	0 24	1 19	15 39	2.2	2 36	1.7
30	6 56	17 9	0 26	1 26	15 52	2.3	2 25	1.6
35	7 8	16 57	0 28	1 31	15 59	2.4	2 19	1.5
40	7 23	16 42	0 31	1 38	16 7	2.5	2 12	1.4
45	7 39	16 26	0 34	1 47	16 17	2.6	2 4	1.3
50	8 0	16 5	0 39	1 60	16 29	2.7	1 54	1.2
55	8 27	15 38	0 46	2 18	16 44	2.8	1 42	1.0
60	9 6	14 59	0 58	2 46	17 4	3.1	1 27	.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	47 48.0	130	11 29.1	93	50 27.0	-14 53.2	355 29.2	-22 26.3
2	76 52.0	130	11 47.7	92	80 32.1	-14 53.1	25 34.5	-22 26.3
4	105 56.0	130	12 6.1	90	110 37.3	-14 53.1	55 39.8	-22 26.3
6	134 59.9	129	12 24.2	89	140 42.5	-14 53.0	85 45.2	-22 26.3
8	164 3.7	129	12 42.0	88	170 47.7	-14 53.0	115 50.5	-22 26.3
10	193 7.5	129	12 59.6	87	200 52.8	-14 52.9	145 55.8	-22 26.4
12	222 11.3	128	13 16.9	85	230 58.0	-14 52.9	176 1.1	-22 26.4
14	251 14.9	128	13 34.0	84	261 3.2	-14 52.8	206 6.5	-22 26.4
16	280 18.5	128	13 50.8	83	291 8.4	-14 52.8	236 11.8	-22 26.4
18	309 22.0	127	14 7.3	81	321 13.5	-14 52.7	266 17.1	-22 26.5
20	338 25.5	127	14 23.6	80	351 18.7	-14 52.7	296 22.4	-22 26.5
22	7 28.9	127	14 39.5	78	21 23.9	-14 52.6	326 27.8	-22 26.5
Δ					26	0	27	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 2 19.6	-.5	15.8	T _m	21 29	2.0	55.6	15.2
12	- 2 26.0	T _{m☉}	12 h 2.4 min	Starost	10.2 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 51	.1	225	-3.7	♃	20 35	.0	138	-1.9
♂	2 43	.1	47	-2.1	♄	0 18	.0	83	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 21.9	23 23.5	273 5.0	137 12.0	18 47.8	320 9.7	-22 20.4
2	209 21.6	23 23.4	303 9.9	167 11.1	18 46.1	350 14.4	-22 20.8
4	239 21.4	23 23.2	333 14.9	197 10.3	18 44.4	20 19.1	-22 21.1
6	269 21.1	23 23.1	3 19.8	227 9.4	18 42.6	50 23.8	-22 21.4
8	299 20.8	23 23.0	33 24.7	257 8.6	18 40.9	80 28.5	-22 21.8
10	329 20.6	23 22.8	63 29.6	287 7.7	18 39.2	110 33.3	-22 22.1
12	359 20.3	23 22.7	93 34.6	317 6.9	18 37.4	140 38.0	-22 22.4
14	29 20.0	23 22.5	123 39.5	347 6.0	18 35.7	170 42.7	-22 22.8
16	59 19.8	23 22.4	153 44.4	17 5.2	18 33.9	200 47.5	-22 23.1
18	89 19.5	23 22.3	183 49.4	47 4.3	18 32.2	230 52.2	-22 23.5
20	119 19.3	23 22.1	213 54.3	77 3.5	18 30.4	260 56.9	-22 23.8
22	149 19.0	23 21.9	243 59.2	107 2.7	18 28.7	291 1.7	-22 24.1
Δ	-1	-1		-4	-9	24	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 37	21 28	1 45	:::	13 57	1.1	5 40	3.0
55	3 22	20 43	0 58	:::	14 21	1.3	5 17	2.8
50	3 52	20 13	0 45	:::	14 39	1.4	5 0	2.6
45	4 14	19 51	0 37	2 33	14 53	1.5	4 47	2.5
40	4 32	19 33	0 33	2 3	15 5	1.6	4 36	2.4
35	4 47	19 18	0 30	1 47	15 15	1.7	4 26	2.3
30	5 0	19 5	0 27	1 37	15 24	1.7	4 18	2.3
20	5 22	18 43	0 25	1 24	15 39	1.8	4 4	2.2
10	5 41	18 24	0 23	1 18	15 52	1.9	3 52	2.1
0	5 59	18 6	0 23	1 15	16 5	2.0	3 40	2.0
10	6 16	17 49	0 23	1 15	16 18	2.1	3 29	1.9
20	6 35	17 30	0 24	1 19	16 31	2.1	3 17	1.8
30	6 56	17 9	0 26	1 25	16 47	2.2	3 3	1.7
35	7 8	16 57	0 28	1 31	16 56	2.3	2 55	1.6
40	7 23	16 43	0 31	1 38	17 6	2.4	2 46	1.5
45	7 39	16 26	0 34	1 47	17 18	2.4	2 35	1.4
50	8 0	16 5	0 38	1 59	17 33	2.5	2 22	1.3
55	8 27	15 38	0 46	2 18	17 52	2.7	2 6	1.2
60	9 6	14 59	0 58	2 46	18 18	2.9	1 45	.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	36 32.2	126	14 55.2	77	51 29.0	-14 52.6	356 33.1	-22 26.5
2	65 35.4	126	15 10.6	75	81 34.2	-14 52.5	26 38.4	-22 26.6
4	94 38.5	125	15 25.7	74	111 39.4	-14 52.5	56 43.7	-22 26.6
6	123 41.6	125	15 40.4	72	141 44.5	-14 52.4	86 49.1	-22 26.6
8	152 44.6	125	15 54.9	71	171 49.7	-14 52.4	116 54.4	-22 26.6
10	181 47.5	124	16 9.1	69	201 54.8	-14 52.3	146 59.7	-22 26.6
12	210 50.3	124	16 22.9	68	232 .0	-14 52.3	177 5.0	-22 26.7
14	239 53.1	123	16 36.5	66	262 5.2	-14 52.2	207 10.4	-22 26.7
16	268 55.7	123	16 49.7	64	292 10.3	-14 52.2	237 15.7	-22 26.7
18	297 58.3	123	17 2.6	63	322 15.5	-14 52.1	267 21.0	-22 26.7
20	327 .8	122	17 15.1	61	352 20.6	-14 52.1	297 26.3	-22 26.8
22	356 3.3	122	17 27.4	59	22 25.8	-14 52.0	327 31.7	-22 26.8
Δ					26	0	27	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 2 32.4	-.5	15.8	T _m	22 16	2.0	55.1	15.0
12	- 2 38.8	T _{m☉}	12 h 2.6 min	Starost	11.2 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 52	.1	224	-3.8	♃	20 31	.0	138	-1.9
♂	2 39	.1	47	-2.2	♄	0 14	.0	83	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	18.7	23	21.8	274	4.1	137	1.8	18	26.9	321	6.5	-22	24.5	
2	209	18.5	23	21.6	304	9.1	167	1.0	18	25.1	351	11.2	-22	24.8	
4	239	18.2	23	21.5	334	14.0	197	.2	18	23.4	21	16.0	-22	25.2	
6	269	17.9	23	21.3	4	18.9	226	59.4	18	21.6	51	20.8	-22	25.5	
8	299	17.7	23	21.1	34	23.9	256	58.6	18	19.8	81	25.5	-22	25.9	
10	329	17.4	23	21.0	64	28.8	286	57.7	18	18.0	111	30.3	-22	26.2	
12	359	17.2	23	20.8	94	33.7	316	56.9	18	16.3	141	35.1	-22	26.6	
14	29	16.9	23	20.6	124	38.6	346	56.1	18	14.5	171	39.9	-22	26.9	
16	59	16.6	23	20.4	154	43.6	16	55.3	18	12.7	201	44.7	-22	27.3	
18	89	16.4	23	20.3	184	48.5	46	54.5	18	10.9	231	49.5	-22	27.7	
20	119	16.1	23	20.1	214	53.4	76	53.7	18	9.1	261	54.3	-22	28.0	
22	149	15.9	23	19.9	244	58.4	106	52.9	18	7.3	291	59.2	-22	28.4	
Δ		-1		-1				-4		-9		24			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 38	21 28	1 44	:::	14 23	1.4	6 52	2.7
55	3 22	20 43	0 58	:::	14 52	1.6	6 24	2.6
50	3 52	20 13	0 45	:::	15 13	1.7	6 3	2.5
45	4 15	19 51	0 37	2 33	15 30	1.7	5 47	2.4
40	4 33	19 33	0 33	2 3	15 43	1.8	5 34	2.3
35	4 48	19 18	0 30	1 47	15 55	1.8	5 23	2.3
30	5 1	19 5	0 27	1 36	16 5	1.9	5 13	2.2
20	5 23	18 43	0 25	1 24	16 23	1.9	4 56	2.1
10	5 42	18 24	0 23	1 18	16 38	2.0	4 41	2.1
0	5 59	18 7	0 23	1 15	16 53	2.0	4 28	2.0
10	6 17	17 49	0 23	1 15	17 7	2.1	4 14	1.9
20	6 35	17 31	0 24	1 19	17 23	2.1	3 60	1.9
30	6 56	17 10	0 26	1 25	17 41	2.2	3 43	1.8
35	7 9	16 57	0 28	1 31	17 51	2.2	3 33	1.8
40	7 23	16 43	0 31	1 38	18 3	2.2	3 22	1.7
45	7 39	16 26	0 34	1 47	18 17	2.3	3 9	1.6
50	8 0	16 6	0 38	1 59	18 34	2.3	2 54	1.5
55	8 27	15 39	0 45	2 18	18 57	2.4	2 34	1.4
60	9 6	15 0	0 58	2 46	19 27	2.6	2 7	1.2

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	25	5.6	121	17	39.2	58	52	30.9	-14	52.0	357	37.0	-22	26.8	
2	54	7.9	121	17	50.8	56	82	36.1	-14	52.0	27	42.3	-22	26.8	
4	83	10.1	121	18	2.0	54	112	41.2	-14	51.9	57	47.6	-22	26.9	
6	112	12.2	120	18	12.9	53	142	46.4	-14	51.9	87	53.0	-22	26.9	
8	141	14.2	120	18	23.4	51	172	51.5	-14	51.8	117	58.3	-22	26.9	
10	170	16.2	120	18	33.5	49	202	56.7	-14	51.8	148	3.6	-22	26.9	
12	199	18.1	119	18	43.3	47	233	1.8	-14	51.7	178	8.9	-22	26.9	
14	228	20.0	119	18	52.8	45	263	7.0	-14	51.7	208	14.3	-22	27.0	
16	257	21.8	119	19	1.9	44	293	12.1	-14	51.6	238	19.6	-22	27.0	
18	286	23.5	118	19	10.6	42	323	17.2	-14	51.6	268	24.9	-22	27.0	
20	315	25.1	118	19	18.9	40	353	22.4	-14	51.6	298	30.2	-22	27.0	
22	344	26.8	118	19	26.9	38	23	27.5	-14	51.5	328	35.6	-22	27.1	
Δ							26			0		27			0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 2 45.1	-.5	15.8	T _m	23 4	2.0	54.7 14.9
12	- 2 51.3	T _{m☉}	12 h 2.9 min	Starost	12.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 52	.1	223	-3.8	♄	20 26	.0	138	-1.9
♂	2 35	.1	47	-2.2	♃	0 10	.0	84	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	15.6	23	19.7	275	3.3	136	52.1	18	5.5	322	4.0	-22	28.7	
2	209	15.3	23	19.5	305	8.2	166	51.3	18	3.7	352	8.8	-22	29.1	
4	239	15.1	23	19.3	335	13.1	196	50.5	18	1.9	22	13.6	-22	29.5	
6	269	14.8	23	19.1	5	18.1	226	49.7	18	.1	52	18.5	-22	29.8	
8	299	14.6	23	18.9	35	23.0	256	49.0	17	58.3	82	23.3	-22	30.2	
10	329	14.3	23	18.7	65	27.9	286	48.2	17	56.5	112	28.2	-22	30.6	
12	359	14.1	23	18.5	95	32.8	316	47.4	17	54.6	142	33.0	-22	30.9	
14	29	13.8	23	18.3	125	37.8	346	46.6	17	52.8	172	37.9	-22	31.3	
16	59	13.5	23	18.1	155	42.7	16	45.9	17	51.0	202	42.8	-22	31.7	
18	89	13.3	23	17.9	185	47.6	46	45.1	17	49.2	232	47.6	-22	32.1	
20	119	13.0	23	17.6	215	52.6	76	44.3	17	47.4	262	52.5	-22	32.4	
22	149	12.8	23	17.4	245	57.5	106	43.6	17	45.5	292	57.4	-22	32.8	
Δ		-1		-1				-4		-9		24			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 39	21 27	1 43	:::	14 57	1.8	7 57	2.3
55	3 23	20 43	0 58	:::	15 29	1.9	7 25	2.3
50	3 53	20 13	0 44	:::	15 53	1.9	7 2	2.2
45	4 15	19 51	0 37	2 32	16 11	1.9	6 44	2.2
40	4 33	19 33	0 33	2 3	16 26	2.0	6 29	2.2
35	4 48	19 18	0 30	1 47	16 39	2.0	6 17	2.1
30	5 1	19 5	0 27	1 36	16 50	2.0	6 6	2.1
20	5 23	18 43	0 25	1 24	17 9	2.0	5 47	2.1
10	5 42	18 24	0 23	1 18	17 26	2.0	5 31	2.1
0	5 59	18 7	0 23	1 15	17 41	2.0	5 16	2.0
10	6 17	17 49	0 23	1 15	17 57	2.0	5 1	2.0
20	6 35	17 31	0 24	1 19	18 13	2.0	4 45	2.0
30	6 56	17 10	0 26	1 25	18 33	2.1	4 26	1.9
35	7 9	16 58	0 28	1 31	18 44	2.1	4 15	1.9
40	7 23	16 43	0 31	1 38	18 57	2.1	4 3	1.9
45	7 39	16 27	0 34	1 47	19 12	2.1	3 49	1.8
50	8 0	16 6	0 38	1 59	19 31	2.1	3 31	1.8
55	8 27	15 39	0 45	2 17	19 55	2.1	3 8	1.7
60	9 6	15 1	0 57	2 46	20 29	2.1	2 37	1.6

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	13	28.3	118	19	34.5	36	53	32.7	-14	51.5	358	40.9	-22	27.1	
2	42	29.8	117	19	41.8	34	83	37.8	-14	51.4	28	46.2	-22	27.1	
4	71	31.3	117	19	48.6	32	113	42.9	-14	51.4	58	51.6	-22	27.1	
6	100	32.7	117	19	55.1	31	143	48.1	-14	51.4	88	56.9	-22	27.2	
8	129	34.1	117	20	1.2	29	173	53.2	-14	51.3	119	2.2	-22	27.2	
10	158	35.4	117	20	6.9	27	203	58.3	-14	51.3	149	7.5	-22	27.2	
12	187	36.7	116	20	12.3	25	234	3.5	-14	51.2	179	12.9	-22	27.2	
14	216	38.0	116	20	17.2	23	264	8.6	-14	51.2	209	18.2	-22	27.2	
16	245	39.2	116	20	21.8	21	294	13.7	-14	51.2	239	23.5	-22	27.3	
18	274	40.5	116	20	26.0	19	324	18.8	-14	51.1	269	28.8	-22	27.3	
20	303	41.7	116	20	29.8	17	354	24.0	-14	51.1	299	34.2	-22	27.3	
22	332	42.9	116	20	33.2	15	24	29.1	-14	51.1	329	39.5	-22	27.3	
Δ							26			0		27			0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 2 57.6	-.5	15.8	T _m	2		

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}	S_{σ}		δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	179	12.5	23	17.2	276	2.4	136	42.8	17	43.7	323	2.3 -22 33.2
2	209	12.3	23	17.0	306	7.3	166	42.0	17	41.9	353	7.2 -22 33.6
4	239	12.0	23	16.7	336	12.3	196	41.3	17	40.0	23	12.1 -22 34.0
6	269	11.7	23	16.5	6	17.2	226	40.5	17	38.2	53	17.0 -22 34.3
8	299	11.5	23	16.3	36	22.1	256	39.8	17	36.3	83	21.9 -22 34.7
10	329	11.2	23	16.0	66	27.1	286	39.0	17	34.5	113	26.8 -22 35.1
12	359	11.0	23	15.8	96	32.0	316	38.3	17	32.6	143	31.7 -22 35.5
14	29	10.7	23	15.5	126	36.9	346	37.5	17	30.8	173	36.6 -22 35.9
16	59	10.5	23	15.3	156	41.8	16	36.8	17	28.9	203	41.6 -22 36.3
18	89	10.2	23	15.0	186	46.8	46	36.1	17	27.1	233	46.5 -22 36.7
20	119	10.0	23	14.8	216	51.7	76	35.3	17	25.2	263	51.5 -22 37.0
22	149	9.7	23	14.5	246	56.6	106	34.6	17	23.3	293	56.4 -22 37.4
Δ		-1		-1				-4		-9		25 -2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	2 39	21 27	1 42	:::	15 41	2.3	8 53	1.9
55	3 23	20 43	0 58	:::	16 14	2.2	8 20	1.9
50	3 53	20 13	0 44	:::	16 39	2.2	7 55	2.0
45	4 16	19 51	0 37	2 32	16 58	2.1	7 36	2.0
40	4 33	19 33	0 33	2 3	17 13	2.1	7 21	2.0
35	4 48	19 18	0 30	1 47	17 26	2.1	7 8	2.0
30	5 1	19 5	0 27	1 36	17 37	2.1	6 57	2.0
20	5 23	18 43	0 25	1 24	17 57	2.1	6 37	2.0
10	5 42	18 24	0 23	1 18	18 14	2.0	6 20	2.0
0	5 60	18 7	0 23	1 15	18 30	2.0	6 5	2.0
10	6 17	17 50	0 23	1 15	18 46	2.0	5 49	2.0
20	6 35	17 31	0 24	1 19	19 2	2.0	5 32	2.0
30	6 56	17 10	0 26	1 25	19 22	1.9	5 12	2.0
35	7 9	16 58	0 28	1 31	19 33	1.9	5 1	2.0
40	7 23	16 44	0 31	1 38	19 46	1.9	4 48	2.0
45	7 39	16 27	0 34	1 47	20 2	1.9	4 33	2.0
50	8 0	16 7	0 38	1 59	20 21	1.8	4 14	2.0
55	8 27	15 40	0 45	2 17	20 45	1.8	3 49	2.0
60	9 5	15 1	0 57	2 45	21 20	1.7	3 15	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	1	44.1	116	20	36.2	13	54	34.2 -14 51.0
2	30	45.3	116	20	38.8	11	84	39.3 -14 51.0
4	59	46.5	116	20	41.1	9	114	44.5 -14 50.9
6	88	47.7	116	20	42.9	7	144	49.6 -14 50.9
8	117	48.9	116	20	44.4	5	174	54.7 -14 50.9
10	146	50.1	116	20	45.4	3	204	59.8 -14 50.8
12	175	51.4	116	20	46.1	1	235	4.9 -14 50.8
14	204	52.6	116	20	46.4	-1	265	10.0 -14 50.8
16	233	53.9	117	20	46.3	-2	295	15.2 -14 50.7
18	262	55.2	117	20	45.8	-4	325	20.3 -14 50.7
20	291	56.6	117	20	44.9	-6	355	25.4 -14 50.7
22	320	58.0	117	20	43.6	-8	25	30.5 -14 50.6
Δ							26	0

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	s	h min	min	'	'
00	- 3	9.9	- .5	15.8	T_m	1.0	54.2 14.8
12	- 3	16.0	$T_{m\odot}$	12 h 3.3 min	Starost	14.2 d	Faza \odot

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
h	h min	'	°		h min	'	°		
ζ	14 54	.1	221	-3.8	μ	20 18	.0	139	-1.9
σ	2 27	.1	47	-2.2	η	0 1	.0	84	.2

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}	S_{σ}		δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	179	9.5	23	14.3	277	1.6	136	33.9	17	21.5	324	1.4 -22 37.8
2	209	9.2	23	14.0	307	6.5	166	33.2	17	19.6	354	6.3 -22 38.2
4	239	9.0	23	13.8	337	11.4	196	32.4	17	17.7	24	11.3 -22 38.6
6	269	8.7	23	13.5	7	16.3	226	31.7	17	15.8	54	16.3 -22 39.0
8	299	8.5	23	13.2	37	21.3	256	31.0	17	14.0	84	21.2 -22 39.4
10	329	8.2	23	13.0	67	26.2	286	30.3	17	12.1	114	26.2 -22 39.8
12	359	8.0	23	12.7	97	31.1	316	29.6	17	10.2	144	31.2 -22 40.2
14	29	7.7	23	12.4	127	36.1	346	28.9	17	8.3	174	36.2 -22 40.6
16	59	7.5	23	12.1	157	41.0	16	28.2	17	6.4	204	41.2 -22 41.0
18	89	7.2	23	11.8	187	45.9	46	27.5	17	4.5	234	46.2 -22 41.4
20	119	7.0	23	11.5	217	50.8	76	26.8	17	2.6	264	51.2 -22 41.8
22	149	6.7	23	11.3	247	55.8	106	26.1	17	.7	294	56.2 -22 42.3
Δ		-1		-1				-4		-9		25 -2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	2 40	21 26	1 40	:::	16 35	2.6	9 39	1.5
55	3 24	20 43	0 57	:::	17 7	2.5	9 6	1.6
50	3 54	20 13	0 44	:::	17 31	2.4	8 42	1.7
45	4 16	19 51	0 37	2 31	17 49	2.3	8 24	1.7
40	4 34	19 33	0 33	2 3	18 4	2.2	8 9	1.8
35	4 49	19 18	0 30	1 47	18 16	2.2	7 56	1.8
30	5 2	19 5	0 27	1 36	18 27	2.2	7 45	1.9
20	5 24	18 43	0 25	1 24	18 46	2.1	7 25	1.9
10	5 42	18 25	0 23	1 18	19 3	2.0	7 9	2.0
0	5 60	18 7	0 22	1 15	19 18	2.0	6 53	2.0
10	6 17	17 50	0 23	1 15	19 33	1.9	6 37	2.0
20	6 35	17 32	0 24	1 19	19 49	1.9	6 21	2.1
30	6 56	17 11	0 26	1 25	20 8	1.8	6 1	2.1
35	7 9	16 58	0 28	1 31	20 19	1.7	5 50	2.1
40	7 23	16 44	0 31	1 37	20 32	1.7	5 37	2.2
45	7 39	16 28	0 34	1 47	20 46	1.6	5 22	2.2
50	7 60	16 7	0 38	1 59	21 5	1.6	5 3	2.3
55	8 27	15 40	0 45	2 17	21 28	1.4	4 38	2.3
60	9 5	15 2	0 57	2 45	21 60	1.3	4 4	2.5
S								

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	349	59.5	117	20	42.0	-10	55	35.6 -14 50.6
2	19	1.0	118	20	39.9	-12	85	40.7 -14 50.6
4	48	2.5	118	20	37.5	-14	115	45.8 -14 50.5
6	77	4.1	118	20	34.7	-16	145	50.9 -14 50.5
8	106	5.8	119	20	31.5	-18	175	56.0 -14 50.5
10	135	7.5	119	20	27.9	-20	206	1.1 -14 50.5
12	164	9.4	119	20	24.0	-22	236	6.2 -14 50.4
14	193	11.2	120	20	19.7	-24	266	11.3 -14 50.4
16	222	13.2	120	20	15.0	-25	296	16.4 -14 50.4
18	251	15.2	121	20	9.9	-27	326	21.5 -14 50.3
20	280	17.3	121	20	4.4	-29	356	26.6 -14 50.3
22	309	19.5	121	19	58.6	-31	26	31.7 -14 50.3
Δ							26	0

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	s	h min	min	'	'
00	- 3	22.1	- .5	15.8	T_m	0 41	2.0 54.1 14.7
12	- 3	28.1	$T_{m\odot}$	12 h 3.5 min	Starost	15.2 d	Faza \odot

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
h	h min	'	°		h min	'	°		
ζ	14 54	.1	220	-3.8	μ	20 14	.0	139	-1.9
σ	2 24	.1	47	-2.3	η	23 53	.0	84	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	6.5	23	11.0	278	.7	136	25.4	16	58.8	325	1.2	-22	42.7	
2	209	6.2	23	10.7	308	5.6	166	24.7	16	56.9	355	6.3	-22	43.1	
4	239	6.0	23	10.4	338	10.6	196	24.0	16	55.0	25	11.3	-22	43.5	
6	269	5.7	23	10.1	8	15.5	226	23.3	16	53.1	55	16.3	-22	43.9	
8	299	5.5	23	9.8	38	20.4	256	22.6	16	51.2	85	21.4	-22	44.3	
10	329	5.3	23	9.5	68	25.3	286	22.0	16	49.3	115	26.4	-22	44.7	
12	359	5.0	23	9.2	98	30.3	316	21.3	16	47.4	145	31.5	-22	45.2	
14	29	4.8	23	8.8	128	35.2	346	20.6	16	45.4	175	36.5	-22	45.6	
16	59	4.5	23	8.5	158	40.1	16	19.9	16	43.5	205	41.6	-22	46.0	
18	89	4.3	23	8.2	188	45.1	46	19.3	16	41.6	235	46.6	-22	46.4	
20	119	4.0	23	7.9	218	50.0	76	18.6	16	39.7	265	51.7	-22	46.8	
22	149	3.8	23	7.6	248	54.9	106	17.9	16	37.7	295	56.8	-22	47.3	
Δ		-1		-2				-3		-10		25			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 41	21 26	1 39	:::	17 37	2.9	10 14	1.1
55	3 25	20 42	0 57	:::	18 6	2.7	9 44	1.3
50	3 54	20 13	0 44	:::	18 28	2.5	9 23	1.4
45	4 17	19 51	0 37	2 31	18 44	2.4	9 6	1.5
40	4 34	19 33	0 33	2 2	18 58	2.3	8 52	1.6
35	4 49	19 18	0 30	1 46	19 9	2.3	8 40	1.7
30	5 2	19 5	0 27	1 36	19 19	2.2	8 29	1.7
20	5 24	18 43	0 25	1 24	19 36	2.1	8 11	1.8
10	5 43	18 25	0 23	1 18	19 51	2.0	7 56	1.9
0	5 60	18 7	0 22	1 15	20 5	1.9	7 41	1.9
10	6 17	17 50	0 23	1 15	20 19	1.8	7 26	2.0
20	6 36	17 32	0 24	1 19	20 34	1.8	7 10	2.1
30	6 57	17 11	0 26	1 25	20 51	1.7	6 52	2.2
35	7 9	16 59	0 28	1 31	21 1	1.6	6 42	2.2
40	7 23	16 45	0 30	1 37	21 12	1.5	6 29	2.3
45	7 39	16 28	0 34	1 47	21 26	1.4	6 15	2.4
50	7 60	16 8	0 38	1 59	21 42	1.3	5 57	2.4
55	8 26	15 41	0 45	2 17	22 2	1.2	5 35	2.6
60	9 4	15 3	0 57	2 45	22 30	1.0	5 3	2.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	338	21.8	122	19	52.5	-33	56	36.8	-14	50.3	1	52.6	-22	27.9		
2	7	24.2	122	19	45.9	-34	86	41.9	-14	50.2	31	57.9	-22	27.9		
4	36	26.7	123	19	39.0	-36	116	47.0	-14	50.2	62	3.3	-22	28.0		
6	65	29.3	123	19	31.8	-38	146	52.1	-14	50.2	92	8.6	-22	28.0		
8	94	32.0	124	19	24.2	-40	176	57.2	-14	50.1	122	13.9	-22	28.0		
10	123	34.8	124	19	16.2	-42	207	2.3	-14	50.1	152	19.2	-22	28.0		
12	152	37.6	125	19	7.9	-43	237	7.4	-14	50.1	182	24.6	-22	28.1		
14	181	40.6	126	18	59.2	-45	267	12.4	-14	50.1	212	29.9	-22	28.1		
16	210	43.7	126	18	50.2	-47	297	17.5	-14	50.0	242	35.2	-22	28.1		
18	239	47.0	127	18	40.9	-48	327	22.6	-14	50.0	272	40.5	-22	28.1		
20	268	50.3	127	18	31.2	-50	357	27.7	-14	50.0	302	45.9	-22	28.1		
22	297	53.7	128	18	21.2	-52	27	32.8	-14	50.0	332	51.2	-22	28.2		
Δ								25		0		27			0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	- 3 34.0	-.5	15.8	T _m	1 29	2.0	54.0	14.7
12	- 3 39.9	T _{m☉}	12 h 3,7 min	Starost	16.2 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	'	h min	'	°	'	'
♀	14 55	.1	218	-3.8	♃	20 10	.0	139	-1.9
♂	2 20	.1	47	-2.3	♄	23 48	.0	84	.2

1. JUL

NEDELJA

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	3.6	23	7.2	278	59.8	136	17.3	16	35.8	326	1.9	-22	47.7	
2	209	3.3	23	6.9	309	4.8	166	16.6	16	33.9	356	7.0	-22	48.1	
4	239	3.1	23	6.6	339	9.7	196	16.0	16	31.9	26	12.1	-22	48.5	
6	269	2.8	23	6.2	9	14.6	226	15.3	16	30.0	56	17.2	-22	49.0	
8	299	2.6	23	5.9	39	19.5	256	14.7	16	28.0	86	22.3	-22	49.4	
10	329	2.4	23	5.6	69	24.5	286	14.0	16	26.1	116	27.4	-22	49.8	
12	359	2.1	23	5.2	99	29.4	316	13.4	16	24.1	146	32.5	-22	50.3	
14	29	1.9	23	4.9	129	34.3	346	12.8	16	22.2	176	37.6	-22	50.7	
16	59	1.6	23	4.5	159	39.3	16	12.1	16	20.2	206	42.8	-22	51.1	
18	89	1.4	23	4.2	189	44.2	46	11.5	16	18.3	236	47.9	-22	51.6	
20	119	1.2	23	3.8	219	49.1	76	10.9	16	16.3	266	53.0	-22	52.0	
22	149	.9	23	3.5	249	54.0	106	10.2	16	14.3	296	58.2	-22	52.4	
Δ		-1		-2				-3		-10		26			-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 42	21 25	1 38	:::	18 46	3.0	10 41	.9
55	3 26	20 42	0 57	:::	19 10	2.8	10 16	1.1
50	3 55	20 12	0 44	:::	19 28	2.6	9 57	1.2
45	4 17	19 50	0 37	2 30	19 42	2.5	9 42	1.3
40	4 35	19 33	0 33	2 2	19 53	2.4	9 30	1.4
35	4 50	19 18	0 30	1 46	20 3	2.3	9 20	1.5
30	5 2	19 5	0 27	1 36	20 12	2.2	9 10	1.6
20	5 24	18 43	0 24	1 24	20 26	2.1	8 55	1.7
10	5 43	18 25	0 23	1 17	20 39	2.0	8 41	1.8
0	6 0	18 8	0 22	1 15	20 51	1.9	8 28	1.9
10	6 17	17 50	0 23	1 15	21 3	1.8	8 15	2.0
20	6 36	17 32	0 24	1 19	21 16	1.7	8 1	2.1
30	6 57	17 11	0 26	1 25	21 31	1.5	7 44	2.2
35	7 9	16 59	0 28	1 30	21 39	1.5	7 35	2.3
40	7 23	16 45	0 30	1 37	21 49	1.4	7 24	2.4
45	7 39	16 29	0 34	1 46	21 60	1.3	7 12	2.4
50	7 60	16 8	0 38	1 59	22 14	1.1	6 56	2.6
55	8 26	15 42	0 45	2 17	22 31	1.0	6 36	2.7
60	9 4	15 4	0 57	2 45	22 53	.8	6 9	3.0

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	326	57.3	128	18	10.9	-53	57	37.8	-14	49.9	2	56.5	-22	28.2		
2	356	.9	129	18	.2	-55	87	42.9	-14	49.9	33	1.8	-22	28.2		
4	25	4.7	129	17	49.2	-56	117	48.0	-14	49.9	63	7.2	-22	28.2		
6	54	8.6	130	17	37.9	-58	147	53.1	-14	49.9	93	12.5	-22	28.3		
8	83	12.6	131	17	26.3	-60	177	58.2	-14	49.9	123	17.8	-22	28.3		
10	112	16.7	131	17	14.4	-61	208	3.2	-14	49.8	153	23.1	-22	28.3		
12	141	21.0	132	17	2.2	-63	238	8.3	-14	49.8	183	28.5	-22	28.3		
14	170	25.3	132	16	49.7	-64	268	13.4	-14	49.8	213	33.8	-22	28.4		
16	199	29.8	133	16	36.8	-66	298	18.4	-14	49.8	243	39.1	-22	28.4		
18	228	34.4	133	16	23.7	-67	328	23.5	-14	49.8	273	44.4	-22	28.4		
20	257	39.1	134	16	10.3	-69	358	28.6	-14	49.7	303	49.8	-22	28.4		
22	286	43.9	135	15	56.6	-70	28	33.6	-14	49.7	333	55.1	-22	28.4		
Δ								25		0		27			0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	-						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	.7	23	3.1	279	59.0	136	9.6	16	12.4	327	3.3	-22	52.9	
2	209	.4	23	2.7	310	3.9	166	9.0	16	10.4	357	8.5	-22	53.3	
4	239	.2	23	2.4	340	8.8	196	8.4	16	8.4	27	13.7	-22	53.8	
6	269	.0	23	2.0	10	13.8	226	7.7	16	6.5	57	18.8	-22	54.2	
8	298	59.7	23	1.6	40	18.7	256	7.1	16	4.5	87	24.0	-22	54.7	
10	328	59.5	23	1.3	70	23.6	286	6.5	16	2.5	117	29.2	-22	55.1	
12	358	59.3	23	.9	100	28.5	316	5.9	16	.5	147	34.4	-22	55.6	
14	28	59.0	23	.5	130	33.5	346	5.3	15	58.6	177	39.6	-22	56.0	
16	58	58.8	23	.1	160	38.4	16	4.7	15	56.6	207	44.8	-22	56.5	
18	88	58.6	22	59.8	190	43.3	46	4.1	15	54.6	237	50.0	-22	56.9	
20	118	58.3	22	59.4	220	48.3	76	3.5	15	52.6	267	55.2	-22	57.4	
22	148	58.1	22	59.0	250	53.2	106	2.9	15	50.6	298	.4	-22	57.8	
Δ		-1		-2				-3		-10			26		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 43	21 24	1 36	:::	19 58	3.1	11 1	.7
55	3 26	20 41	0 57	:::	20 17	2.8	10 42	.9
50	3 56	20 12	0 44	:::	20 30	2.7	10 27	1.1
45	4 18	19 50	0 37	2 30	20 41	2.5	10 15	1.2
40	4 35	19 33	0 33	2 2	20 50	2.4	10 5	1.3
35	4 50	19 18	0 30	1 46	20 58	2.3	9 56	1.4
30	5 3	19 5	0 27	1 36	21 5	2.2	9 49	1.5
20	5 24	18 44	0 24	1 24	21 17	2.1	9 36	1.6
10	5 43	18 25	0 23	1 17	21 27	2.0	9 24	1.7
0	6 0	18 8	0 22	1 15	21 36	1.8	9 13	1.9
10	6 18	17 51	0 23	1 15	21 46	1.7	9 2	2.0
20	6 36	17 32	0 24	1 18	21 56	1.6	8 51	2.1
30	6 57	17 12	0 26	1 25	22 8	1.5	8 37	2.2
35	7 9	16 60	0 28	1 30	22 14	1.4	8 30	2.3
40	7 23	16 46	0 30	1 37	22 22	1.3	8 21	2.4
45	7 39	16 29	0 34	1 46	22 31	1.2	8 10	2.5
50	7 59	16 9	0 38	1 59	22 41	1.0	7 58	2.6
55	8 26	15 43	0 45	2 17	22 54	.9	7 42	2.8
60	9 3	15 5	0 57	2 44	23 11	.6	7 20	3.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	315	48.8	135	15	42.6	-71	58	38.7	-14	49.7	4	.4	-22	28.5		
2	344	53.9	136	15	28.3	-73	88	43.8	-14	49.7	34	5.7	-22	28.5		
4	13	59.0	136	15	13.8	-74	118	48.8	-14	49.7	64	11.1	-22	28.5		
6	43	4.2	137	14	59.0	-75	148	53.9	-14	49.6	94	16.4	-22	28.5		
8	72	9.6	137	14	43.9	-77	178	59.0	-14	49.6	124	21.7	-22	28.6		
10	101	15.0	138	14	28.6	-78	209	4.0	-14	49.6	154	27.0	-22	28.6		
12	130	20.6	138	14	13.0	-79	239	9.1	-14	49.6	184	32.4	-22	28.6		
14	159	26.3	139	13	57.1	-80	269	14.1	-14	49.6	214	37.7	-22	28.6		
16	188	32.0	139	13	41.1	-82	299	19.2	-14	49.6	244	43.0	-22	28.6		
18	217	37.8	140	13	24.7	-83	329	24.2	-14	49.5	274	48.3	-22	28.7		
20	246	43.8	140	13	8.1	-84	359	29.3	-14	49.5	304	53.7	-22	28.7		
22	275	49.8	140	12	51.3	-85	29	34.3	-14	49.5	334	59.0	-22	28.7		
Δ								25		0			27		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 3 57.3	-.5	15.8	T _m	3 2	1.9	54.2 14.8
12	- 4 2.9	T _{m☉}	12 h 4.0 min	Starost	18.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	°	h min	'	°	°	°
♀	14 56	.1	216	-3.9	♃	20 2	.0	139	-1.9
♂	2 11	.1	47	-2.3	♄	23 40	.0	84	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	57.9	22	58.6	280	58.1	136	2.3	15	48.6	328	5.6	-22	58.3	
2	208	57.7	22	58.2	311	3.0	166	1.7	15	46.6	358	10.8	-22	58.7	
4	238	57.4	22	57.8	341	8.0	196	1.1	15	44.6	28	16.0	-22	59.2	
6	268	57.2	22	57.4	11	12.9	226	.6	15	42.6	58	21.3	-22	59.6	
8	298	57.0	22	57.0	41	17.8	255	60.0	15	40.6	88	26.5	-23	.1	
10	328	56.7	22	56.6	71	22.8	285	59.4	15	38.6	118	31.8	-23	.6	
12	358	56.5	22	56.2	101	27.7	315	58.8	15	36.6	148	37.0	-23	1.0	
14	28	56.3	22	55.8	131	32.6	345	58.3	15	34.6	178	42.3	-23	1.5	
16	58	56.1	22	55.3	161	37.5	15	57.7	15	32.6	208	47.5	-23	1.9	
18	88	55.8	22	54.9	191	42.5	45	57.1	15	30.5	238	52.8	-23	2.4	
20	118	55.6	22	54.5	221	47.4	75	56.6	15	28.5	268	58.1	-23	2.9	
22	148	55.4	22	54.1	251	52.3	105	56.0	15	26.5	299	3.4	-23	3.3	
Δ		-1		-2				-3		-10			26		-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 44	21 23	1 35	:::	21 13	3.2	11 18	.6
55	3 27	20 41	0 56	:::	21 25	2.9	11 3	.8
50	3 56	20 12	0 44	:::	21 34	2.7	10 53	1.0
45	4 18	19 50	0 37	2 29	21 42	2.6	10 44	1.1
40	4 36	19 32	0 33	2 2	21 48	2.5	10 36	1.2
35	4 51	19 18	0 30	1 46	21 54	2.3	10 30	1.3
30	5 3	19 5	0 27	1 36	21 58	2.3	10 24	1.4
20	5 25	18 44	0 24	1 24	22 7	2.1	10 15	1.6
10	5 43	18 25	0 23	1 17	22 14	2.0	10 6	1.7
0	6 1	18 8	0 22	1 15	22 21	1.8	9 58	1.8
10	6 18	17 51	0 23	1 15	22 27	1.7	9 50	2.0
20	6 36	17 33	0 24	1 18	22 34	1.6	9 41	2.1
30	6 57	17 12	0 26	1 25	22 42	1.4	9 31	2.2
35	7 9	16 60	0 28	1 30	22 47	1.3	9 25	2.3
40	7 22	16 46	0 30	1 37	22 52	1.2	9 18	2.4
45	7 39	16 30	0 34	1 46	22 58	1.1	9 10	2.6
50	7 59	16 10	0 38	1 59	23 6	1.0	9 1	2.7
55	8 25	15 43	0 45	2 17	23 15	.8	8 49	2.9
60	9 2	15 6	0 57	2 44	23 26	.5	8 34	3.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	304	55.9	141	12	34.2	-86	59	39.4	-14	49.5	5	4.3	-22	28.7		
2	334	2.0	141	12	17.0	-88	89	44.4	-14	49.5	35	9.6	-22	28.8		
4	3	8.3	142	11	59.5	-89	119	49.5	-14	49.5	65	14.9	-22	28.8		
6	32	14.6	142	11	41.7	-90	149	54.5	-14	49.5	95	20.3	-22	28.8		
8	61	21.0	142	11	23.8	-91	179	59.6	-14	49.5	125	25.6	-22	28.8		
10	90	27.4	143	11	5.6	-92	210	4.6	-14	49.4	155	30.9	-22	28.8		
12	119	34.0	143	10	47.3	-93	240	9.7	-14	49.4	185	36.2	-22	28.9		
14	148	40.5	143	10	28.7	-94	270	14.7	-14	49.4	215	41.6	-22	28.9		
16	177	47.1	143	10	10.0	-95	300	19.8	-14	49.4	245	46.9	-22	28.9		
18	206	53.8	144	9	51.0	-96	330	24.8	-14	49.4	275	52.2	-22	28.9		
20	236	.5	144	9	31.9	-97	0	29.8	-14	49.4	305	57.5	-22	29.0		
22	265	7.3	144	9	12.6	-98	30	34.9	-14	49.4	336	2.8	-22	29.0		
Δ								25		0			27		0	

SUNCE			
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UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 55.1	22 53.6	281 57.3	135 55.4	15 24.5	329 8.6	-23 3.8
2	208 54.9	22 53.2	312 2.2	165 54.9	15 22.4	359 13.9	-23 4.3
4	238 54.7	22 52.8	342 7.1	195 54.3	15 20.4	29 19.2	-23 4.7
6	268 54.5	22 52.4	12 12.0	225 53.8	15 18.4	59 24.5	-23 5.2
8	298 54.3	22 51.9	42 17.0	255 53.2	15 16.3	89 29.8	-23 5.7
10	328 54.0	22 51.5	72 21.9	285 52.7	15 14.3	119 35.1	-23 6.2
12	358 53.8	22 51.0	102 26.8	315 52.2	15 12.3	149 40.5	-23 6.6
14	28 53.6	22 50.6	132 31.7	345 51.6	15 10.2	179 45.8	-23 7.1
16	58 53.4	22 50.1	162 36.7	15 51.1	15 8.2	209 51.1	-23 7.6
18	88 53.1	22 49.7	192 41.6	45 50.5	15 6.1	239 56.4	-23 8.1
20	118 52.9	22 49.2	222 46.5	75 50.0	15 4.1	270 1.8	-23 8.5
22	148 52.7	22 48.8	252 51.5	105 49.5	15 2.0	300 7.1	-23 9.0
Δ	-1	-2		-3	-10	27	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 46	21 22	1 33	: : :	22 28	3.2	11 31	.5
55	3 28	20 40	0 56	: : :	22 35	3.0	11 23	.8
50	3 57	20 11	0 44	: : :	22 40	2.8	11 16	.9
45	4 19	19 50	0 37	2 29	22 44	2.6	11 11	1.1
40	4 36	19 32	0 33	2 1	22 47	2.5	11 6	1.2
35	4 51	19 18	0 29	1 46	22 50	2.4	11 2	1.3
30	5 4	19 5	0 27	1 36	22 53	2.3	10 58	1.4
20	5 25	18 44	0 24	1 23	22 57	2.1	10 52	1.6
10	5 44	18 25	0 23	1 17	23 1	2.0	10 47	1.7
0	6 1	18 8	0 22	1 15	23 4	1.8	10 42	1.8
10	6 18	17 51	0 23	1 15	23 8	1.7	10 36	2.0
20	6 36	17 33	0 24	1 18	23 12	1.6	10 31	2.1
30	6 56	17 12	0 26	1 25	23 16	1.4	10 24	2.3
35	7 8	17 0	0 28	1 30	23 19	1.3	10 21	2.4
40	7 22	16 47	0 30	1 37	23 21	1.2	10 17	2.5
45	7 39	16 30	0 34	1 46	23 25	1.1	10 12	2.6
50	7 59	16 10	0 38	1 59	23 28	1.8	10 6	2.8
55	8 25	15 44	0 45	2 16	23 33	1.8	9 58	2.9
60	9 2	15 7	0 56	2 44	23 39	1.8	9 49	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	294 14.0	144	8 53.0	-98	60 39.9	-14 49.4	6 8.2	-22 29.0
2	323 20.8	144	8 33.4	-99	90 44.9	-14 49.4	36 13.5	-22 29.0
4	352 27.6	144	8 13.5	-100	120 50.0	-14 49.3	66 18.8	-22 29.1
6	21 34.5	144	7 53.5	-101	150 55.0	-14 49.3	96 24.1	-22 29.1
8	50 41.3	144	7 33.3	-102	181 .0	-14 49.3	126 29.5	-22 29.1
10	79 48.2	144	7 13.0	-102	211 5.1	-14 49.3	156 34.8	-22 29.1
12	108 55.0	144	6 52.5	-103	241 10.1	-14 49.3	186 40.1	-22 29.1
14	138 1.9	144	6 31.8	-104	271 15.1	-14 49.3	216 45.4	-22 29.2
16	167 8.7	144	6 11.1	-105	301 20.1	-14 49.3	246 50.7	-22 29.2
18	196 15.5	144	5 50.1	-105	331 25.2	-14 49.3	276 56.1	-22 29.2
20	225 22.3	144	5 29.1	-106	1 30.2	-14 49.3	307 1.4	-22 29.2
22	254 29.1	144	5 7.9	-107	31 35.2	-14 49.3	337 6.7	-22 29.3
Δ					25	0	27	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 4 19.4	-.4	15.8	T _m	4 31	1.8	54.9 15.0
12	- 4 24.7	T _{m☉}	12 h 4.4 min	Starost	20.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	' / "	°	h min	' / "	°	h min	' / "	°
♀	14 57	.1	214	-3.9	♃	19 54	.0	139	-1.9
♂	2 3	.1	47	-2.4	♄	23 31	.0	84	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 52.5	22 48.3	282 56.4	135 49.0	14 60.0	330 12.5	-23 9.5
2	208 52.3	22 47.9	313 1.3	165 48.4	14 57.9	0 17.8	-23 10.0
4	238 52.1	22 47.4	343 6.2	195 47.9	14 55.9	30 23.2	-23 10.5
6	268 51.8	22 46.9	13 11.2	225 47.4	14 53.8	60 28.6	-23 11.0
8	298 51.6	22 46.5	43 16.1	255 46.9	14 51.8	90 33.9	-23 11.4
10	328 51.4	22 46.0	73 21.0	285 46.4	14 49.7	120 39.3	-23 11.9
12	358 51.2	22 45.5	103 26.0	315 45.9	14 47.6	150 44.7	-23 12.4
14	28 51.0	22 45.0	133 30.9	345 45.4	14 45.6	180 50.1	-23 12.9
16	58 50.8	22 44.5	163 35.8	15 44.9	14 43.5	210 55.5	-23 13.4
18	88 50.5	22 44.1	193 40.7	45 44.4	14 41.4	241 .9	-23 13.9
20	118 50.3	22 43.6	223 45.7	75 43.9	14 39.3	271 6.3	-23 14.4
22	148 50.1	22 43.1	253 50.6	105 43.4	14 37.3	301 11.7	-23 14.9
Δ	-1	-2		-3	-10	27	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 47	21 21	1 32	: : :	23 46	2.0	11 44	1.7
55	3 29	20 40	0 56	: : :	23 46	2.0	11 41	1.7
50	3 58	20 11	0 44	: : :	23 47	2.0	11 38	1.7
45	4 19	19 49	0 37	2 28	23 47	2.0	11 36	1.7
40	4 37	19 32	0 32	2 1	23 47	2.0	11 35	1.8
35	4 51	19 17	0 29	1 46	23 47	1.9	11 33	1.8
30	5 4	19 5	0 27	1 36	23 48	1.9	11 32	1.8
20	5 25	18 44	0 24	1 23	23 48	1.9	11 30	1.8
10	5 44	18 25	0 23	1 17	23 48	1.9	11 28	1.8
0	6 1	18 8	0 22	1 15	23 49	1.9	11 26	1.9
10	6 18	17 51	0 23	1 15	23 49	1.9	11 24	1.9
20	6 36	17 33	0 24	1 18	23 49	1.9	11 21	1.9
30	6 56	17 13	0 26	1 25	23 50	1.9	11 19	1.9
35	7 8	17 1	0 28	1 30	23 50	1.9	11 18	2.0
40	7 22	16 47	0 30	1 37	23 50	1.8	11 16	2.0
45	7 38	16 31	0 34	1 46	23 50	1.8	11 14	2.0
50	7 58	16 11	0 38	1 58	...	.0	11 12	2.0
55	8 24	15 45	0 45	2 16	...	.0	11 9	2.1
60	9 1	15 9	0 56	2 43	...	.0	11 5	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	283 35.8	143	4 46.6	-107	61 40.2	-14 49.3	7 12.0	-22 29.3
2	312 42.5	143	4 25.2	-108	91 45.3	-14 49.3	37 17.3	-22 29.3
4	341 49.1	143	4 3.6	-108	121 50.3	-14 49.3	67 22.7	-22 29.3
6	10 55.7	143	3 42.0	-109	151 55.3	-14 49.3	97 28.0	-22 29.3
8	40 2.2	142	3 20.2	-109	182 .3	-14 49.3	127 33.3	-22 29.4
10	69 8.6	142	2 58.3	-110	212 5.3	-14 49.3	157 38.6	-22 29.4
12	98 15.0	141	2 36.4	-110	242 10.3	-14 49.2	187 44.0	-22 29.4
14	127 21.2	141	2 14.3	-111	272 15.3	-14 49.2	217 49.3	-22 29.4
16	156 27.4	140	1 52.2	-111	302 20.4	-14 49.2	247 54.6	-22 29.5
18	185 33.5	140	1 30.0	-111	332 25.4	-14 49.2	277 59.9	-22 29.5
20	214 39.5	139	1 7.7	-112	2 30.4	-14 49.2	308 5.2	-22 29.5
22	243 45.4	139	0 45.4	-112	32 35.4	-14 49.2	338 10.6	-22 29.5
Δ					25	0	27	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 4 30.0	-.4	15.8	T _m	5 15	1.8	55.4 15.1
12	- 4 35.2	T _{m☉}	12 h 4.6 min	Starost	21.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	' / "	°	h min	' / "	°	h min	' / "	°
♀	14 57	.1	213	-3.9	♃	19 50	.0	139	-1.9
♂	2 3	.1	47	-2.4	♄	23 27	.0	84	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 49.9	22 42.6	283 55.5	135 42.9	14 35.2	331 17.1	-23 15.4
2	208 49.7	22 42.1	314 .5	165 42.4	14 33.1	1 22.5	-23 15.9
4	238 49.5	22 41.6	344 5.4	195 41.9	14 31.0	31 28.0	-23 16.4
6	268 49.3	22 41.1	14 10.3	225 41.4	14 28.9	61 33.4	-23 16.8
8	298 49.1	22 40.6	44 15.2	255 40.9	14 26.8	91 38.8	-23 17.3
10	328 48.9	22 40.1	74 20.2	285 40.5	14 24.7	121 44.3	-23 17.8
12	358 48.7	22 39.6	104 25.1	315 40.0	14 22.6	151 49.7	-23 18.3
14	28 48.4	22 39.1	134 30.0	345 39.5	14 20.5	181 55.2	-23 18.8
16	58 48.2	22 38.6	164 35.0	15 39.0	14 18.5	212 .6	-23 19.3
18	88 48.0	22 38.0	194 39.9	45 38.6	14 16.4	242 6.1	-23 19.8
20	118 47.8	22 37.5	224 44.8	75 38.1	14 14.2	272 11.6	-23 20.3
22	148 47.6	22 37.0	254 49.7	105 37.7	14 12.1	302 17.0	-23 20.8
Δ	-1	-3		-2	-10	27	-2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 48	21 20	1 30	: : :	. . .	.0	12 24	3.4
55	3 30	20 39	0 56	: : :	. . .	.0	12 21	3.1
50	3 59	20 10	0 43	: : :	. . .	.0	12 20	2.9
45	4 20	19 49	0 37	2 27	. . .	.0	12 18	2.8
40	4 37	19 32	0 32	2 1	. . .	.0	12 17	2.6
35	4 52	19 17	0 29	1 45	. . .	.0	12 16	2.5
30	5 5	19 5	0 27	1 35	. . .	.0	12 15	2.4
20	5 26	18 44	0 24	1 23	. . .	.0	12 13	2.2
10	5 44	18 25	0 23	1 17	. . .	.0	12 12	2.1
0	6 1	18 8	0 22	1 15	. . .	.0	12 10	1.9
10	6 18	17 52	0 23	1 15	. . .	.0	12 9	1.8
20	6 36	17 34	0 24	1 18	. . .	.0	12 7	1.6
30	6 56	17 13	0 26	1 25	. . .	.0	12 6	1.5
35	7 8	17 1	0 28	1 30	. . .	.0	12 5	1.4
40	7 22	16 48	0 30	1 37	. . .	.0	12 4	1.3
45	7 38	16 32	0 33	1 46	. . .	.0	12 2	1.1
50	7 58	16 12	0 38	1 58	0 -9	2.7	12 1	1.0
55	8 24	15 46	0 45	2 16	0 -9	2.9	11 59	.8
60	8 60	15 10	0 56	2 43	0 -8	3.1	11 57	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	272 51.1	138	0 23.0	-112	62 40.4	-14 49.2	8 15.9	-22 29.5
2	301 56.7	137	0 .5	108	92 45.4	-14 49.2	38 21.2	-22 29.6
4	331 2.2	137	0 22.0	113	122 50.4	-14 49.2	68 26.5	-22 29.6
6	0 7.6	136	0 44.6	113	152 55.4	-14 49.2	98 31.8	-22 29.6
8	29 12.8	135	1 7.2	113	183 .4	-14 49.2	128 37.1	-22 29.6
10	58 17.8	134	1 29.8	113	213 5.4	-14 49.2	158 42.5	-22 29.7
12	87 22.7	134	1 52.5	113	243 10.4	-14 49.2	188 47.8	-22 29.7
14	116 27.4	133	2 15.2	113	273 15.4	-14 49.2	218 53.1	-22 29.7
16	145 31.9	132	2 37.9	114	303 20.4	-14 49.2	248 58.4	-22 29.7
18	174 36.3	131	3 .6	114	333 25.4	-14 49.2	279 3.7	-22 29.7
20	203 40.4	130	3 23.3	113	3 30.4	-14 49.3	309 9.1	-22 29.8
22	232 44.4	129	3 46.0	113	33 35.4	-14 49.3	339 14.4	-22 29.8
Δ					25	0	27	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	- 4 40.4	-.4	15.8	T _m	5 59	2.0	56.1 15.3		
12	- 4 45.4	T _{m☉}	12 h 4.8 min	Starost	22.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	14 57	.1	212	-3.9	♃	19 46	.0	139	-1.8
♂	1 55	.1	47	-2.4	♄	23 23	.0	84	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 47.4	22 36.5	284 54.7	135 37.2	14 10.0	332 22.5	-23 21.4
2	208 47.2	22 35.9	314 59.6	165 36.7	14 7.9	2 28.0	-23 21.9
4	238 47.0	22 35.4	345 4.5	195 36.3	14 5.8	32 33.5	-23 22.4
6	268 46.8	22 34.9	15 9.5	225 35.8	14 3.7	62 39.0	-23 22.9
8	298 46.6	22 34.3	45 14.4	255 35.4	14 1.6	92 44.5	-23 23.4
10	328 46.4	22 33.8	75 19.3	285 34.9	13 59.5	122 50.0	-23 23.9
12	358 46.2	22 33.3	105 24.2	315 34.5	13 57.4	152 55.5	-23 24.4
14	28 46.0	22 32.7	135 29.2	345 34.1	13 55.2	183 1.0	-23 24.9
16	58 45.8	22 32.2	165 34.1	15 33.6	13 53.1	213 6.6	-23 25.4
18	88 45.6	22 31.6	195 39.0	45 33.2	13 51.0	243 12.1	-23 25.9
20	118 45.4	22 31.1	225 44.0	75 32.7	13 48.9	273 17.6	-23 26.4
22	148 45.2	22 30.5	255 48.9	105 32.3	13 46.7	303 23.2	-23 27.0
Δ	-1	-3		-2	-11	28	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 50	21 19	1 29	: : :	0 5	.6	13 45	3.5
55	3 31	20 38	0 55	: : :	0 10	.9	13 36	3.2
50	3 59	20 10	0 43	: : :	0 14	1.0	13 30	3.0
45	4 21	19 49	0 37	2 27	0 17	1.2	13 24	2.9
40	4 38	19 31	0 32	2 0	0 20	1.3	13 20	2.7
35	4 53	19 17	0 29	1 45	0 22	1.4	13 16	2.6
30	5 5	19 5	0 27	1 35	0 24	1.5	13 13	2.5
20	5 26	18 44	0 24	1 23	0 28	1.7	13 7	2.3
10	5 44	18 25	0 23	1 17	0 31	1.9	13 2	2.2
0	6 1	18 9	0 22	1 15	0 34	2.0	12 57	2.1
10	6 18	17 52	0 23	1 15	0 37	2.1	12 52	1.9
20	6 36	17 34	0 24	1 18	0 41	2.3	12 47	1.8
30	6 56	17 14	0 26	1 25	0 45	2.5	12 41	1.6
35	7 8	17 2	0 28	1 30	0 47	2.6	12 38	1.5
40	7 22	16 48	0 30	1 37	0 50	2.7	12 34	1.4
45	7 38	16 32	0 33	1 46	0 53	2.8	12 30	1.3
50	7 57	16 13	0 38	1 58	0 56	3.0	12 25	1.1
55	8 23	15 47	0 45	2 16	1 1	3.2	12 18	.9
60	8 59	15 11	0 56	2 42	1 7	3.5	12 10	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	261 48.1	128	4 8.7	113	63 40.4	-14 49.3	9 19.7	-22 29.8
2	290 51.7	126	4 31.3	113	93 45.4	-14 49.3	39 25.0	-22 29.8
4	319 55.0	125	4 54.0	113	123 50.3	-14 49.3	69 30.3	-22 29.9
6	348 58.0	124	5 16.6	113	153 55.3	-14 49.3	99 35.6	-22 29.9
8	18 .8	123	5 39.1	113	184 .3	-14 49.3	129 41.0	-22 29.9
10	47 3.4	122	6 1.7	112	214 5.3	-14 49.3	159 46.3	-22 29.9
12	76 5.7	120	6 24.1	112	244 10.3	-14 49.3	189 51.6	-22 29.9
14	105 7.8	119	6 46.5	112	274 15.3	-14 49.3	219 56.9	-22 30.0
16	134 9.6	118	7 8.8	111	304 20.2	-14 49.3	250 2.2	-22 30.0
18	163 11.1	116	7 31.0	111	334 25.2	-14 49.3	280 7.5	-22 30.0
20	192 12.4	115	7 53.2	110	4 30.2	-14 49.3	310 12.9	-22 30.0
22	221 13.3	113	8 15.2	110	34 35.2	-14 49.3	340 18.2	-22 30.1
Δ					25	0	27	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	- 4 50.3	-.4	15.8	T _m	6 46	2.0	56.9 15.5		
12	- 4 55.2	T _{m☉}	12 h 4.9 min	Starost	23.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	°	♃	h min	' / "	°	°
♁	14 58	.1	211	-3.9	♃	19 42	.0	139	-1.8
♂	1 50	.1	47	-2.4	♄	23 19	.0	84	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 45.0	22 30.0	285 53.8	135 31.9	13 44.6	333 28.7	-23 27.5
2	208 44.8	22 29.4	315 58.7	165 31.5	13 42.5	3 34.3	-23 28.0
4	238 44.6	22 28.8	346 3.7	195 31.0	13 40.3	33 39.8	-23 28.5
6	268 44.4	22 28.3	16 8.6	225 30.6	13 38.2	63 45.4	-23 29.0
8	298 44.2	22 27.7	46 13.5	255 30.2	13 36.0	93 51.0	-23 29.5
10	328 44.0	22 27.1	76 18.4	285 29.8	13 33.9	123 56.5	-23 30.1
12	358 43.8	22 26.6	106 23.4	315 29.4	13 31.8	154 2.1	-23 30.6
14	28 43.6	22 26.0	136 28.3	345 29.0	13 29.6	184 7.7	-23 31.1
16	58 43.4	22 25.4	166 33.2	15 28.6	13 27.5	214 13.3	-23 31.6
18	88 43.3	22 24.8	196 38.2	45 28.2	13 25.3	244 18.9	-23 32.1
20	118 43.1	22 24.2	226 43.1	75 27.8	13 23.2	274 24.5	-23 32.7
22	148 42.9	22 23.6	256 48.0	105 27.4	13 21.0	304 30.1	-23 33.2
Δ	-1	-3		-2	-11	28	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 51	21 18	1 27	:::	0 20	.7	15 10	3.6
55	3 32	20 37	0 55	:::	0 31	1.0	14 54	3.3
50	4 0	20 9	0 43	:::	0 39	1.2	14 43	3.1
45	4 22	19 48	0 37	2 26	0 46	1.4	14 33	3.0
40	4 39	19 31	0 32	1 60	0 52	1.5	14 26	2.8
35	4 53	19 17	0 29	1 45	0 57	1.6	14 19	2.7
30	5 5	19 5	0 27	1 35	1 1	1.7	14 13	2.6
20	5 27	18 44	0 24	1 23	1 9	1.9	14 3	2.5
10	5 45	18 25	0 23	1 17	1 16	2.0	13 55	2.3
0	6 1	18 9	0 22	1 15	1 22	2.1	13 46	2.2
10	6 18	17 52	0 23	1 15	1 29	2.3	13 38	2.1
20	6 36	17 34	0 24	1 18	1 36	2.4	13 29	1.9
30	6 56	17 14	0 26	1 25	1 44	2.6	13 20	1.8
35	7 8	17 3	0 28	1 30	1 49	2.7	13 14	1.7
40	7 21	16 49	0 30	1 37	1 54	2.8	13 7	1.6
45	7 37	16 33	0 33	1 46	2 0	2.9	12 60	1.5
50	7 57	16 14	0 38	1 58	2 8	3.1	12 51	1.3
55	8 22	15 48	0 44	2 15	2 17	3.3	12 40	1.1
60	8 58	15 13	0 55	2 42	2 30	3.6	12 25	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	250 13.9	112	8 37.2	109	64 40.2	-14 49.3	10 23.5	-22 30.1
2	279 14.3	110	8 59.0	108	94 45.1	-14 49.3	40 28.8	-22 30.1
4	308 14.3	109	9 20.7	108	124 50.1	-14 49.4	70 34.1	-22 30.1
6	337 14.0	107	9 42.2	107	154 55.1	-14 49.4	100 39.4	-22 30.1
8	6 13.4	105	10 3.6	106	185 .1	-14 49.4	130 44.8	-22 30.2
10	35 12.5	104	10 24.9	105	215 5.0	-14 49.4	160 50.1	-22 30.2
12	64 11.2	102	10 45.9	105	245 10.0	-14 49.4	190 55.4	-22 30.2
14	93 9.6	100	11 6.9	104	275 15.0	-14 49.4	221 .7	-22 30.2
16	122 7.6	98	11 27.6	103	305 19.9	-14 49.4	251 6.0	-22 30.3
18	151 5.3	97	11 48.1	102	335 24.9	-14 49.4	281 11.3	-22 30.3
20	180 2.6	95	12 8.4	101	5 29.9	-14 49.4	311 16.6	-22 30.3
22	208 59.6	93	12 28.5	99	35 34.8	-14 49.4	341 22.0	-22 30.3
Δ					25	0	27	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min		
00	- 4 60.0	-.4	15.8	T _m	7 34	2.2	57.8	15.8	
12	- 5 4.6	T _{m☉}	12 h 5.1 min	Starost	24.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	14 58 .1	210	-4.0	♃	19 38 .0	139	-1.8		
♂	1 46 .1	48	-2.4	♄	23 14 .0	84	.3		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 42.7	22 23.1	286 52.9	135 27.0	13 18.8	334 35.7	-23 33.7
2	208 42.5	22 22.5	316 57.9	165 26.6	13 16.7	4 41.3	-23 34.2
4	238 42.3	22 21.9	347 2.8	195 26.2	13 14.5	34 46.9	-23 34.8
6	268 42.1	22 21.3	17 7.7	225 25.8	13 12.4	64 52.5	-23 35.3
8	298 41.9	22 20.7	47 12.7	255 25.4	13 10.2	94 58.2	-23 35.8
10	328 41.8	22 20.1	77 17.6	285 25.0	13 8.0	125 3.8	-23 36.3
12	358 41.6	22 19.5	107 22.5	315 24.7	13 5.9	155 9.5	-23 36.9
14	28 41.4	22 18.8	137 27.4	345 24.3	13 3.7	185 15.1	-23 37.4
16	58 41.2	22 18.2	167 32.4	15 23.9	13 1.5	215 20.8	-23 37.9
18	88 41.0	22 17.6	197 37.3	45 23.5	12 59.3	245 26.4	-23 38.5
20	118 40.8	22 17.0	227 42.2	75 23.2	12 57.2	275 32.1	-23 39.0
22	148 40.6	22 16.4	257 47.2	105 22.8	12 55.0	305 37.7	-23 39.5
Δ	-1	-3		-2	-11	28	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 53	21 17	1 26	:::	0 38	1.0	16 37	3.6
55	3 33	20 36	0 55	:::	0 55	1.2	16 15	3.3
50	4 1	20 9	0 43	:::	1 8	1.4	15 58	3.2
45	4 22	19 48	0 36	2 25	1 19	1.6	15 45	3.0
40	4 39	19 31	0 32	1 59	1 27	1.7	15 34	2.9
35	4 54	19 17	0 29	1 45	1 35	1.8	15 25	2.8
30	5 6	19 4	0 27	1 35	1 42	1.9	15 17	2.7
20	5 27	18 43	0 24	1 23	1 53	2.0	15 3	2.6
10	5 45	18 26	0 23	1 17	2 4	2.2	14 51	2.5
0	6 2	18 9	0 22	1 14	2 14	2.3	14 39	2.4
10	6 18	17 52	0 23	1 15	2 23	2.4	14 28	2.3
20	6 36	17 35	0 24	1 18	2 34	2.6	14 16	2.2
30	6 56	17 15	0 26	1 25	2 46	2.7	14 2	2.0
35	7 8	17 3	0 28	1 30	2 53	2.8	13 54	1.9
40	7 21	16 50	0 30	1 37	3 1	2.9	13 45	1.8
45	7 37	16 34	0 33	1 46	3 11	3.0	13 35	1.7
50	7 56	16 15	0 38	1 58	3 22	3.2	13 22	1.6
55	8 21	15 49	0 44	2 15	3 37	3.4	13 6	1.4
60	8 57	15 14	0 55	2 41	3 56	3.7	12 45	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	237 56.2	91	12 48.4	98	65 39.8	-14 49.5	11 27.3	-22 30.3
2	266 52.4	89	13 8.0	97	95 44.7	-14 49.5	41 32.6	-22 30.4
4	295 48.3	87	13 27.4	96	125 49.7	-14 49.5	71 37.9	-22 30.4
6	324 43.7	85	13 46.5	94	155 54.7	-14 49.5	101 43.2	-22 30.4
8	353 38.8	84	14 5.4	93	185 59.6	-14 49.5	131 48.5	-22 30.4
10	22 33.5	82	14 24.0	91	216 4.6	-14 49.5	161 53.8	-22 30.4
12	51 27.9	80	14 42.2	90	246 9.5	-14 49.5	191 59.1	-22 30.5
14	80 21.8	78	15 .2	88	276 14.5	-14 49.6	222 4.5	-22 30.5
16	109 15.3	76	15 17.8	87	306 19.4	-14 49.6	252 9.8	-22 30.5
18	138 8.5	74	15 35.1	85	336 24.4	-14 49.6	282 15.1	-22 30.5
20	167 1.3	72	15 52.1	83	6 29.3	-14 49.6	312 20.4	-22 30.6
22	195 53.6	70	16 8.7	81	36 34.3	-14 49.6	342 25.7	-22 30.6
Δ					25	0	27	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min		
00	- 5 9.2	-.4	15.8	T _m	8 26	2.4	58.8	16.0	
12	- 5 13.7	T _{m☉}	12 h 5.2 min	Starost	25.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	14 58 .1	209	-4.0	♃	19 34 .0	139	-1.8		
♂	1 41 .1	48	-2.4	♄	23 10 .0	85	.3		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 40.5	22 15.8	287 52.1	135 22.4	12 52.8	335 43.4	-23 40.1
2	208 40.3	22 15.1	317 57.0	165 22.1	12 50.6	5 49.1	-23 40.6
4	238 40.1	22 14.5	348 1.9	195 21.7	12 48.4	35 54.8	-23 41.1
6	268 39.9	22 13.9	18 6.9	225 21.4	12 46.3	66 .5	-23 41.7
8	298 39.8	22 13.2	48 11.8	255 21.0	12 44.1	96 6.1	-23 42.2
10	328 39.6	22 12.6	78 16.7	285 20.7	12 41.9	126 11.8	-23 42.7
12	358 39.4	22 12.0	108 21.7	315 20.3	12 39.7	156 17.5	-23 43.3
14	28 39.2	22 11.3	138 26.6	345 20.0	12 37.5	186 23.3	-23 43.8
16	58 39.0	22 10.7	168 31.5	15 19.6	12 35.3	216 29.0	-23 44.3
18	88 38.9	22 10.0	198 36.4	45 19.3	12 33.1	246 34.7	-23 44.9
20	118 38.7	22 9.4	228 41.4	75 19.0	12 30.9	276 40.4	-23 45.4
22	148 38.5	22 8.7	258 46.3	105 18.6	12 28.7	306 46.1	-23 45.9
Δ	-1	-3		-2	-11	29	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 54	21 15	1 24	:::	1 1	1.4	18 3	3.3
55	3 35	20 35	0 54	:::	1 25	1.6	17 35	3.2
50	4 2	20 8	0 43	:::	1 43	1.8	17 14	3.0
45	4 23	19 47	0 36	2 24	1 57	1.9	16 57	2.9
40	4 40	19 30	0 32	1 59	2 8	2.0	16 44	2.9
35	4 54	19 16	0 29	1 44	2 19	2.1	16 32	2.8
30	5 6	19 4	0 27	1 35	2 27	2.2	16 22	2.8
20	5 27	18 43	0 24	1 23	2 43	2.3	16 5	2.7
10	5 45	18 26	0 23	1 17	2 56	2.4	15 50	2.6
0	6 2	18 9	0 22	1 14	3 9	2.5	15 37	2.5
10	6 18	17 53	0 23	1 15	3 22	2.6	15 23	2.5
20	6 36	17 35	0 24	1 18	3 35	2.7	15 8	2.4
30	6 56	17 15	0 26	1 25	3 51	2.8	14 51	2.3
35	7 7	17 4	0 28	1 30	4 0	2.8	14 41	2.2
40	7 21	16 50	0 30	1 37	4 11	2.9	14 30	2.2
45	7 36	16 35	0 33	1 45	4 23	3.0	14 17	2.1
50	7 56	16 15	0 38	1 58	4 38	3.1	14 0	2.0
55	8 20	15 51	0 44	2 15	4 58	3.3	13 40	1.9
60	8 55	15 16	0 55	2 41	5 24	3.5	13 13	1.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	224 45.6	68 16 24.9	79	66 39.2	-14 49.6	12 31.0	-22 30.6	
2	253 37.2	66 16 40.8	77	96 44.2	-14 49.7	42 36.3	-22 30.6	
4	282 28.4	64 16 56.2	75	126 49.1	-14 49.7	72 41.6	-22 30.6	
6	311 19.3	62 17 11.3	73	156 54.0	-14 49.7	102 46.9	-22 30.7	
8	340 9.7	60 17 25.9	71	186 59.0	-14 49.7	132 52.3	-22 30.7	
10	8 59.8	59 17 40.2	69	217 3.9	-14 49.7	162 57.6	-22 30.7	
12	37 49.5	57 17 53.9	67	247 8.9	-14 49.8	193 2.9	-22 30.7	
14	66 38.8	55 18 7.3	64	277 13.8	-14 49.8	223 8.2	-22 30.8	
16	95 27.8	53 18 20.1	62	307 18.7	-14 49.8	253 13.5	-22 30.8	
18	124 16.4	51 18 32.5	59	337 23.7	-14 49.8	283 18.8	-22 30.8	
20	153 4.7	50 18 44.4	57	7 28.6	-14 49.8	313 24.1	-22 30.8	
22	181 52.6	48 18 55.8	54	37 33.5	-14 49.9	343 29.4	-22 30.8	
Δ				25	0	27	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 5 18.1	-.4	15.8	T _m	9 23	2.5	59.7 16.3
12	- 5 22.4	T _{m☉}	12 h 5.4 min	Starost	26.2 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	14 59	.1	207	-4.0	♃	19 30	.0	139	-1.8
♂	1 37	.1	48	-2.5	♄	23 6	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 38.3	22 8.1	288 51.2	135 18.3	12 26.5	336 51.9	-23 46.5
2	208 38.2	22 7.4	318 56.2	165 18.0	12 24.3	6 57.6	-23 47.0
4	238 38.0	22 6.8	349 1.1	195 17.6	12 22.1	37 3.3	-23 47.6
6	268 37.8	22 6.1	19 6.0	225 17.3	12 19.9	67 9.1	-23 48.1
8	298 37.7	22 5.4	49 10.9	255 17.0	12 17.7	97 14.8	-23 48.7
10	328 37.5	22 4.8	79 15.9	285 16.7	12 15.5	127 20.6	-23 49.2
12	358 37.3	22 4.1	109 20.8	315 16.4	12 13.2	157 26.4	-23 49.7
14	28 37.2	22 3.4	139 25.7	345 16.0	12 11.0	187 32.1	-23 50.3
16	58 37.0	22 2.8	169 30.6	15 15.7	12 8.8	217 37.9	-23 50.8
18	88 36.8	22 2.1	199 35.6	45 15.4	12 6.6	247 43.7	-23 51.4
20	118 36.7	22 1.4	229 40.5	75 15.1	12 4.4	277 49.5	-23 51.9
22	148 36.5	22 .7	259 45.4	105 14.8	12 2.1	307 55.3	-23 52.5
Δ	-1	-3		-2	-11	29	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 56	21 14	1 23	:::	1 34	2.0	19 24	2.8
55	3 36	20 34	0 54	:::	2 4	2.1	18 50	2.7
50	4 3	20 7	0 43	:::	2 26	2.2	18 26	2.7
45	4 24	19 47	0 36	2 23	2 43	2.3	18 8	2.7
40	4 41	19 30	0 32	1 59	2 57	2.4	17 53	2.7
35	4 55	19 16	0 29	1 44	3 9	2.4	17 40	2.7
30	5 7	19 4	0 27	1 34	3 19	2.4	17 29	2.7
20	5 28	18 43	0 24	1 23	3 37	2.5	17 10	2.7
10	5 45	18 26	0 23	1 17	3 53	2.6	16 53	2.7
0	6 2	18 9	0 22	1 14	4 8	2.6	16 37	2.6
10	6 18	17 53	0 23	1 15	4 23	2.6	16 22	2.6
20	6 36	17 36	0 24	1 18	4 39	2.7	16 5	2.6
30	6 55	17 16	0 26	1 25	4 57	2.7	15 46	2.6
35	7 7	17 4	0 28	1 30	5 8	2.8	15 35	2.6
40	7 20	16 51	0 30	1 36	5 21	2.8	15 22	2.5
45	7 36	16 36	0 33	1 45	5 35	2.9	15 7	2.5
50	7 55	16 16	0 38	1 57	5 53	2.9	14 49	2.5
55	8 20	15 52	0 44	2 14	6 17	3.0	14 25	2.4
60	8 54	15 17	0 55	2 40	6 49	3.1	13 52	2.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	210 40.2	46 19 6.7	52	67 38.5	-14 49.9	13 34.7	-22 30.9	
2	239 27.5	45 19 17.1	49	97 43.4	-14 49.9	43 40.0	-22 30.9	
4	268 14.5	43 19 26.9	47	127 48.3	-14 49.9	73 45.4	-22 30.9	
6	297 1.1	42 19 36.2	44	157 53.3	-14 50.0	103 50.7	-22 30.9	
8	325 47.5	40 19 45.0	41	187 58.2	-14 50.0	133 56.0	-22 30.9	
10	354 33.6	39 19 53.2	38	218 3.1	-14 50.0	164 1.3	-22 31.0	
12	23 19.4	38 20 .8	35	248 8.0	-14 50.0	194 6.6	-22 31.0	
14	52 5.0	37 20 7.9	32	278 13.0	-14 50.0	224 11.9	-22 31.0	
16	80 50.3	35 20 14.3	29	308 17.9	-14 50.1	254 17.2	-22 31.0	
18	109 35.4	34 20 20.2	26	338 22.8	-14 50.1	284 22.5	-22 31.1	
20	138 20.2	33 20 25.5	23	8 27.7	-14 50.1	314 27.8	-22 31.1	
22	167 4.9	32 20 30.2	20	38 32.6	-14 50.1	344 33.1	-22 31.1	
Δ				25	0	27	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 5 26.6	-.3	15.8	T _m	10 23	2.6	60.5 16.5
12	- 5 30.6	T _{m☉}	12 h 5.5 min	Starost	27.2 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	14 59	.1	206	-4.0	♃	19 26	.0	139	-1.8
♂	1 32	.1	48	-2.5	♄	23 2	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 36.3	22 .0	289 50.4	135 14.5	11 59.9	338 1.0	-23 53.0
2	208 36.2	21 59.3	319 55.3	165 14.2	11 57.7	8 6.8	-23 53.5
4	238 36.0	21 58.7	350 .2	195 13.9	11 55.5	38 12.6	-23 54.1
6	268 35.9	21 58.0	20 5.1	225 13.6	11 53.2	68 18.5	-23 54.6
8	298 35.7	21 57.3	50 10.1	255 13.3	11 51.0	98 24.3	-23 55.2
10	328 35.5	21 56.6	80 15.0	285 13.0	11 48.8	128 30.1	-23 55.7
12	358 35.4	21 55.9	110 19.9	315 12.8	11 46.5	158 35.9	-23 56.3
14	28 35.2	21 55.2	140 24.9	345 12.5	11 44.3	188 41.7	-23 56.8
16	58 35.1	21 54.5	170 29.8	15 12.2	11 42.1	218 47.6	-23 57.4
18	88 34.9	21 53.7	200 34.7	45 11.9	11 39.8	248 53.4	-23 57.9
20	118 34.7	21 53.0	230 39.6	75 11.6	11 37.6	278 59.2	-23 58.5
22	148 34.6	21 52.3	260 44.6	105 11.4	11 35.3	309 5.1	-23 59.0
Δ	-1	-4		-1	-11	29	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 58	21 12	1 21	: : :	2 22	2.7	20 30	2.0
55	3 37	20 33	0 54	: : :	2 55	2.7	19 56	2.2
50	4 4	20 6	0 43	3 39	3 20	2.7	19 32	2.3
45	4 25	19 46	0 36	2 23	3 38	2.7	19 13	2.4
40	4 41	19 29	0 32	1 58	3 54	2.7	18 58	2.4
35	4 55	19 16	0 29	1 44	4 7	2.7	18 45	2.5
30	5 7	19 4	0 27	1 34	4 18	2.7	18 33	2.5
20	5 28	18 43	0 24	1 23	4 38	2.7	18 14	2.6
10	5 46	18 26	0 23	1 17	4 55	2.7	17 57	2.6
0	6 2	18 9	0 22	1 14	5 11	2.7	17 41	2.6
10	6 18	17 53	0 23	1 15	5 26	2.6	17 25	2.7
20	6 36	17 36	0 24	1 18	5 44	2.6	17 8	2.7
30	6 55	17 16	0 26	1 25	6 3	2.6	16 48	2.8
35	7 7	17 5	0 28	1 30	6 15	2.6	16 36	2.8
40	7 20	16 52	0 30	1 36	6 28	2.6	16 23	2.8
45	7 35	16 36	0 33	1 45	6 44	2.6	16 7	2.9
50	7 54	16 17	0 37	1 57	7 3	2.5	15 48	2.9
55	8 19	15 53	0 44	2 14	7 28	2.5	15 23	3.0
60	8 53	15 19	0 54	2 40	8 3	2.4	14 48	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	195 49.4	32 20	34.3	17	68 37.6	-14 50.2	14 38.4	-22 31.1
2	224 33.8	31 20	37.8	14	98 42.5	-14 50.2	44 43.7	-22 31.1
4	253 17.9	30 20	40.6	11	128 47.4	-14 50.2	74 49.0	-22 31.2
6	282 2.0	30 20	42.8	8	158 52.3	-14 50.3	104 54.3	-22 31.2
8	310 45.9	29 20	44.4	5	188 57.2	-14 50.3	134 59.6	-22 31.2
10	339 29.7	29 20	45.4	2	219 2.1	-14 50.3	165 4.9	-22 31.2
12	8 13.5	28 20	45.7	-2	249 7.0	-14 50.3	195 10.3	-22 31.2
14	36 57.1	28 20	45.4	-5	279 11.9	-14 50.4	225 15.6	-22 31.3
16	65 40.8	28 20	44.4	-8	309 16.8	-14 50.4	255 20.9	-22 31.3
18	94 24.4	28 20	42.9	-11	339 21.7	-14 50.4	285 26.2	-22 31.3
20	123 8.0	28 20	40.6	-14	9 26.6	-14 50.5	315 31.5	-22 31.3
22	151 51.6	28 20	37.8	-17	39 31.5	-14 50.5	345 36.8	-22 31.4
Δ					25	0	27	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 5 34.6	-.3	15.8	T _m	11 26	2.6	61.0	16.6
12	- 5 38.4	T _{m☉}	12 h 5.6 min	Starost	28.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 59	.1	205	-4.0	♃	19 22	.0	139	-1.8
♂	1 28	.1	48	-2.5	♄	22 57	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 34.4	21 51.6	290 49.5	135 11.1	11 33.1	339 10.9	-23 59.6
2	208 34.3	21 50.9	320 54.4	165 10.8	11 30.8	9 16.8	-24 .1
4	238 34.1	21 50.2	350 59.4	195 10.6	11 28.6	39 22.6	-24 .7
6	268 34.0	21 49.4	21 4.3	225 10.3	11 26.3	69 28.5	-24 1.2
8	298 33.8	21 48.7	51 9.2	255 10.0	11 24.1	99 34.4	-24 1.8
10	328 33.7	21 48.0	81 14.1	285 9.8	11 21.8	129 40.2	-24 2.3
12	358 33.5	21 47.2	111 19.1	315 9.5	11 19.6	159 46.1	-24 2.9
14	28 33.4	21 46.5	141 24.0	345 9.3	11 17.3	189 52.0	-24 3.4
16	58 33.2	21 45.8	171 28.9	15 9.0	11 15.1	219 57.9	-24 4.0
18	88 33.1	21 45.0	201 33.9	45 8.8	11 12.8	250 3.8	-24 4.5
20	118 32.9	21 44.3	231 38.8	75 8.5	11 10.5	280 9.7	-24 5.1
22	148 32.8	21 43.5	261 43.7	105 8.3	11 8.3	310 15.6	-24 5.6
Δ	-1	-4		-1	-11	29	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	2 60	21 11	1 20	: : :	3 28	3.4	21 19	1.4
55	3 38	20 32	0 53	: : :	4 1	3.2	20 49	1.7
50	4 5	20 6	0 42	3 31	4 25	3.1	20 27	1.9
45	4 26	19 45	0 36	2 22	4 44	3.0	20 10	2.0
40	4 42	19 29	0 32	1 58	4 59	2.9	19 56	2.1
35	4 56	19 15	0 29	1 44	5 12	2.9	19 44	2.2
30	5 8	19 3	0 27	1 34	5 23	2.8	19 33	2.3
20	5 28	18 43	0 24	1 23	5 42	2.8	19 15	2.4
10	5 46	18 26	0 23	1 17	5 59	2.7	18 59	2.5
0	6 2	18 9	0 22	1 14	6 14	2.6	18 44	2.6
10	6 18	17 53	0 23	1 15	6 30	2.5	18 29	2.7
20	6 35	17 36	0 24	1 18	6 47	2.5	18 13	2.8
30	6 55	17 17	0 26	1 24	7 6	2.4	17 55	2.9
35	7 6	17 5	0 28	1 30	7 17	2.3	17 44	2.9
40	7 19	16 52	0 30	1 36	7 30	2.3	17 31	3.0
45	7 35	16 37	0 33	1 45	7 45	2.2	17 17	3.1
50	7 53	16 18	0 37	1 57	8 4	2.1	16 59	3.2
55	8 18	15 54	0 44	2 14	8 28	1.9	16 35	3.4
60	8 51	15 20	0 54	2 39	9 1	1.7	16 3	3.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 35.2	28 20	34.3	-21	69 36.5	-14 50.5	15 42.1	-22 31.4
2	209 18.8	29 20	30.2	-24	99 41.4	-14 50.6	45 47.4	-22 31.4
4	238 2.5	29 20	25.4	-27	129 46.2	-14 50.6	75 52.7	-22 31.4
6	266 46.3	29 20	20.0	-30	159 51.1	-14 50.6	105 58.0	-22 31.4
8	295 30.2	30 20	14.0	-33	189 56.0	-14 50.7	136 3.3	-22 31.5
10	324 14.2	31 20	7.4	-36	220 .9	-14 50.7	166 8.6	-22 31.5
12	352 58.3	31 20	.1	-39	250 5.8	-14 50.7	196 13.9	-22 31.5
14	21 42.6	32 19	52.3	-42	280 10.7	-14 50.8	226 19.2	-22 31.5
16	50 27.0	33 19	43.9	-45	310 15.6	-14 50.8	256 24.5	-22 31.5
18	79 11.6	34 19	34.8	-48	340 20.5	-14 50.8	286 29.8	-22 31.6
20	107 56.4	35 19	25.2	-51	10 25.4	-14 50.9	316 35.1	-22 31.6
22	136 41.4	36 19	15.0	-54	40 30.3	-14 50.9	346 40.4	-22 31.6
Δ					24	0	27	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 5 42.2	-.3	15.8	T _m	12 29	2.6	61.3	16.7
12	- 5 45.8	T _{m☉}	12 h 5.8 min	Starost	29.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 59	.1	204	-4.1	♃	19 18	.0	139	-1.8
♂	1 23	.1	48	-2.5	♄	22 53	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 32.7	21 42.8	291 48.6	135 8.1	11 6.0	340 21.5	-24 6.2
2	208 32.5	21 42.0	321 53.6	165 7.8	11 3.8	40 27.4	-24 6.7
4	238 32.4	21 41.3	351 58.5	195 7.6	11 1.5	10 33.3	-24 7.3
6	268 32.2	21 40.5	22 3.4	225 7.4	10 59.2	70 39.2	-24 7.9
8	298 32.1	21 39.8	52 8.4	255 7.1	10 56.9	100 45.1	-24 8.4
10	328 32.0	21 39.0	82 13.3	285 6.9	10 54.7	130 51.1	-24 9.0
12	358 31.8	21 38.3	112 18.2	315 6.7	10 52.4	160 57.0	-24 9.5
14	28 31.7	21 37.5	142 23.1	345 6.5	10 50.1	191 2.9	-24 10.1
16	58 31.5	21 36.7	172 28.1	15 6.2	10 47.8	221 8.9	-24 10.6
18	88 31.4	21 36.0	202 33.0	45 6.0	10 45.6	251 14.8	-24 11.2
20	118 31.3	21 35.2	232 37.9	75 5.8	10 43.3	281 20.8	-24 11.7
22	148 31.1	21 34.4	262 42.9	105 5.6	10 41.0	311 26.7	-24 12.3
Δ	-1	-4		-1	-11	30	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 2	21 9	1 19	:	4 50	3.8	21 53	1.0
55	3 40	20 31	0 53	:	5 18	3.5	21 30	1.3
50	4 6	20 5	0 42	3 25	5 39	3.3	21 12	1.5
45	4 27	19 45	0 36	2 21	5 56	3.2	20 58	1.7
40	4 43	19 28	0 32	1 57	6 9	3.0	20 46	1.8
35	4 57	19 15	0 29	1 43	6 21	2.9	20 36	1.9
30	5 9	19 3	0 27	1 34	6 31	2.9	20 27	2.0
20	5 29	18 43	0 24	1 22	6 48	2.7	20 12	2.2
10	5 46	18 26	0 23	1 16	7 3	2.6	19 59	2.3
0	6 2	18 9	0 22	1 14	7 17	2.5	19 46	2.4
10	6 18	17 54	0 23	1 14	7 31	2.4	19 33	2.5
20	6 35	17 37	0 24	1 18	7 46	2.3	19 19	2.7
30	6 55	17 17	0 26	1 24	8 3	2.1	19 4	2.8
35	7 6	17 6	0 28	1 29	8 13	2.0	18 54	2.9
40	7 19	16 53	0 30	1 36	8 24	1.9	18 44	3.0
45	7 34	16 38	0 33	1 45	8 37	1.8	18 31	3.2
50	7 53	16 19	0 37	1 57	8 54	1.7	18 16	3.3
55	8 17	15 56	0 44	2 14	9 14	1.5	17 57	3.6
60	8 50	15 22	0 54	2 39	9 42	1.2	17 30	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	165 26.6	37 19 4.2	-57	70 35.2	-14 50.9	16 45.7	-22 31.6	
2	194 12.0	38 18 52.9	-59	100 40.1	-14 51.0	46 51.0	-22 31.7	
4	222 57.6	40 18 41.0	-62	130 44.9	-14 51.0	76 56.3	-22 31.7	
6	251 43.6	41 18 28.5	-65	160 49.8	-14 51.0	107 1.6	-22 31.7	
8	280 29.7	42 18 15.5	-67	190 54.7	-14 51.1	137 6.9	-22 31.7	
10	309 16.2	44 18 2.1	-70	220 59.6	-14 51.1	167 12.2	-22 31.7	
12	338 2.9	45 17 48.1	-73	251 4.5	-14 51.1	197 17.5	-22 31.8	
14	6 50.0	47 17 33.6	-75	281 9.3	-14 51.2	227 22.8	-22 31.8	
16	35 37.3	48 17 18.6	-77	311 14.2	-14 51.2	257 28.1	-22 31.8	
18	64 24.9	50 17 3.1	-80	341 19.1	-14 51.3	287 33.4	-22 31.8	
20	93 12.9	51 16 47.2	-82	11 24.0	-14 51.3	317 38.7	-22 31.8	
22	122 1.2	53 16 30.8	-84	41 28.8	-14 51.3	347 44.0	-22 31.9	
Δ				24	0	26	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 5 49.4	-.3	15.8	T _m	13 32	2.5	61.3	16.7
12	- 5 52.7	T _{m☉}	12 h 5.9 min	Starost	.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	°	♃	h min	'	°	°
♄	14 60	.1	203	-4.1	♄	19 15	.0	139	-1.8
♅	1 18	.1	49	-2.5	♅	22 49	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 31.0	21 33.6	292 47.8	135 5.4	10 38.7	341 32.7	-24 12.8
2	208 30.9	21 32.8	322 52.7	165 5.2	10 36.4	41 38.6	-24 13.4
4	238 30.7	21 32.1	352 57.6	195 5.0	10 34.1	71 44.6	-24 13.9
6	268 30.6	21 31.3	23 2.6	225 4.8	10 31.9	101 50.6	-24 14.5
8	298 30.5	21 30.5	53 7.5	255 4.6	10 29.6	131 56.5	-24 15.1
10	328 30.4	21 29.7	83 12.4	285 4.4	10 27.3	162 2.5	-24 15.6
12	358 30.2	21 28.9	113 17.3	315 4.2	10 25.0	192 14.5	-24 16.2
14	28 30.1	21 28.1	143 22.3	345 4.0	10 22.7	222 20.5	-24 16.7
16	58 30.0	21 27.3	173 27.2	15 3.8	10 20.4	252 26.5	-24 17.3
18	88 29.8	21 26.5	203 32.1	45 3.6	10 18.1	282 32.5	-24 17.8
20	118 29.7	21 25.7	233 37.1	75 3.4	10 15.8	312 38.5	-24 18.4
22	148 29.6	21 24.9	263 42.0	105 3.3	10 13.5	342 44.0	-24 18.9
Δ	-1	-4		-1	-11	30	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 3	21 7	1 17	:	6 20	3.8	22 18	.8
55	3 41	20 30	0 52	:	6 42	3.5	22 1	1.1
50	4 7	20 4	0 42	3 20	6 59	3.3	21 48	1.3
45	4 27	19 44	0 36	2 20	7 12	3.2	21 38	1.4
40	4 44	19 28	0 32	1 57	7 23	3.0	21 29	1.6
35	4 57	19 14	0 29	1 43	7 32	2.9	21 22	1.7
30	5 9	19 3	0 27	1 34	7 40	2.8	21 15	1.8
20	5 29	18 43	0 24	1 22	7 54	2.6	21 4	2.0
10	5 46	18 26	0 23	1 16	8 6	2.5	20 54	2.1
0	6 2	18 10	0 22	1 14	8 17	2.3	20 44	2.3
10	6 18	17 54	0 23	1 14	8 28	2.2	20 34	2.4
20	6 35	17 37	0 24	1 18	8 40	2.1	20 24	2.6
30	6 54	17 18	0 26	1 24	8 54	1.9	20 12	2.8
35	7 6	17 7	0 28	1 29	9 2	1.8	20 5	2.9
40	7 18	16 54	0 30	1 36	9 11	1.7	19 57	3.0
45	7 33	16 39	0 33	1 45	9 21	1.5	19 48	3.1
50	7 52	16 21	0 37	1 57	9 34	1.4	19 36	3.3
55	8 15	15 57	0 43	2 13	9 49	1.2	19 22	3.5
60	8 48	15 24	0 54	2 38	10 10	.9	19 3	3.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	150 49.8	55 16 14.0	-86	71 33.7	-14 51.4	17 49.3	-22 31.9	
2	179 38.7	56 15 56.7	-88	101 38.6	-14 51.4	47 54.6	-22 31.9	
4	208 28.0	58 15 39.0	-90	131 43.4	-14 51.5	77 59.9	-22 31.9	
6	237 17.6	60 15 21.0	-92	161 48.3	-14 51.5	108 5.2	-22 31.9	
8	266 7.6	62 15 2.5	-94	191 53.2	-14 51.5	138 10.5	-22 32.0	
10	294 57.9	63 14 43.7	-96	221 58.0	-14 51.6	168 15.7	-22 32.0	
12	323 48.6	65 14 24.5	-98	252 2.9	-14 51.6	198 21.0	-22 32.0	
14	352 39.6	67 14 5.0	-99	282 7.8	-14 51.7	228 26.3	-22 32.0	
16	21 31.0	69 13 45.1	-101	312 12.6	-14 51.7	258 31.6	-22 32.1	
18	50 22.7	70 13 24.9	-103	342 17.5	-14 51.8	288 36.9	-22 32.1	
20	79 14.8	72 13 4.4	-104	12 22.4	-14 51.8	318 42.2	-22 32.1	
22	108 7.2	74 12 43.6	-105	42 27.2	-14 51.8	348 47.5	-22 32.1	
Δ				24	0	26	0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	- 5 56.0	-.3	15.8	T _m	14 31	2.3	60.9	16.6
12	- 5 59.0	T _{m☉}	12 h 6.0 min	Starost	1.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	°	♃	h min	'	°	°
♄	14 60	.1	202	-4.1	♄	19 11	.0	139	-1.8
♅	1 14	.1	49	-2.5	♅	22 45	.0	85	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	29.5	21	24.1	293	46.9	135	3.1	10	11.2	342	44.5	-24	19.5	
2	208	29.4	21	23.3	323	51.8	165	2.9	10	8.9	12	50.5	-24	20.1	
4	238	29.2	21	22.5	353	56.8	195	2.7	10	6.6	42	56.5	-24	20.6	
6	268	29.1	21	21.6	24	1.7	225	2.6	10	4.3	73	2.5	-24	21.2	
8	298	29.0	21	20.8	54	6.6	255	2.4	10	2.0	103	8.6	-24	21.7	
10	328	28.9	21	20.0	84	11.6	285	2.2	9	59.7	133	14.6	-24	22.3	
12	358	28.8	21	19.2	114	16.5	315	2.1	9	57.4	163	20.6	-24	22.8	
14	28	28.6	21	18.3	144	21.4	345	1.9	9	55.1	193	26.6	-24	23.4	
16	58	28.5	21	17.5	174	26.3	15	1.7	9	52.7	223	32.7	-24	23.9	
18	88	28.4	21	16.7	204	31.3	45	1.6	9	50.4	253	38.7	-24	24.5	
20	118	28.3	21	15.9	234	36.2	75	1.4	9	48.1	283	44.8	-24	25.0	
22	148	28.2	21	15.0	264	41.1	105	1.3	9	45.8	313	50.8	-24	25.6	
Δ		-1		-4				-1		-12		30			-3

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	3 5	21 5	1 16	:	7 53	3.8	22 37	.6		
55	3 42	20 29	0 52	:	8 7	3.5	22 27	.9		
50	4 9	20 3	0 42	3 16	8 19	3.2	22 19	1.1		
45	4 28	19 43	0 36	2 19	8 28	3.1	22 12	1.3		
40	4 44	19 27	0 32	1 56	8 35	2.9	22 7	1.4		
35	4 58	19 14	0 29	1 43	8 41	2.8	22 2	1.5		
30	5 10	19 2	0 27	1 33	8 47	2.7	21 58	1.6		
20	5 29	18 43	0 24	1 22	8 57	2.5	21 51	1.8		
10	5 47	18 25	0 23	1 16	9 5	2.3	21 44	2.0		
0	6 2	18 10	0 22	1 14	9 13	2.2	21 38	2.1		
10	6 18	17 54	0 22	1 14	9 21	2.0	21 32	2.3		
20	6 35	17 37	0 24	1 18	9 29	1.9	21 26	2.4		
30	6 54	17 18	0 26	1 24	9 39	1.7	21 18	2.6		
35	7 5	17 7	0 28	1 29	9 44	1.6	21 13	2.7		
40	7 18	16 55	0 30	1 36	9 51	1.5	21 8	2.9		
45	7 33	16 40	0 33	1 45	9 58	1.3	21 3	3.0		
50	7 51	16 22	0 37	1 56	10 7	1.2	20 55	3.2		
55	8 14	15 58	0 43	2 13	10 17	1.0	20 47	3.4		
60	8 47	15 26	0 53	2 38	10 31	.7	20 35	3.7		

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	137	.0	76	12	22.5	-107	72	32.1	-14	51.9	18	52.8	-22	32.1	
2	165	53.2	77	12	1.2	-108	102	36.9	-14	51.9	48	58.1	-22	32.2	
4	194	46.7	79	11	39.6	-109	132	41.8	-14	52.0	79	3.4	-22	32.2	
6	223	40.5	81	11	17.8	-110	162	46.6	-14	52.0	109	8.7	-22	32.2	
8	252	34.7	83	10	55.7	-111	192	51.5	-14	52.1	139	14.0	-22	32.2	
10	281	29.2	84	10	33.4	-112	222	56.3	-14	52.1	169	19.3	-22	32.2	
12	310	24.1	86	10	10.9	-113	253	1.2	-14	52.2	199	24.6	-22	32.3	
14	339	19.3	88	9	48.2	-114	283	6.0	-14	52.2	229	29.9	-22	32.3	
16	8	14.8	89	9	25.3	-115	313	10.9	-14	52.3	259	35.1	-22	32.3	
18	37	10.7	91	9	2.3	-116	343	15.7	-14	52.3	289	40.4	-22	32.3	
20	66	6.8	92	8	39.1	-117	13	20.6	-14	52.4	319	45.7	-22	32.3	
22	95	3.3	94	8	15.7	-117	43	25.4	-14	52.4	349	51.0	-22	32.4	
Δ								24		0		26			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6	2.1	- .2	15.8	T _m	15 26	2.2	60.3	16.4
12	- 6	4.9	T _{m☉}	12 h 6.1 min	Starost	2.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°	°	h min	'	°	°	°
♀	14 60	.1	201	-4.1	♀	19 7	.0	139	-1.8
♂	1 9	.1	49	-2.5	♂	22 40	.0	85	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	28.1	21	14.2	294	46.1	135	1.1	9	43.5	343	56.9	-24	26.2	
2	208	28.0	21	13.3	324	51.0	165	1.0	9	41.2	14	2.9	-24	26.7	
4	238	27.9	21	12.5	354	55.9	195	.8	9	38.8	44	9.0	-24	27.3	
6	268	27.8	21	11.6	25	.8	225	.7	9	36.5	74	15.1	-24	27.8	
8	298	27.6	21	10.8	55	5.8	255	.6	9	34.2	104	21.1	-24	28.4	
10	328	27.5	21	9.9	85	10.7	285	.4	9	31.9	134	27.2	-24	28.9	
12	358	27.4	21	9.1	115	15.6	315	.3	9	29.5	164	33.3	-24	29.5	
14	28	27.3	21	8.2	145	20.6	345	.2	9	27.2	194	39.4	-24	30.0	
16	58	27.2	21	7.4	175	25.5	15	.0	9	24.9	224	45.4	-24	30.6	
18	88	27.1	21	6.5	205	30.4	44	59.9	9	22.6	254	51.5	-24	31.1	
20	118	27.0	21	5.6	235	35.3	74	59.8	9	20.2	284	57.6	-24	31.7	
22	148	26.9	21	4.8	265	40.3	104	59.7	9	17.9	315	3.7	-24	32.2	
Δ		-1		-4				-1		-12		30			-3

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	3 7	21 4	1 15	:	9 23	3.6	22 52	1.7		
55	3 44	20 27	0 52	:	9 30	3.3	22 48	1.7		
50	4 10	20 2	0 42	3 12	9 36	3.1	22 45	1.8		
45	4 29	19 42	0 36	2 18	9 41	2.9	22 43	1.8		
40	4 45	19 27	0 32	1 56	9 45	2.8	22 41	1.8		
35	4 59	19 13	0 29	1 42	9 48	2.7	22 39	1.9		
30	5 10	19 2	0 27	1 33	9 51	2.6	22 37	1.9		
20	5 30	18 42	0 24	1 22	9 57	2.4	22 34	1.9		
10	5 47	18 25	0 23	1 16	10 1	2.2	22 32	2.0		
0	6 3	18 10	0 22	1 14	10 6	2.1	22 29	2.0		
10	6 18	17 54	0 22	1 14	10 10	1.9	22 27	2.1		
20	6 35	17 38	0 24	1 17	10 14	1.8	22 24	2.1		
30	6 54	17 19	0 26	1 24	10 20	1.6	22 21	2.2		
35	7 5	17 8	0 28	1 29	10 23	1.5	22 19	2.2		
40	7 17	16 55	0 30	1 36	10 26	1.3	22 17	2.3		
45	7 32	16 41	0 33	1 44	10 30	1.2	22 15	2.3		
50	7 50	16 23	0 37	1 56	10 35	1.0	22 12	2.3		
55	8 13	15 60	0 43	2 13	10 40	.8	22 8	2.4		
60	8 45	15 28	0 53	2 37	10 48	.6	22 4	2.5		

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	124	.1	95	7	52.3	-118	73	30.3	-14	52.5	19	56.3	-22	32.4	
2	152	57.2	97	7	28.7	-119	103	35.1	-14	52.5	50	1.6	-22	32.4	
4	181	54.6	98	7	5.0	-119	133	39.9	-14	52.6	80	6.9	-22	32.4	
6	210	52.3	100	6	41.2	-119	163	44.8	-14	52.6	110	12.2	-22	32.4	
8	239	50.3	101	6	17.3	-120	193	49.6	-14	52.7	140	17.5	-22	32.5	
10	268	48.5	103	5	53.3	-120	223	54.4	-14	52.7	170	22.7	-22	32.5	
12	297	47.0	104	5	29.3	-120	253	59.3	-14	52.8	200	28.0	-22	32.5	
14	326	45.8	105	5	5.2	-121	284	4.1	-14	52.8	230	33.3	-22	32.5	
16	355	44.9	107	4	41.0	-121	314	8.9	-14	52.9	260	38.6	-22	32.5	
18	24	44.2	108	4	16.8	-121	344	13.8	-14	52.9	290	43.9	-22	32.6	
20	53	43.7	109	3	52.6	-121	14	18.6	-14	53.0	320	49.2	-22	32.6	
22	82	43.5	110	3	28.4	-121	44	23.4	-14	53.0	350	54.5	-22	32.6	
Δ								24		0		26			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 6	7.7	- .2	15.8	T _m	16 18	2.0	59.5	16.2
12	- 6	10.2	T _{m☉}						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS			
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	26.8	21	3.9	295	45.2	134	59.5	9	15.6	345	9.8 -24 32.8
2	208	26.7	21	3.0	325	50.1	164	59.4	9	13.2	15	15.9 -24 33.3
4	238	26.6	21	2.2	355	55.1	194	59.3	9	10.9	45	22.0 -24 33.9
6	268	26.5	21	1.3	26	.0	224	59.2	9	8.6	75	28.1 -24 34.4
8	298	26.4	21	.4	56	4.9	254	59.1	9	6.2	105	34.2 -24 35.0
10	328	26.3	20	59.5	86	9.8	284	59.0	9	3.9	135	40.4 -24 35.5
12	358	26.2	20	58.6	116	14.8	314	58.9	9	1.5	165	46.5 -24 36.1
14	28	26.2	20	57.8	146	19.7	344	58.8	8	59.2	195	52.6 -24 36.6
16	58	26.1	20	56.9	176	24.6	14	58.7	8	56.9	225	58.7 -24 37.2
18	88	26.0	20	56.0	206	29.5	44	58.6	8	54.5	256	4.8 -24 37.7
20	118	25.9	20	55.1	236	34.5	74	58.5	8	52.2	286	11.0 -24 38.3
22	148	25.8	20	54.2	266	39.4	104	58.4	8	49.8	316	17.1 -24 38.8
Δ	0	-4					-1	-12			31	-3

UT	MESEC				JUPITER			SATURN				
	S _♃		Δ	δ _♃	S _♃	δ _♃		S _♄	δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'
0	111	43.6	111	3	4.2	-121	74	28.3	-14	53.1	20	59.8 -22 32.6
2	140	43.8	112	2	40.0	-121	104	33.1	-14	53.1	51	5.0 -22 32.7
4	169	44.3	113	2	15.7	-121	134	37.9	-14	53.2	81	10.3 -22 32.7
6	198	45.0	114	1	51.5	-121	164	42.7	-14	53.2	111	15.6 -22 32.7
8	227	45.8	115	1	27.4	-121	194	47.6	-14	53.3	141	20.9 -22 32.7
10	256	46.9	116	1	3.2	-120	224	52.4	-14	53.3	171	26.2 -22 32.7
12	285	48.2	117	0	39.1	-120	254	57.2	-14	53.4	201	31.5 -22 32.8
14	314	49.6	118	0	15.1	-31	285	2.0	-14	53.5	231	36.7 -22 32.8
16	343	51.2	119	0	8.9	120	315	6.8	-14	53.5	261	42.0 -22 32.8
18	12	53.0	120	0	32.8	119	345	11.6	-14	53.6	291	47.3 -22 32.8
20	41	55.0	121	0	56.7	119	15	16.5	-14	53.6	321	52.6 -22 32.8
22	70	57.1	121	1	20.4	118	45	21.3	-14	53.7	351	57.9 -22 32.9
Δ							24	0			26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 9	21 2	1 14	:::	10 49	1.1	23 32	3.3
55	3 45	20 26	0 51	:::	10 50	1.2	23 30	3.1
50	4 11	20 1	0 41	3 9	10 51	1.4	23 28	2.9
45	4 30	19 42	0 35	2 17	10 52	1.5	23 26	2.7
40	4 46	19 26	0 32	1 55	10 52	1.5	23 25	2.6
35	4 59	19 13	0 29	1 42	10 53	1.6	23 24	2.5
30	5 11	19 2	0 27	1 33	10 53	1.7	23 23	2.4
20	5 30	18 42	0 24	1 22	10 54	1.8	23 21	2.2
10	5 47	18 25	0 23	1 16	10 55	1.9	23 20	2.1
0	6 3	18 10	0 22	1 14	10 55	2.0	23 18	2.0
10	6 18	17 54	0 22	1 14	10 56	2.1	23 17	1.8
20	6 35	17 38	0 24	1 17	10 57	2.2	23 15	1.7
30	6 53	17 19	0 26	1 24	10 57	2.3	23 13	1.5
35	7 4	17 9	0 27	1 29	10 58	2.4	23 12	1.4
40	7 17	16 56	0 30	1 36	10 58	2.4	23 11	1.3
45	7 31	16 42	0 33	1 44	10 59	2.5	23 10	1.2
50	7 49	16 24	0 37	1 56	10 60	2.6	23 8	1.1
55	8 12	16 1	0 43	2 12	11 1	2.8	23 6	.9
60	8 44	15 29	0 53	2 37	11 2	3.0	23 3	.7

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 6 12.7	-.2	15.8	T _m	17 7	2.0	58.6 16.0
12	- 6 14.9	T _{m☉}	12 h 6.3 min	Starost	4.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	15 0	.1	199	-4.1	♃	18 59	.0	139	-1.8
♂	0 59	.1	49	-2.6	♄	22 32	.0	85	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS			
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	25.7	20	53.3	296	44.3	134	58.3	8	47.5	346	23.3 -24 39.4
2	208	25.6	20	52.4	326	49.3	164	58.2	8	45.1	16	29.4 -24 39.9
4	238	25.5	20	51.5	356	54.2	194	58.1	8	42.8	46	35.5 -24 40.5
6	268	25.4	20	50.6	26	59.1	224	58.1	8	40.4	76	41.7 -24 41.0
8	298	25.4	20	49.7	57	4.0	254	58.0	8	38.1	106	47.8 -24 41.6
10	328	25.3	20	48.8	87	9.0	284	57.9	8	35.7	136	54.0 -24 42.1
12	358	25.2	20	47.8	117	13.9	314	57.8	8	33.4	167	.2 -24 42.7
14	28	25.1	20	46.9	147	18.8	344	57.8	8	31.0	197	6.3 -24 43.2
16	58	25.0	20	46.0	177	23.8	14	57.7	8	28.6	227	12.5 -24 43.7
18	88	25.0	20	45.1	207	28.7	44	57.6	8	26.3	257	18.7 -24 44.3
20	118	24.9	20	44.2	237	33.6	74	57.6	8	23.9	287	24.8 -24 44.8
22	148	24.8	20	43.2	267	38.5	104	57.5	8	21.6	317	31.0 -24 45.4
Δ	0	-5					0	-12			31	-3

UT	MESEC				JUPITER			SATURN				
	S _♃		Δ	δ _♃	S _♃	δ _♃		S _♄	δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'
0	99	59.3	122	1	44.1	118	75	26.1	-14	53.7	22	3.2 -22 32.9
2	129	1.7	123	2	7.7	117	105	30.9	-14	53.8	52	8.4 -22 32.9
4	158	4.2	123	2	31.2	117	135	35.7	-14	53.9	82	13.7 -22 32.9
6	187	6.9	124	2	54.5	116	165	40.5	-14	53.9	112	19.0 -22 32.9
8	216	9.7	124	3	17.8	116	195	45.3	-14	54.0	142	24.3 -22 33.0
10	245	12.5	125	3	40.9	115	225	50.1	-14	54.0	172	29.6 -22 33.0
12	274	15.5	125	4	3.9	114	255	54.9	-14	54.1	202	34.8 -22 33.0
14	303	18.6	126	4	26.7	114	285	59.7	-14	54.2	232	40.1 -22 33.0
16	332	21.7	126	4	49.4	113	316	4.5	-14	54.2	262	45.4 -22 33.0
18	1	25.0	127	5	12.0	112	346	9.3	-14	54.3	292	50.7 -22 33.1
20	30	28.3	127	5	34.4	111	16	14.1	-14	54.3	322	56.0 -22 33.1
22	59	31.7	127	5	56.6	110	46	18.9	-14	54.4	353	1.2 -22 33.1
Δ							24	0			26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 11	20 60	1 12	:::	11 15	.6	...	.0
55	3 47	20 25	0 51	:::	11 20	.8	...	.0
50	4 12	19 60	0 41	3 5	11 24	1.0	...	.0
45	4 31	19 41	0 35	2 16	11 27	1.2	...	.0
40	4 47	19 25	0 31	1 55	11 29	1.3	...	.0
35	4 60	19 12	0 29	1 42	11 32	1.4	...	.0
30	5 11	19 1	0 27	1 33	11 34	1.5	...	.0
20	5 31	18 42	0 24	1 22	11 37	1.7	...	.0
10	5 47	18 25	0 23	1 16	11 40	1.8	...	.0
0	6 3	18 10	0 22	1 14	11 43	1.9	...	.0
10	6 18	17 55	0 22	1 14	11 46	2.1	...	.0
20	6 34	17 38	0 24	1 17	11 49	2.2	23 56	1.7
30	6 53	17 20	0 26	1 24	11 53	2.4	23 50	1.5
35	7 4	17 9	0 27	1 29	11 55	2.5	23 47	1.4
40	7 16	16 57	0 30	1 35	11 57	2.6	23 43	1.3
45	7 30	16 43	0 33	1 44	12 0	2.7	23 39	1.2
50	7 48	16 25	0 37	1 56	12 3	2.9	23 34	1.0
55	8 11	16 2	0 43	2 12	12 8	3.1	23 28	.9
60	8 42	15 31	0 52	2 36	12 13	3.4	23 20	.6

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 6 17.2	-.2	15.8	T _m	17 54	2.0	57.6 15.7
12	- 6 19.1	T _{m☉}	12 h 6.3 min	Starost	5.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	15 0	.1	198	-4.2	♃	18 55	.0	139	-1.8
♂	0 54	.1	50	-2.6	♄	22 28	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 24.7	20 42.3	297 43.5	134 57.4	8 19.2	347 37.2	-24 45.9
2	208 24.7	20 41.4	327 48.4	164 57.4	8 16.8	17 43.4	-24 46.5
4	238 24.6	20 40.5	357 53.3	194 57.3	8 14.5	47 49.5	-24 47.0
6	268 24.5	20 39.5	27 58.3	224 57.3	8 12.1	77 55.7	-24 47.5
8	298 24.4	20 38.6	58 3.2	254 57.2	8 9.7	108 1.9	-24 48.1
10	328 24.4	20 37.6	88 8.1	284 57.2	8 7.4	138 8.1	-24 48.6
12	358 24.3	20 36.7	118 13.0	314 57.1	8 5.0	168 14.3	-24 49.2
14	28 24.2	20 35.8	148 18.0	344 57.1	8 2.6	198 20.5	-24 49.7
16	58 24.2	20 34.8	178 22.9	14 57.0	8 .3	228 26.7	-24 50.2
18	88 24.1	20 33.9	208 27.8	44 57.0	7 57.9	258 32.9	-24 50.8
20	118 24.0	20 32.9	238 32.8	74 57.0	7 55.5	288 39.1	-24 51.3
22	148 24.0	20 31.9	268 37.7	104 56.9	7 53.1	318 45.3	-24 51.8
Δ	0	-5		0	-12	31	-3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	88 35.2	128	6 18.7	110	76 23.7	-14 54.5	23 6.5	-22 33.1
2	117 38.7	128	6 40.6	109	106 28.5	-14 54.5	53 11.8	-22 33.1
4	146 42.3	128	7 2.4	108	136 33.3	-14 54.6	83 17.1	-22 33.2
6	175 45.9	128	7 23.9	107	166 38.1	-14 54.7	113 22.3	-22 33.2
8	204 49.6	129	7 45.3	106	196 42.9	-14 54.7	143 27.6	-22 33.2
10	233 53.3	129	8 6.4	105	226 47.7	-14 54.8	173 32.9	-22 33.2
12	262 57.0	129	8 27.4	104	256 52.5	-14 54.8	203 38.2	-22 33.2
14	292 .8	129	8 48.1	103	286 57.3	-14 54.9	233 43.4	-22 33.3
16	321 4.5	129	9 8.7	102	317 2.1	-14 55.0	263 48.7	-22 33.3
18	350 8.3	129	9 29.0	101	347 6.9	-14 55.0	293 54.0	-22 33.3
20	19 12.1	129	9 49.1	99	17 11.7	-14 55.1	323 59.3	-22 33.3
22	48 15.9	129	10 9.0	98	47 16.4	-14 55.2	354 4.5	-22 33.3
Δ					24	0	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 13	20 58	1 11	:::	11 29	.6	0 52	3.3
55	3 48	20 23	0 51	:::	11 40	.9	0 44	3.1
50	4 13	19 59	0 41	3 2	11 48	1.1	0 37	2.9
45	4 32	19 40	0 35	2 16	11 55	1.2	0 32	2.7
40	4 48	19 25	0 31	1 54	12 0	1.3	0 28	2.6
35	5 1	19 12	0 29	1 41	12 5	1.4	0 24	2.5
30	5 12	19 1	0 27	1 33	12 9	1.5	0 21	2.4
20	5 31	18 42	0 24	1 22	12 17	1.7	0 15	2.2
10	5 47	18 25	0 23	1 16	12 23	1.8	0 10	2.1
0	6 3	18 10	0 22	1 14	12 30	1.9	0 5	1.9
10	6 18	17 55	0 22	1 14	12 36	2.1	0 1	1.8
20	6 34	17 39	0 24	1 17	12 43	2.2	...	.0
30	6 52	17 21	0 26	1 24	12 50	2.3	...	.0
35	7 3	17 10	0 27	1 29	12 55	2.4	...	.0
40	7 15	16 58	0 30	1 35	12 60	2.5	...	.0
45	7 29	16 44	0 33	1 44	13 6	2.7	...	.0
50	7 47	16 26	0 37	1 55	13 13	2.8	23 59	1.1
55	8 9	16 4	0 43	2 12	13 22	3.0	23 48	.9
60	8 40	15 33	0 52	2 35	13 34	3.3	23 34	.7

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s /		h min	min	/	/
00	- 6 21.1	-.1	15.8	T _m	18 41	1.9	56.8
12	- 6 22.7	T _{m☉}	12 h 6.4 min	Starost	6.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	/	°		♃	h min	/	°	
♃	15 0	.1	197	-4.2	♃	18 51	.0	139	-1.8
♄	0 49	.1	50	-2.6	♄	22 24	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.9	20 31.0	298 42.6	134 56.9	7 50.8	348 51.5	-24 52.4
2	208 23.8	20 30.0	328 47.5	164 56.9	7 48.4	18 57.7	-24 52.9
4	238 23.8	20 29.1	358 52.5	194 56.8	7 46.0	49 4.0	-24 53.4
6	268 23.7	20 28.1	28 57.4	224 56.8	7 43.6	79 10.2	-24 54.0
8	298 23.7	20 27.1	59 2.3	254 56.8	7 41.3	109 16.4	-24 54.5
10	328 23.6	20 26.2	89 7.3	284 56.8	7 38.9	139 22.6	-24 55.0
12	358 23.5	20 25.2	119 12.2	314 56.8	7 36.5	169 28.8	-24 55.6
14	28 23.5	20 24.2	149 17.1	344 56.8	7 34.1	199 35.1	-24 56.1
16	58 23.4	20 23.3	179 22.0	14 56.7	7 31.7	229 41.3	-24 56.6
18	88 23.4	20 22.3	209 27.0	44 56.7	7 29.3	259 47.5	-24 57.2
20	118 23.3	20 21.3	239 31.9	74 56.7	7 27.0	289 53.8	-24 57.7
22	148 23.3	20 20.3	269 36.8	104 56.7	7 24.6	320 .0	-24 58.2
Δ	0	-5		0	-12	31	-3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	77 19.7	129	10 28.7	97	77 21.2	-14 55.2	24 9.8	-22 33.4
2	106 23.5	129	10 48.1	96	107 26.0	-14 55.3	54 15.1	-22 33.4
4	135 27.3	129	11 7.3	95	137 30.8	-14 55.4	84 20.4	-22 33.4
6	164 31.1	129	11 26.3	93	167 35.6	-14 55.4	114 25.6	-22 33.4
8	193 34.8	129	11 45.0	92	197 40.3	-14 55.5	144 30.9	-22 33.4
10	222 38.6	129	12 3.4	91	227 45.1	-14 55.6	174 36.2	-22 33.5
12	251 42.3	128	12 21.6	90	257 49.9	-14 55.6	204 41.4	-22 33.5
14	280 45.9	128	12 39.5	88	287 54.7	-14 55.7	234 46.7	-22 33.5
16	309 49.6	128	12 57.2	87	317 59.4	-14 55.8	264 52.0	-22 33.5
18	338 53.2	128	13 14.6	86	348 4.2	-14 55.9	294 57.3	-22 33.5
20	7 56.8	128	13 31.7	84	18 9.0	-14 55.9	325 2.5	-22 33.6
22	37 .3	127	13 48.6	83	48 13.8	-14 56.0	355 7.8	-22 33.6
Δ					24	0	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 16	20 56	1 10	:::	11 45	.8	2 11	3.2
55	3 50	20 22	0 50	:::	12 1	1.0	1 57	3.0
50	4 14	19 58	0 41	2 59	12 14	1.2	1 46	2.8
45	4 33	19 39	0 35	2 15	12 24	1.3	1 37	2.6
40	4 48	19 24	0 31	1 54	12 32	1.4	1 29	2.5
35	5 1	19 11	0 29	1 41	12 39	1.5	1 23	2.4
30	5 12	19 0	0 27	1 32	12 46	1.6	1 18	2.3
20	5 31	18 41	0 24	1 21	12 57	1.7	1 8	2.2
10	5 48	18 25	0 23	1 16	13 7	1.8	0 60	2.1
0	6 3	18 10	0 22	1 13	13 16	1.9	0 52	1.9
10	6 18	17 55	0 22	1 14	13 25	2.1	0 44	1.8
20	6 34	17 39	0 23	1 17	13 35	2.2	0 36	1.7
30	6 52	17 21	0 26	1 24	13 47	2.3	0 26	1.6
35	7 3	17 11	0 27	1 29	13 53	2.4	0 21	1.5
40	7 15	16 59	0 30	1 35	14 1	2.5	0 15	1.4
45	7 29	16 45	0 32	1 44	14 10	2.6	0 8	1.3
50	7 46	16 27	0 37	1 55	14 21	2.7	...	.0
55	8 8	16 5	0 42	2 11	14 34	2.9	...	.0
60	8 38	15 35	0 52	2 35	14 52	3.1	23 51	.9

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s /		h min	min	/	/
00	- 6 24.4	-.1	15.8	T _m	19 27	2.0	56.0
12	- 6 25.8	T _{m☉}	12 h 6.4 min	Starost	7.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	/	°		♃	h min	/	°	
♃	15 0	.1	196	-4.2	♃	18 48	.0	139	-1.8
♄	0 44	.1	50	-2.6	♄	22 19	.0	85	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.2	20 19.3	299 41.8	134 56.7	7 22.2	350 6.3	-24 58.7
2	208 23.2	20 18.3	329 46.7	164 56.7	7 19.8	20 12.5	-24 59.3
4	238 23.1	20 17.3	359 51.6	194 56.7	7 17.4	50 18.8	-24 59.8
6	268 23.1	20 16.4	29 56.5	224 56.7	7 15.0	80 25.0	-25 .3
8	298 23.0	20 15.4	60 1.5	254 56.7	7 12.6	110 31.3	-25 .8
10	328 23.0	20 14.4	90 6.4	284 56.7	7 10.2	140 37.5	-25 1.4
12	358 22.9	20 13.4	120 11.3	314 56.8	7 7.8	170 43.8	-25 1.9
14	28 22.9	20 12.4	150 16.2	344 56.8	7 5.5	200 50.0	-25 2.4
16	58 22.8	20 11.4	180 21.2	14 56.8	7 3.1	230 56.3	-25 2.9
18	88 22.8	20 10.4	210 26.1	44 56.8	7 .7	261 2.5	-25 3.5
20	118 22.7	20 9.3	240 31.0	74 56.8	6 58.3	291 8.8	-25 4.0
22	148 22.7	20 8.3	270 36.0	104 56.9	6 55.9	321 15.1	-25 4.5
Δ	0	-5		0	-12	31	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 18	20 54	1 9	:::	12 3	1.0	3 28	3.1
55	3 52	20 20	0 50	:::	12 25	1.2	3 8	2.8
50	4 16	19 56	0 41	2 56	12 42	1.4	2 52	2.7
45	4 34	19 38	0 35	2 14	12 55	1.5	2 40	2.5
40	4 49	19 23	0 31	1 53	13 6	1.6	2 30	2.4
35	5 2	19 11	0 28	1 41	13 16	1.6	2 21	2.4
30	5 13	18 60	0 26	1 32	13 24	1.7	2 14	2.3
20	5 32	18 41	0 24	1 21	13 38	1.8	2 0	2.2
10	5 48	18 25	0 23	1 16	13 51	1.9	1 49	2.1
0	6 3	18 10	0 22	1 13	14 3	2.0	1 38	2.0
10	6 18	17 55	0 22	1 14	14 15	2.1	1 28	1.9
20	6 34	17 40	0 23	1 17	14 27	2.1	1 16	1.8
30	6 52	17 22	0 26	1 24	14 42	2.3	1 4	1.6
35	7 2	17 11	0 27	1 28	14 51	2.3	0 56	1.6
40	7 14	16 59	0 29	1 35	15 0	2.4	0 48	1.5
45	7 28	16 46	0 32	1 43	15 12	2.5	0 38	1.4
50	7 45	16 29	0 36	1 55	15 26	2.6	0 26	1.3
55	8 6	16 7	0 42	2 11	15 44	2.7	0 11	1.1
60	8 36	15 37	0 51	2 34	16 7	3.0	...	0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	66 3.8	127 14	5.1	81	78 18.5	-14 56.1	25 13.1	-22 33.6
2	95 7.2	127 14	21.4	80	108 23.3	-14 56.1	55 18.3	-22 33.6
4	124 10.6	127 14	37.4	78	138 28.1	-14 56.2	85 23.6	-22 33.6
6	153 13.9	126 14	53.1	77	168 32.8	-14 56.3	115 28.9	-22 33.7
8	182 17.2	126 15	8.5	75	198 37.6	-14 56.4	145 34.1	-22 33.7
10	211 20.4	126 15	23.6	74	228 42.3	-14 56.4	175 39.4	-22 33.7
12	240 23.6	125 15	38.4	72	258 47.1	-14 56.5	205 44.7	-22 33.7
14	269 26.7	125 15	52.8	71	288 51.9	-14 56.6	235 49.9	-22 33.7
16	298 29.7	125 16	7.0	69	318 56.6	-14 56.6	265 55.2	-22 33.8
18	327 32.7	125 16	20.8	68	349 1.4	-14 56.7	296 .5	-22 33.8
20	356 35.6	124 16	34.4	66	19 6.1	-14 56.8	326 5.7	-22 33.8
22	25 38.5	124 16	47.6	64	49 10.9	-14 56.9	356 11.0	-22 33.8
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 6 27.2	-.1	15.8	T _m	20 14	2.0	55.4 15.1
12	- 6 28.2	T _{m☉}	12 h 6.5 min	Starost	8.9 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	15 0	.1	195	-4.2	♃	18 44	.0	139	-1.7
♂	0 39	.1	50	-2.6	♄	22 15	.0	86	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 22.7	20 7.3	300 40.9	134 56.9	6 53.5	351 21.4	-25 5.0
2	208 22.6	20 6.3	330 45.8	164 56.9	6 51.1	21 27.6	-25 5.5
4	238 22.6	20 5.3	0 50.7	194 56.9	6 48.7	51 33.9	-25 6.0
6	268 22.6	20 4.3	30 55.7	224 57.0	6 46.3	81 40.2	-25 6.6
8	298 22.5	20 3.2	61 .6	254 57.0	6 43.9	111 46.5	-25 7.1
10	328 22.5	20 2.2	91 5.5	284 57.0	6 41.5	141 52.7	-25 7.6
12	358 22.5	20 1.2	121 10.5	314 57.1	6 39.1	171 59.0	-25 8.1
14	28 22.4	20 .2	151 15.4	344 57.1	6 36.7	202 5.3	-25 8.6
16	58 22.4	19 59.1	181 20.3	14 57.2	6 34.3	232 11.6	-25 9.1
18	88 22.4	19 58.1	211 25.2	44 57.2	6 31.9	262 17.9	-25 9.6
20	118 22.3	19 57.1	241 30.2	74 57.3	6 29.4	292 24.2	-25 10.1
22	148 22.3	19 56.0	271 35.1	104 57.3	6 27.0	322 30.5	-25 10.6
Δ	0	-5		0	-12	31	-3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 20	20 52	1 8	:::	12 27	1.3	4 42	2.8
55	3 53	20 19	0 49	:::	12 54	1.5	4 15	2.6
50	4 17	19 55	0 40	2 54	13 15	1.6	3 56	2.5
45	4 35	19 37	0 35	2 13	13 30	1.7	3 41	2.4
40	4 50	19 22	0 31	1 53	13 44	1.7	3 28	2.3
35	5 3	19 10	0 28	1 40	13 55	1.8	3 18	2.3
30	5 14	18 59	0 26	1 32	14 5	1.8	3 8	2.2
20	5 32	18 41	0 24	1 21	14 21	1.9	2 52	2.1
10	5 48	18 25	0 22	1 15	14 36	1.9	2 38	2.1
0	6 3	18 10	0 22	1 13	14 50	2.0	2 25	2.0
10	6 18	17 55	0 22	1 14	15 4	2.1	2 13	1.9
20	6 33	17 40	0 23	1 17	15 19	2.1	1 59	1.8
30	6 51	17 22	0 26	1 23	15 36	2.2	1 43	1.7
35	7 1	17 12	0 27	1 28	15 46	2.2	1 34	1.7
40	7 13	17 0	0 29	1 35	15 58	2.3	1 23	1.6
45	7 27	16 47	0 32	1 43	16 11	2.3	1 11	1.6
50	7 44	16 30	0 36	1 55	16 28	2.4	0 56	1.5
55	8 5	16 9	0 42	2 10	16 49	2.5	0 38	1.3
60	8 34	15 39	0 51	2 34	17 18	2.7	0 13	1.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	54 41.2	124 17	.5	63	79 15.6	-14 56.9	26 16.2	-22 33.8
2	83 44.0	123 17	13.0	61	109 20.4	-14 57.0	56 21.5	-22 33.8
4	112 46.6	123 17	25.2	59	139 25.1	-14 57.1	86 26.8	-22 33.9
6	141 49.2	123 17	37.1	58	169 29.9	-14 57.2	116 32.0	-22 33.9
8	170 51.7	122 17	48.7	56	199 34.6	-14 57.2	146 37.3	-22 33.9
10	199 54.2	122 17	59.9	54	229 39.4	-14 57.3	176 42.6	-22 33.9
12	228 56.6	122 18	10.7	53	259 44.1	-14 57.4	206 47.8	-22 33.9
14	257 58.9	121 18	21.2	51	289 48.9	-14 57.5	236 53.1	-22 34.0
16	287 1.2	121 18	31.4	49	319 53.6	-14 57.6	266 58.3	-22 34.0
18	316 3.4	121 18	41.2	47	349 58.4	-14 57.6	297 3.6	-22 34.0
20	345 5.5	120 18	50.6	45	20 3.1	-14 57.7	327 8.9	-22 34.0
22	14 7.6	120 18	59.7	44	50 7.9	-14 57.8	357 14.1	-22 34.0
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s / ' / "	h min	h min	min	' / "	' / "
00	- 6 29.3	-.1	15.8	T _m	21 2	2.0	54.9 15.0
12	- 6 30.1	T _{m☉}	12 h 6.5 min	Starost	9.9 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	15 0	.1	194	-4.2	♃	18 40	.0	139	-1.7
♂	0 34	.1	51	-2.6	♄	22 11	.0	86	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.3	19 55.0	301 40.0	134 57.4	6 24.6	352 36.8	-25 11.1	
2	208 22.2	19 53.9	331 45.0	164 57.4	6 22.2	22 43.1	-25 11.6	
4	238 22.2	19 52.9	1 49.9	194 57.5	6 19.8	52 49.4	-25 12.2	
6	268 22.2	19 51.8	31 54.8	224 57.6	6 17.4	82 55.7	-25 12.7	
8	298 22.2	19 50.8	61 59.7	254 57.6	6 15.0	113 2.0	-25 13.2	
10	328 22.2	19 49.7	92 4.7	284 57.7	6 12.6	143 8.3	-25 13.7	
12	358 22.1	19 48.7	122 9.6	314 57.8	6 10.2	173 14.6	-25 14.2	
14	28 22.1	19 47.6	152 14.5	344 57.8	6 7.8	203 20.9	-25 14.7	
16	58 22.1	19 46.6	182 19.5	14 57.9	6 5.3	233 27.2	-25 15.2	
18	88 22.1	19 45.5	212 24.4	44 58.0	6 2.9	263 33.5	-25 15.7	
20	118 22.1	19 44.4	242 29.3	74 58.1	6 .5	293 39.8	-25 16.2	
22	148 22.0	19 43.4	272 34.2	104 58.1	5 58.1	323 46.1	-25 16.6	
Δ	0	-5		0	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 22	20 49	1 7	:::	12 58	1.7	5 49	2.5
55	3 55	20 17	0 49	:::	13 29	1.8	5 18	2.4
50	4 18	19 54	0 40	2 51	13 52	1.8	4 56	2.3
45	4 36	19 36	0 35	2 12	14 10	1.9	4 38	2.2
40	4 51	19 22	0 31	1 52	14 25	1.9	4 24	2.2
35	5 3	19 9	0 28	1 40	14 37	1.9	4 12	2.2
30	5 14	18 59	0 26	1 32	14 48	1.9	4 2	2.1
20	5 32	18 40	0 24	1 21	15 7	2.0	3 44	2.1
10	5 48	18 25	0 22	1 15	15 23	2.0	3 28	2.1
0	6 3	18 10	0 22	1 13	15 38	2.0	3 13	2.0
10	6 18	17 56	0 22	1 14	15 53	2.0	2 59	2.0
20	6 33	17 40	0 23	1 17	16 10	2.1	2 43	1.9
30	6 50	17 23	0 26	1 23	16 29	2.1	2 25	1.9
35	7 1	17 13	0 27	1 28	16 40	2.1	2 14	1.8
40	7 12	17 1	0 29	1 35	16 52	2.1	2 2	1.8
45	7 26	16 48	0 32	1 43	17 7	2.1	1 48	1.8
50	7 42	16 31	0 36	1 54	17 26	2.2	1 31	1.7
55	8 3	16 10	0 42	2 10	17 49	2.2	1 9	1.6
60	8 32	15 41	0 51	2 33	18 22	2.3	0 39	1.5

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	43 9.6	120 19	8.4	42	80 12.6	-14 57.9	27 19.4	-22 34.1
2	72 11.6	120 19	16.8	40	110 17.3	-14 58.0	57 24.6	-22 34.1
4	101 13.5	119 19	24.8	38	140 22.1	-14 58.0	87 29.9	-22 34.1
6	130 15.4	119 19	32.4	36	170 26.8	-14 58.1	117 35.2	-22 34.1
8	159 17.2	119 19	39.7	34	200 31.5	-14 58.2	147 40.4	-22 34.1
10	188 19.0	119 19	46.5	33	230 36.3	-14 58.3	177 45.7	-22 34.2
12	217 20.7	118 19	53.1	31	260 41.0	-14 58.4	207 50.9	-22 34.2
14	246 22.4	118 19	59.2	29	290 45.7	-14 58.4	237 56.2	-22 34.2
16	275 24.0	118 20	4.9	27	320 50.5	-14 58.5	268 1.4	-22 34.2
18	304 25.7	118 20	10.3	25	350 55.2	-14 58.6	298 6.7	-22 34.2
20	333 27.2	118 20	15.3	23	20 59.9	-14 58.7	328 11.9	-22 34.3
22	2 28.8	118 20	19.9	21	51 4.7	-14 58.8	358 17.2	-22 34.3
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 6 30.9	.0	15.8	T _m	21 50	2.0	54.5 14.8
12	- 6 31.4	T _{m☉}	12 h 6.5 min	Starost	10.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	h min	'	°	°	h min	'
♀	15 0	.1	193	-4.3	♃	18 36	.0	139	-1.7
♂	0 29	.1	51	-2.6	♄	22 7	.0	86	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.0	19 42.3	302 39.2	134 58.2	5 55.7	353 52.4	-25 17.1	
2	208 22.0	19 41.2	332 44.1	164 58.3	5 53.3	23 58.7	-25 17.6	
4	238 22.0	19 40.2	2 49.0	194 58.4	5 50.8	54 5.1	-25 18.1	
6	268 22.0	19 39.1	32 54.0	224 58.5	5 48.4	84 11.4	-25 18.6	
8	298 22.0	19 38.0	62 58.9	254 58.6	5 46.0	114 17.7	-25 19.1	
10	328 22.0	19 36.9	93 3.8	284 58.7	5 43.6	144 24.0	-25 19.6	
12	358 22.0	19 35.8	123 8.7	314 58.8	5 41.2	174 30.3	-25 20.1	
14	28 22.0	19 34.8	153 13.7	344 58.9	5 38.7	204 36.7	-25 20.6	
16	58 22.0	19 33.7	183 18.6	14 59.0	5 36.3	234 43.0	-25 21.1	
18	88 21.9	19 32.6	213 23.5	44 59.1	5 33.9	264 49.3	-25 21.5	
20	118 21.9	19 31.5	243 28.4	74 59.2	5 31.5	294 55.7	-25 22.0	
22	148 21.9	19 30.4	273 33.4	104 59.3	5 29.0	325 2.0	-25 22.5	
Δ	0	-5		0	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 24	20 47	1 6	:::	13 38	2.1	6 49	2.0
55	3 57	20 15	0 49	:::	14 12	2.1	6 15	2.0
50	4 20	19 53	0 40	2 49	14 36	2.1	5 51	2.0
45	4 37	19 35	0 35	2 11	14 55	2.1	5 32	2.0
40	4 52	19 21	0 31	1 52	15 10	2.1	5 17	2.0
35	5 4	19 9	0 28	1 40	15 23	2.1	5 4	2.0
30	5 15	18 58	0 26	1 31	15 34	2.0	4 53	2.0
20	5 33	18 40	0 24	1 21	15 54	2.0	4 34	2.0
10	5 48	18 24	0 22	1 15	16 11	2.0	4 17	2.0
0	6 3	18 10	0 22	1 13	16 26	2.0	4 1	2.0
10	6 17	17 56	0 22	1 14	16 42	2.0	3 46	2.0
20	6 33	17 41	0 23	1 17	16 59	2.0	3 29	2.0
30	6 50	17 23	0 26	1 23	17 19	2.0	3 10	2.0
35	6 60	17 13	0 27	1 28	17 30	2.0	2 59	2.0
40	7 11	17 2	0 29	1 34	17 43	1.9	2 46	2.0
45	7 25	16 49	0 32	1 43	17 59	1.9	2 31	2.0
50	7 41	16 32	0 36	1 54	18 18	1.9	2 12	2.0
55	8 2	16 12	0 42	2 10	18 42	1.9	1 48	1.9
60	8 30	15 43	0 50	2 33	19 17	1.8	1 15	1.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	31 30.3	118 20	24.2	19	81 9.4	-14 58.9	28 22.5	-22 34.3
2	60 31.8	117 20	28.0	17	111 14.1	-14 58.9	58 27.7	-22 34.3
4	89 33.3	117 20	31.5	15	141 18.8	-14 59.0	88 33.0	-22 34.3
6	118 34.8	117 20	34.5	13	171 23.5	-14 59.1	118 38.2	-22 34.4
8	147 36.2	117 20	37.2	12	201 28.3	-14 59.2	148 43.5	-22 34.4
10	176 37.7	117 20	39.5	10	231 33.0	-14 59.3	178 48.7	-22 34.4
12	205 39.1	117 20	41.4	8	261 37.7	-14 59.4	208 54.0	-22 34.4
14	234 40.6	117 20	43.0	6	291 42.4	-14 59.4	238 59.2	-22 34.4
16	263 42.0	117 20	44.1	4	321 47.1	-14 59.5	269 4.5	-22 34.4
18	292 43.5	117 20	44.8	2	351 51.9	-14 59.6	299 9.7	-22 34.5
20	321 44.9	117 20	45.2	0	21 56.6	-14 59.7	329 15.0	-22 34.5
22	350 46.4	118 20	45.2	-2	52 1.3	-14 59.8	359 20.2	-22 34.5
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	- 6 31.9	.0	15.8	T _m	22 38	2.0	54.2 14.8
12	- 6 32.1	T _{m☉}	12 h 6.5 min	Starost	11.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h min	'	°	°	h min	'	°	°	h min	'
♀	15 0	.1	192	-4.3	♃	18 32	.0	138	-1.7
♂	0 24	.1	51	-2.6	♄	22 3	.0	86	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 21.9	19 29.3	303 38.3	134 59.4	5 26.6	355 8.3	-25 23.0	
2	208 21.9	19 28.2	333 43.2	164 59.5	5 24.2	25 14.7	-25 23.5	
4	238 21.9	19 27.1	3 48.2	194 59.6	5 21.8	55 21.0	-25 23.9	
6	268 21.9	19 26.0	33 53.1	224 59.7	5 19.3	85 27.3	-25 24.4	
8	298 21.9	19 24.9	63 58.0	254 59.9	5 16.9	115 33.7	-25 24.9	
10	328 21.9	19 23.8	94 2.9	284 60.0	5 14.5	145 40.0	-25 25.4	
12	358 21.9	19 22.7	124 7.9	315 .1	5 12.0	175 46.3	-25 25.8	
14	28 22.0	19 21.6	154 12.8	345 .2	5 9.6	205 52.7	-25 26.3	
16	58 22.0	19 20.5	184 17.7	15 .4	5 7.2	235 59.0	-25 26.8	
18	88 22.0	19 19.3	214 22.7	45 .5	5 4.8	266 5.4	-25 27.3	
20	118 22.0	19 18.2	244 27.6	75 .6	5 2.3	296 11.7	-25 27.7	
22	148 22.0	19 17.1	274 32.5	105 .8	4 59.9	326 18.1	-25 28.2	
Δ	0	-6		1	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 27	20 45	1 5	:::	14 28	2.5	7 38	1.6
55	3 58	20 14	0 48	:::	15 2	2.4	7 4	1.7
50	4 21	19 51	0 40	2 47	15 26	2.3	6 40	1.8
45	4 38	19 34	0 34	2 10	15 44	2.2	6 21	1.8
40	4 53	19 20	0 31	1 51	15 59	2.2	6 6	1.9
35	5 5	19 8	0 28	1 39	16 12	2.2	5 53	1.9
30	5 15	18 57	0 26	1 31	16 23	2.1	5 42	1.9
20	5 33	18 40	0 24	1 21	16 43	2.1	5 22	1.9
10	5 49	18 24	0 22	1 15	16 59	2.0	5 6	2.0
0	6 3	18 10	0 22	1 13	17 15	2.0	4 50	2.0
10	6 17	17 56	0 22	1 13	17 30	1.9	4 34	2.0
20	6 32	17 41	0 23	1 17	17 47	1.9	4 17	2.1
30	6 49	17 24	0 25	1 23	18 6	1.8	3 58	2.1
35	6 59	17 14	0 27	1 28	18 17	1.8	3 46	2.1
40	7 11	17 3	0 29	1 34	18 30	1.8	3 33	2.1
45	7 24	16 50	0 32	1 43	18 45	1.7	3 18	2.2
50	7 40	16 34	0 36	1 54	19 3	1.6	2 59	2.2
55	8 0	16 13	0 42	2 9	19 27	1.5	2 34	2.2
60	8 28	15 46	0 50	2 32	20 0	1.4	1 60	2.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	19 47.9	118 20	44.8	-4	82 6.0	-14 59.9	29 25.5	-22 34.5
2	48 49.5	118 20	44.0	-6	112 10.7	-14 60.0	59 30.7	-22 34.5
4	77 51.0	118 20	42.8	-8	142 15.4	-15 .1	89 36.0	-22 34.6
6	106 52.6	118 20	41.2	-10	172 20.1	-15 .1	119 41.2	-22 34.6
8	135 54.2	118 20	39.2	-12	202 24.8	-15 .2	149 46.5	-22 34.6
10	164 55.9	119 20	36.9	-14	232 29.5	-15 .3	179 51.7	-22 34.6
12	193 57.6	119 20	34.2	-16	262 34.2	-15 .4	209 56.9	-22 34.6
14	222 59.4	119 20	31.1	-17	292 38.9	-15 .5	240 2.2	-22 34.7
16	252 1.2	119 20	27.6	-19	322 43.6	-15 .6	270 7.4	-22 34.7
18	281 3.1	120 20	23.7	-21	352 48.3	-15 .7	300 12.7	-22 34.7
20	310 5.0	120 20	19.5	-23	22 53.0	-15 .8	330 17.9	-22 34.7
22	339 7.0	120 20	14.8	-25	52 57.7	-15 .9	0 23.2	-22 34.7
Δ					24	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 6 32.2	.0	15.8	T _m 23 26	2.0	54.0	14.7
12	- 6 32.1	T _{m☉} 12 h 6.5 min	Starost 12.9 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 60	.1	191	-4.3	♃	18 29	.0	138	-1.7
♂	0 19	.1	51	-2.6	♄	21 58	.0	86	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.0	19 16.0	304 37.4	135 .9	4 57.5	356 24.4	-25 28.7	
2	208 22.0	19 14.9	334 42.4	165 1.0	4 55.0	26 30.7	-25 29.1	
4	238 22.0	19 13.7	4 47.3	195 1.2	4 52.6	56 37.1	-25 29.6	
6	268 22.0	19 12.6	34 52.2	225 1.3	4 50.2	86 43.4	-25 30.1	
8	298 22.0	19 11.5	64 57.2	255 1.5	4 47.7	116 49.8	-25 30.5	
10	328 22.1	19 10.3	95 2.1	285 1.6	4 45.3	146 56.1	-25 31.0	
12	358 22.1	19 9.2	125 7.0	315 1.8	4 42.9	177 2.5	-25 31.4	
14	28 22.1	19 8.1	155 11.9	345 1.9	4 40.4	207 8.8	-25 31.9	
16	58 22.1	19 6.9	185 16.9	15 2.1	4 38.0	237 15.2	-25 32.3	
18	88 22.1	19 5.8	215 21.8	45 2.2	4 35.5	267 21.5	-25 32.8	
20	118 22.2	19 4.6	245 26.7	75 2.4	4 33.1	297 27.9	-25 33.3	
22	148 22.2	19 3.5	275 31.7	105 2.6	4 30.7	327 34.3	-25 33.7	
Δ	0	-6		1	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 29	20 43	1 4	:::	15 29	2.8	8 16	1.2
55	3 60	20 12	0 48	:::	15 59	2.6	7 45	1.4
50	4 22	19 50	0 40	2 44	16 21	2.5	7 23	1.5
45	4 40	19 33	0 34	2 9	16 38	2.4	7 5	1.6
40	4 54	19 19	0 31	1 51	16 52	2.3	6 51	1.7
35	5 6	19 7	0 28	1 39	17 4	2.2	6 38	1.7
30	5 16	18 57	0 26	1 31	17 15	2.2	6 28	1.8
20	5 34	18 39	0 24	1 20	17 32	2.1	6 9	1.8
10	5 49	18 24	0 22	1 15	17 48	2.0	5 53	1.9
0	6 3	18 10	0 22	1 13	18 2	1.9	5 38	2.0
10	6 17	17 56	0 22	1 13	18 17	1.9	5 23	2.0
20	6 32	17 41	0 23	1 16	18 32	1.8	5 7	2.1
30	6 49	17 25	0 25	1 23	18 50	1.7	4 48	2.2
35	6 59	17 15	0 27	1 28	19 0	1.6	4 37	2.2
40	7 10	17 4	0 29	1 34	19 12	1.6	4 24	2.3
45	7 23	16 51	0 32	1 43	19 26	1.5	4 10	2.3
50	7 39	16 35	0 36	1 54	19 43	1.4	3 51	2.4
55	7 59	16 15	0 41	2 9	20 4	1.3	3 28	2.5
60	8 26	15 48	0 50	2 31	20 34	1.1	2 55	2.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	8 9.0	121 20	9.8	-27	83 2.4	-15 1.0	30 28.4	-22 34.8
2	37 11.2	121 20	4.5	-29	113 7.1	-15 1.1	60 33.7	-22 34.8
4	66 13.4	121 19	58.7	-31	143 11.8	-15 1.1	90 38.9	-22 34.8
6	95 15.6	122 19	52.6	-32	173 16.5	-15 1.2	120 44.1	-22 34.8
8	124 18.0	122 19	46.2	-34	203 21.2	-15 1.3	150 49.4	-22 34.8
10	153 20.4	123 19	39.3	-36	233 25.9	-15 1.4	180 54.6	-22 34.8
12	182 23.0	123 19	32.2	-38	263 30.6	-15 1.5	210 59.9	-22 34.9
14	211 25.6	124 19	24.6	-40	293 35.3	-15 1.6	241 5.1	-22 34.9
16	240 28.3	124 19	16.7	-41	323 40.0	-15 1.7	271 10.3	-22 34.9
18	269 31.1	124 19	8.5	-43	353 44.6	-15 1.8	301 15.6	-22 34.9
20	298 34.0	125 18	59.9	-45	23 49.3	-15 1.9	331 20.8	-22 34.9
22	327 37.0	125 18	50.9	-46	53 54.0	-15 2.0	1 26.1	-22 35.0
Δ					23	0	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 6 32.0	.0	15.8	T _m ...	1.0	54.0	14.7
12	- 6 31.6	T _{m☉} 12 h 6.5 min	Starost 13.9 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	14 60	.1	190	-4.3	♃	18 25	.0	138	-1.7
♂	0 14	.1	52	-2.6	♄	21 54	.0	86	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	22.2	19	2.3	305	36.6	135	2.7	4	28.2	357	40.6	-25	34.2
2	208	22.2	19	1.2	335	41.5	165	2.9	4	25.8	27	47.0	-25	34.6
4	238	22.3	19	.0	5	46.4	195	3.1	4	23.3	57	53.3	-25	35.1
6	268	22.3	18	58.9	35	51.4	225	3.2	4	20.9	87	59.7	-25	35.5
8	298	22.3	18	57.7	65	56.3	255	3.4	4	18.5	118	6.0	-25	35.9
10	328	22.3	18	56.6	96	1.2	285	3.6	4	16.0	148	12.4	-25	36.4
12	358	22.4	18	55.4	126	6.2	315	3.8	4	13.6	178	18.7	-25	36.8
14	28	22.4	18	54.2	156	11.1	345	3.9	4	11.1	208	25.1	-25	37.3
16	58	22.4	18	53.1	186	16.0	15	4.1	4	8.7	238	31.5	-25	37.7
18	88	22.5	18	51.9	216	20.9	45	4.3	4	6.3	268	37.8	-25	38.1
20	118	22.5	18	50.7	246	25.9	75	4.5	4	3.8	298	44.2	-25	38.6
22	148	22.5	18	49.6	276	30.8	105	4.7	4	1.4	328	50.5	-25	39.0
Δ	0		-6				1		-12		32			-2

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	356	40.1	126	18	41.6	-48	83	58.7	-15	2.1	31	31.3	-22	35.0		
2	25	43.3	127	18	32.0	-50	114	3.4	-15	2.2	61	36.5	-22	35.0		
4	54	46.6	127	18	22.0	-51	144	8.1	-15	2.3	91	41.8	-22	35.0		
6	83	50.0	128	18	11.7	-53	174	12.7	-15	2.4	121	47.0	-22	35.0		
8	112	53.5	128	18	1.1	-55	204	17.4	-15	2.5	151	52.2	-22	35.1		
10	141	57.1	129	17	50.2	-56	234	22.1	-15	2.6	181	57.5	-22	35.1		
12	171	.9	129	17	38.9	-58	264	26.8	-15	2.7	212	2.7	-22	35.1		
14	200	4.7	130	17	27.3	-60	294	31.4	-15	2.8	242	7.9	-22	35.1		
16	229	8.7	130	17	15.4	-61	324	36.1	-15	2.9	272	13.2	-22	35.1		
18	258	12.8	131	17	3.2	-63	354	40.8	-15	3.0	302	18.4	-22	35.1		
20	287	16.9	131	16	50.7	-64	24	45.5	-15	3.1	332	23.7	-22	35.2		
22	316	21.2	132	16	37.9	-66	54	50.1	-15	3.2	2	28.9	-22	35.2		
Δ							23		0		26			0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 31	20 40	1 3	:::	16 36	3.0	8 46	.9
55	4 2	20 10	0 48	:::	17 1	2.7	8 19	1.1
50	4 24	19 49	0 39	2 42	17 20	2.6	7 59	1.3
45	4 41	19 32	0 34	2 8	17 35	2.5	7 43	1.4
40	4 55	19 18	0 31	1 50	17 48	2.4	7 31	1.5
35	5 6	19 6	0 28	1 39	17 58	2.3	7 20	1.6
30	5 17	18 56	0 26	1 30	18 7	2.2	7 10	1.6
20	5 34	18 39	0 24	1 20	18 23	2.1	6 53	1.7
10	5 49	18 24	0 22	1 15	18 36	2.0	6 39	1.8
0	6 3	18 10	0 22	1 13	18 49	1.9	6 25	1.9
10	6 17	17 56	0 22	1 13	19 2	1.8	6 11	2.0
20	6 31	17 42	0 23	1 16	19 15	1.7	5 57	2.1
30	6 48	17 25	0 25	1 23	19 31	1.6	5 40	2.2
35	6 58	17 16	0 27	1 28	19 40	1.5	5 30	2.3
40	7 9	17 5	0 29	1 34	19 50	1.4	5 19	2.3
45	7 22	16 52	0 32	1 42	20 2	1.3	5 5	2.4
50	7 37	16 36	0 36	1 53	20 16	1.2	4 49	2.5
55	7 57	16 17	0 41	2 9	20 35	1.0	4 28	2.7
60	8 24	15 50	0 50	2 31	20 59	.8	3 60	2.9

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 6 31.2	.1	15.8	T _m	0 14	1.9	54.0	14.7
12	- 6 30.5	T _{m☉}	12 h 6.5 min	Starost	14.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 60	.1	189	-4.3	♃	18 21	.0	138	-1.7
♂	0 9	.1	52	-2.6	♄	21 50	.0	86	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	22.6	18	48.4	306	35.7	135	4.9	3	58.9	358	56.9	-25	39.4
2	208	22.6	18	47.2	336	40.7	165	5.1	3	56.5	29	3.3	-25	39.9
4	238	22.6	18	46.0	6	45.6	195	5.3	3	54.0	59	9.6	-25	40.3
6	268	22.7	18	44.9	36	50.5	225	5.5	3	51.6	89	16.0	-25	40.7
8	298	22.7	18	43.7	66	55.4	255	5.7	3	49.1	119	22.3	-25	41.2
10	328	22.8	18	42.5	97	.4	285	5.9	3	46.7	149	28.7	-25	41.6
12	358	22.8	18	41.3	127	5.3	315	6.1	3	44.2	179	35.1	-25	42.0
14	28	22.8	18	40.1	157	10.2	345	6.3	3	41.8	209	41.4	-25	42.4
16	58	22.9	18	38.9	187	15.1	15	6.5	3	39.3	239	47.8	-25	42.9
18	88	22.9	18	37.7	217	20.1	45	6.7	3	36.9	269	54.2	-25	43.3
20	118	23.0	18	36.5	247	25.0	75	6.9	3	34.4	300	.5	-25	43.7
22	148	23.0	18	35.3	277	29.9	105	7.1	3	32.0	330	6.9	-25	44.1
Δ	0		-6				1		-12		32			-2

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	345	25.7	133	16	24.8	-67	84	54.8	-15	3.3	32	34.1	-22	35.2		
2	14	30.2	133	16	11.3	-68	114	59.5	-15	3.4	62	39.3	-22	35.2		
4	43	34.8	134	15	57.6	-70	145	4.1	-15	3.5	92	44.6	-22	35.2		
6	72	39.6	134	15	43.7	-71	175	8.8	-15	3.6	122	49.8	-22	35.3		
8	101	44.4	135	15	29.4	-73	205	13.5	-15	3.7	152	55.0	-22	35.3		
10	130	49.4	135	15	14.9	-74	235	18.1	-15	3.8	183	.3	-22	35.3		
12	159	54.5	136	15	.0	-75	265	22.8	-15	3.9	213	5.5	-22	35.3		
14	188	59.7	136	14	45.0	-77	295	27.5	-15	4.0	243	10.7	-22	35.3		
16	218	5.0	137	14	29.6	-78	325	32.1	-15	4.1	273	16.0	-22	35.4		
18	247	10.4	138	14	14.0	-79	355	36.8	-15	4.2	303	21.2	-22	35.4		
20	276	15.9	138	13	58.2	-81	25	41.4	-15	4.3	333	26.4	-22	35.4		
22	305	21.5	139	13	42.1	-82	55	46.1	-15	4.4	3	31.6	-22	35.4		
Δ							23		-1		26			0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 33	20 38	1 2	:::	17 47	3.1	9 8	.7
55	4 3	20 8	0 47	:::	18 7	2.8	8 46	1.0
50	4 25	19 47	0 39	2 40	18 22	2.7	8 30	1.1
45	4 42	19 31	0 34	2 8	18 34	2.5	8 17	1.3
40	4 55	19 17	0 31	1 50	18 44	2.4	8 6	1.4
35	5 7	19 5	0 28	1 38	18 53	2.3	7 57	1.4
30	5 17	18 55	0 26	1 30	19 0	2.2	7 49	1.5
20	5 34	18 38	0 24	1 20	19 13	2.1	7 35	1.7
10	5 49	18 24	0 22	1 15	19 24	2.0	7 23	1.8
0	6 3	18 10	0 22	1 13	19 35	1.9	7 11	1.9
10	6 17	17 56	0 22	1 13	19 45	1.7	6 60	2.0
20	6 31	17 42	0 23	1 16	19 56	1.6	6 47	2.1
30	6 48	17 26	0 25	1 23	20 9	1.5	6 33	2.2
35	6 57	17 16	0 27	1 28	20 16	1.4	6 24	2.3
40	7 8	17 5	0 29	1 34	20 24	1.3	6 15	2.4
45	7 21	16 53	0 32	1 42	20 34	1.2	6 4	2.5
50	7 36	16 38	0 36	1 53	20 45	1.1	5 50	2.6
55	7 55	16 18	0 41	2 8	20 60	.9	5 33	2.8
60	8 22	15 52	0 49	2 30	21 19	.7	5 9	3.0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 6 29.7	.1	15.8	T _m	1 0	1.9	54.1	1

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 23.1	18 34.1	307 34.9	135 7.4	3 29.5	0 13.2	-25 44.5	
2	208 23.1	18 32.9	337 39.8	165 7.6	3 27.1	30 19.6	-25 44.9	
4	238 23.2	18 31.7	7 44.7	195 7.8	3 24.6	60 26.0	-25 45.4	
6	268 23.2	18 30.5	37 49.6	225 8.0	3 22.2	90 32.3	-25 45.8	
8	298 23.3	18 29.3	67 54.6	255 8.2	3 19.7	120 38.7	-25 46.2	
10	328 23.3	18 28.1	97 59.5	285 8.5	3 17.3	150 45.1	-25 46.6	
12	358 23.4	18 26.9	128 4.4	315 8.7	3 14.8	180 51.4	-25 47.0	
14	28 23.4	18 25.7	158 9.4	345 8.9	3 12.4	210 57.8	-25 47.4	
16	58 23.5	18 24.5	188 14.3	15 9.2	3 9.9	241 4.1	-25 47.8	
18	88 23.6	18 23.2	218 19.2	45 9.4	3 7.5	271 10.5	-25 48.2	
20	118 23.6	18 22.0	248 24.1	75 9.7	3 5.0	301 16.9	-25 48.6	
22	148 23.7	18 20.8	278 29.1	105 9.9	3 2.6	331 23.2	-25 49.0	
Δ	0	-6		1	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 36	20 36	1 1	:::	19 1	3.1	9 26	.6
55	4 5	20 7	0 47	:::	19 15	2.9	9 10	.8
50	4 26	19 46	0 39	2 38	19 26	2.7	8 57	1.0
45	4 43	19 29	0 34	2 7	19 35	2.6	8 47	1.1
40	4 56	19 16	0 30	1 49	19 42	2.4	8 39	1.3
35	5 8	19 5	0 28	1 38	19 48	2.3	8 32	1.4
30	5 18	18 55	0 26	1 30	19 54	2.2	8 26	1.4
20	5 35	18 38	0 24	1 20	20 3	2.1	8 15	1.6
10	5 49	18 23	0 22	1 15	20 11	1.9	8 5	1.7
0	6 3	18 10	0 22	1 12	20 19	1.8	7 56	1.8
10	6 16	17 57	0 22	1 13	20 27	1.7	7 47	2.0
20	6 31	17 42	0 23	1 16	20 35	1.6	7 37	2.1
30	6 47	17 26	0 25	1 23	20 44	1.4	7 26	2.2
35	6 56	17 17	0 27	1 27	20 49	1.3	7 20	2.3
40	7 7	17 6	0 29	1 34	20 55	1.2	7 12	2.4
45	7 19	16 54	0 32	1 42	21 2	1.1	7 3	2.5
50	7 34	16 39	0 36	1 53	21 11	1.0	6 53	2.7
55	7 54	16 20	0 41	2 8	21 21	.8	6 40	2.9
60	8 19	15 54	0 49	2 30	21 34	.6	6 22	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	334 27.2	139	13 25.7	-83	85 50.7	-15 4.5	33 36.9	-22 35.4
2	3 33.0	140	13 9.1	-84	115 55.4	-15 4.6	63 42.1	-22 35.4
4	32 38.9	140	12 52.3	-85	146 .0	-15 4.7	93 47.3	-22 35.5
6	61 44.9	140	12 35.2	-86	176 4.7	-15 4.8	123 52.5	-22 35.5
8	90 51.0	141	12 17.9	-88	206 9.3	-15 4.9	153 57.8	-22 35.5
10	119 57.2	141	12 .4	-89	236 14.0	-15 5.0	184 3.0	-22 35.5
12	149 3.4	142	11 42.7	-90	266 18.6	-15 5.1	214 8.2	-22 35.5
14	178 9.8	142	11 24.8	-91	296 23.3	-15 5.2	244 13.4	-22 35.6
16	207 16.2	142	11 6.6	-92	326 27.9	-15 5.3	274 18.7	-22 35.6
18	236 22.7	143	10 48.3	-93	356 32.6	-15 5.4	304 23.9	-22 35.6
20	265 29.2	143	10 29.7	-94	26 37.2	-15 5.6	334 29.1	-22 35.6
22	294 35.9	143	10 11.0	-95	56 41.9	-15 5.7	4 34.3	-22 35.6
Δ					23	-1	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	- 6 27.7	.1	15.8	T _m	1 45	1.9	54.3 14.8
12	- 6 26.4	T _{m☉}	12 h 6.4 min	Starost	16.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 59	.1	188	-4.4	♃	18 14	.0	138	-1.7
♂	23 54	.1	53	-2.6	♄	21 42	.0	86	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 23.7	18 19.6	308 34.0	135 10.1	3 .1	1 29.6	-25 49.4	
2	208 23.8	18 18.3	338 38.9	165 10.4	2 57.7	31 35.9	-25 49.8	
4	238 23.9	18 17.1	8 43.9	195 10.6	2 55.2	61 42.3	-25 50.2	
6	268 23.9	18 15.9	38 48.8	225 10.9	2 52.8	91 48.7	-25 50.6	
8	298 24.0	18 14.6	68 53.7	255 11.1	2 50.3	121 55.0	-25 51.0	
10	328 24.1	18 13.4	98 58.6	285 11.4	2 47.9	152 1.4	-25 51.3	
12	358 24.1	18 12.2	129 3.6	315 11.7	2 45.4	182 7.7	-25 51.7	
14	28 24.2	18 10.9	159 8.5	345 11.9	2 42.9	212 14.1	-25 52.1	
16	58 24.3	18 9.7	189 13.4	15 12.2	2 40.5	242 20.4	-25 52.5	
18	88 24.3	18 8.4	219 18.4	45 12.4	2 38.0	272 26.8	-25 52.9	
20	118 24.4	18 7.2	249 23.3	75 12.7	2 35.6	302 33.1	-25 53.3	
22	148 24.5	18 5.9	279 28.2	105 13.0	2 33.1	332 39.5	-25 53.6	
Δ	0	-6		1	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 38	20 33	1 1	:::	20 16	3.2	9 40	.5
55	4 7	20 5	0 46	:::	20 24	2.9	9 30	.8
50	4 28	19 44	0 39	2 36	20 31	2.7	9 21	.9
45	4 44	19 28	0 34	2 6	20 36	2.6	9 15	1.1
40	4 57	19 15	0 30	1 49	20 40	2.5	9 9	1.2
35	5 9	19 4	0 28	1 38	20 44	2.4	9 5	1.3
30	5 18	18 54	0 26	1 30	20 47	2.3	9 0	1.4
20	5 35	18 38	0 24	1 20	20 53	2.1	8 53	1.5
10	5 49	18 23	0 22	1 14	20 58	2.0	8 46	1.7
0	6 3	18 10	0 22	1 12	21 3	1.8	8 40	1.8
10	6 16	17 57	0 22	1 13	21 7	1.7	8 34	1.9
20	6 30	17 43	0 23	1 16	21 12	1.5	8 27	2.1
30	6 46	17 27	0 25	1 22	21 18	1.4	8 20	2.2
35	6 55	17 18	0 27	1 27	21 21	1.3	8 15	2.3
40	7 6	17 7	0 29	1 34	21 25	1.2	8 10	2.4
45	7 18	16 55	0 32	1 42	21 29	1.1	8 4	2.6
50	7 33	16 40	0 35	1 53	21 34	.9	7 57	2.7
55	7 52	16 22	0 41	2 8	21 40	.7	7 48	2.9
60	8 17	15 56	0 49	2 29	21 48	.5	7 37	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	323 42.6	144	9 52.1	-96	86 46.5	-15 5.8	34 39.5	-22 35.6
2	352 49.3	144	9 33.0	-96	116 51.1	-15 5.9	64 44.8	-22 35.7
4	21 56.1	144	9 13.7	-97	146 55.8	-15 6.0	94 50.0	-22 35.7
6	51 3.0	145	8 54.2	-98	177 .4	-15 6.1	124 55.2	-22 35.7
8	80 9.9	145	8 34.6	-99	207 5.1	-15 6.2	155 .4	-22 35.7
10	109 16.9	145	8 14.8	-100	237 9.7	-15 6.3	185 5.6	-22 35.7
12	138 23.9	145	7 54.8	-101	267 14.3	-15 6.4	215 10.9	-22 35.8
14	167 30.9	145	7 34.7	-101	297 19.0	-15 6.5	245 16.1	-22 35.8
16	196 37.9	145	7 14.5	-102	327 23.6	-15 6.6	275 21.3	-22 35.8
18	225 45.0	145	6 54.1	-103	357 28.2	-15 6.8	305 26.5	-22 35.8
20	254 52.1	146	6 33.5	-103	27 32.9	-15 6.9	335 31.7	-22 35.8
22	283 59.2	146	6 12.9	-104	57 37.5	-15 7.0	5 36.9	-22 35.8
Δ					23	-1	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	- 6 25.1	.1	15.8	T _m	2 30	1.8	54.6 14.9
12	- 6 23.4	T _{m☉}	12 h 6.4 min	Starost	17.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 59	.1	187	-4.4	♃	18 10	.0	138	-1.7
♂	23 49	.1	53	-2.6	♄	21 38	.0	86	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	24.5	18	4.7	309	33.1	135	13.3	2	30.7	2	45.9	-25	54.0
2	208	24.6	18	3.4	339	38.1	165	13.5	2	28.2	32	52.2	-25	54.4
4	238	24.7	18	2.2	9	43.0	195	13.8	2	25.8	62	58.6	-25	54.8
6	268	24.8	18	.9	39	47.9	225	14.1	2	23.3	93	4.9	-25	55.1
8	298	24.9	17	59.7	69	52.9	255	14.4	2	20.8	123	11.3	-25	55.5
10	328	24.9	17	58.4	99	57.8	285	14.6	2	18.4	153	17.6	-25	55.9
12	358	25.0	17	57.2	130	2.7	315	14.9	2	15.9	183	24.0	-25	56.2
14	28	25.1	17	55.9	160	7.6	345	15.2	2	13.5	213	30.3	-25	56.6
16	58	25.2	17	54.6	190	12.6	15	15.5	2	11.0	243	36.7	-25	57.0
18	88	25.3	17	53.4	220	17.5	45	15.8	2	8.6	273	43.0	-25	57.3
20	118	25.3	17	52.1	250	22.4	75	16.1	2	6.1	303	49.3	-25	57.7
22	148	25.4	17	50.8	280	27.3	105	16.4	2	3.6	333	55.7	-25	58.0
Δ	0	-6					1	-12			32	-2		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 40	20 31	0 60	:	21 32	1.7	9 53	.7
55	4 9	20 3	0 46	:	21 35	1.7	9 48	.9
50	4 29	19 43	0 38	2 34	21 37	1.7	9 44	1.0
45	4 45	19 27	0 34	2 5	21 38	1.7	9 41	1.2
40	4 58	19 14	0 30	1 48	21 40	1.8	9 38	1.3
35	5 9	19 3	0 28	1 37	21 41	1.8	9 36	1.4
30	5 19	18 53	0 26	1 29	21 42	1.8	9 34	1.4
20	5 35	18 37	0 23	1 20	21 43	1.8	9 30	1.6
10	5 50	18 23	0 22	1 14	21 45	1.8	9 27	1.7
0	6 3	18 10	0 22	1 12	21 46	1.8	9 24	1.8
10	6 16	17 57	0 22	1 13	21 48	1.9	9 21	1.9
20	6 30	17 43	0 23	1 16	21 49	1.9	9 17	2.1
30	6 46	17 27	0 25	1 22	21 51	1.9	9 14	2.2
35	6 55	17 18	0 27	1 27	21 52	1.9	9 11	2.3
40	7 5	17 8	0 29	1 33	21 53	2.0	9 9	2.4
45	7 17	16 56	0 32	1 42	21 55	2.0	9 6	2.5
50	7 32	16 42	0 35	1 52	21 56	2.0	9 2	2.6
55	7 50	16 23	0 41	2 7	21 58	2.0	8 58	2.8
60	8 15	15 58	0 48	2 29	22 0	2.1	8 53	3.0

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	313	6.4	146	5	52.1	-105	87	42.1	-15	7.1	35	42.2	-22	35.9
2	342	13.5	146	5	31.1	-105	117	46.7	-15	7.2	65	47.4	-22	35.9
4	11	20.6	146	5	10.1	-106	147	51.4	-15	7.3	95	52.6	-22	35.9
6	40	27.7	146	4	48.9	-106	177	56.0	-15	7.4	125	57.8	-22	35.9
8	69	34.8	145	4	27.7	-107	208	.6	-15	7.5	156	3.0	-22	35.9
10	98	41.9	145	4	6.3	-107	238	5.2	-15	7.7	186	8.2	-22	36.0
12	127	49.0	145	3	44.8	-108	268	9.9	-15	7.8	216	13.4	-22	36.0
14	156	56.0	145	3	23.3	-108	298	14.5	-15	7.9	246	18.6	-22	36.0
16	186	3.0	145	3	1.6	-109	328	19.1	-15	8.0	276	23.9	-22	36.0
18	215	9.9	144	2	39.9	-109	358	23.7	-15	8.1	306	29.1	-22	36.0
20	244	16.8	144	2	18.1	-109	298	28.3	-15	8.2	336	34.3	-22	36.0
22	273	23.7	144	1	56.2	-110	58	32.9	-15	8.3	6	39.5	-22	36.1
Δ							23	-1			26	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 6 21.8	.2	15.8	T _m	3 13	1.8	55.0	15.0
12	- 6 19.9	T _{m☉}	12 h 6.3 min	Starost	18.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 59	.1	186	-4.4	♄	18 6	.0	138	-1.7
♂	23 44	.1	53	-2.6	♄	21 33	.0	86	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	25.5	17	49.5	310	32.3	135	16.7	2	1.2	4	2.0	-25	58.4
2	208	25.6	17	48.3	340	37.2	165	17.0	1	58.7	34	8.4	-25	58.7
4	238	25.7	17	47.0	10	42.1	195	17.3	1	56.3	64	14.7	-25	59.1
6	268	25.8	17	45.7	40	47.1	225	17.6	1	53.8	94	21.1	-25	59.4
8	298	25.9	17	44.4	70	52.0	255	17.9	1	51.3	124	27.4	-25	59.8
10	328	26.0	17	43.1	100	56.9	285	18.2	1	48.9	154	33.7	-26	.1
12	358	26.0	17	41.8	131	1.8	315	18.5	1	46.4	184	40.1	-26	.5
14	28	26.1	17	40.6	161	6.8	345	18.8	1	44.0	214	46.4	-26	.8
16	58	26.2	17	39.3	191	11.7	15	19.1	1	41.5	244	52.7	-26	1.2
18	88	26.3	17	38.0	221	16.6	45	19.4	1	39.0	274	59.1	-26	1.5
20	118	26.4	17	36.7	251	21.6	75	19.8	1	36.6	305	5.4	-26	1.8
22	148	26.5	17	35.4	281	26.5	105	20.1	1	34.1	335	11.7	-26	2.2
Δ	0	-6					2	-12			32	-2		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 43	20 28	0 59	:	22 12	.6	10 9	3.3
55	4 10	20 1	0 46	:	22 16	.8	10 9	3.0
50	4 31	19 41	0 38	2 33	22 18	1.0	10 9	2.8
45	4 46	19 26	0 33	2 4	22 20	1.1	10 9	2.7
40	4 59	19 13	0 30	1 48	22 22	1.3	10 8	2.5
35	5 10	19 2	0 28	1 37	22 23	1.4	10 8	2.4
30	5 20	18 53	0 26	1 29	22 24	1.5	10 8	2.3
20	5 36	18 37	0 23	1 19	22 27	1.6	10 8	2.2
10	5 50	18 23	0 22	1 14	22 29	1.8	10 8	2.0
0	6 3	18 10	0 22	1 12	22 31	1.9	10 8	1.9
10	6 16	17 57	0 22	1 13	22 33	2.0	10 7	1.7
20	6 29	17 43	0 23	1 16	22 35	2.2	10 7	1.6
30	6 45	17 28	0 25	1 22	22 37	2.4	10 7	1.4
35	6 54	17 19	0 27	1 27	22 39	2.5	10 7	1.3
40	7 4	17 9	0 29	1 33	22 40	2.6	10 6	1.2
45	7 16	16 57	0 32	1 41	22 42	2.7	10 6	1.1
50	7 30	16 43	0 35	1 52	22 44	2.9	10 6	.9
55	7 48	16 25	0 40	2 7	22 47	3.1	10 6	.8
60	8 13	16 1	0 48	2 28	22 50	3.3	10 5	.5

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	302	30.4	144	1	34.3	-110	88	37.6	-15	8.5	36	44.7	-22	36.1
2	331	37.2	143	1	12.3	-110	118	42.2	-15	8.6	66	49.9	-22	36.1
4	0	43.8	143	0	50.2	-111	148	46.8	-15	8.7	96	55.1	-22	36.1
6	29	50.3	142	0	28.1	-111	178	51.4	-15	8.8	127	.3	-22	36.1
8	58	56.8	142	0	5.9	52	208	56.0	-15	8.9	157	5.5	-22	36.2
10	88	3.2	141	0	16.3	111	239	.6	-15	9.0	187	10.7	-22	36.2
12	117	9.4	141	0	38.5	111	269	5.2	-15	9.2	217	15.9	-22	36.2
14	146	15.6	140	1	.7	111	299	9.8	-15	9.3	247	21.1	-22	36.2
16	175	21.7	140	1	23.0	111	329	14.4	-15	9.4	277	26.3	-22	36.2
18	204	27.6	139	1	45.3	111	359	19.0	-15	9.5	307	31.6	-22	36.2
20	233	33.4	138	2	7.6	111	29	23.6	-15	9.6	337	36.8	-22	36.3
22	262	39.0	138	2	29.9	111	59	28.2	-15	9.8	7	42.0	-22	36.3
Δ							23	-1			26	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 6 18.0	.2	15.8	T _m	3 57	1.9	55.5	15.1
12	- 6 15.8	T _{m☉}	12 h 6.3 min	Starost	19.9 d	Faza	☉	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 26.6	17 34.1	311 31.4	135 20.4	1 31.7	5 18.1	-26 2.5	
2	208 26.7	17 32.8	341 36.3	165 20.7	1 29.2	35 24.4	-26 2.8	
4	238 26.8	17 31.5	11 41.3	195 21.1	1 26.7	65 30.7	-26 3.2	
6	268 26.9	17 30.2	41 46.2	225 21.4	1 24.3	95 37.0	-26 3.5	
8	298 27.0	17 28.9	71 51.1	255 21.7	1 21.8	125 43.4	-26 3.8	
10	328 27.1	17 27.6	101 56.1	285 22.1	1 19.4	155 49.7	-26 4.2	
12	358 27.2	17 26.2	132 1.0	315 22.4	1 16.9	185 56.0	-26 4.5	
14	28 27.3	17 24.9	162 5.9	345 22.7	1 14.4	216 2.3	-26 4.8	
16	58 27.4	17 23.6	192 10.8	15 23.1	1 12.0	246 8.6	-26 5.1	
18	88 27.5	17 22.3	222 15.8	45 23.4	1 9.5	276 15.0	-26 5.4	
20	118 27.6	17 21.0	252 20.7	75 23.8	1 7.1	306 21.3	-26 5.7	
22	148 27.8	17 19.7	282 25.6	105 24.1	1 4.6	336 27.6	-26 6.1	
Δ	1	-7		2	-12	32	-2	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 45	20 26	0 58	:	22 26	.7	11 28	3.4
55	4 12	19 59	0 45	:	22 35	.9	11 22	3.1
50	4 32	19 40	0 38	2 31	22 42	1.1	11 17	2.9
45	4 47	19 24	0 33	2 3	22 47	1.2	11 13	2.8
40	5 0	19 12	0 30	1 47	22 52	1.4	11 10	2.6
35	5 11	19 1	0 28	1 37	22 56	1.5	11 7	2.5
30	5 20	18 52	0 26	1 29	22 60	1.6	11 4	2.4
20	5 36	18 36	0 23	1 19	23 6	1.7	10 60	2.2
10	5 50	18 22	0 22	1 14	23 11	1.9	10 56	2.1
0	6 3	18 10	0 22	1 12	23 17	2.0	10 53	2.0
10	6 15	17 57	0 22	1 13	23 22	2.0	10 49	1.8
20	6 29	17 44	0 23	1 16	23 28	2.0	10 45	1.7
30	6 44	17 29	0 25	1 22	23 34	2.0	10 41	1.5
35	6 53	17 20	0 27	1 27	23 38	2.0	10 38	1.4
40	7 3	17 10	0 29	1 33	23 42	2.0	10 36	1.3
45	7 14	16 58	0 31	1 41	23 47	2.1	10 32	1.2
50	7 29	16 44	0 35	1 52	23 53	2.1	10 29	1.0
55	7 46	16 27	0 40	2 7	...	.0	10 24	.8
60	8 10	16 3	0 48	2 28	...	.0	10 18	.6
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♅	δ _♅	S _♅	δ _♅
h	°	'	°	'	°	'	°	'	°	'	°	'
0	291 44.6	137	2 52.2	111	89 32.8	-15 9.9	37 47.2	-22 36.3				
2	320 49.9	136	3 14.5	111	119 37.4	-15 10.0	67 52.4	-22 36.3				
4	349 55.1	135	3 36.7	111	149 42.0	-15 10.1	97 57.6	-22 36.3				
6	19 .2	134	3 59.0	111	179 46.6	-15 10.2	128 2.8	-22 36.3				
8	48 5.0	133	4 21.2	111	209 51.2	-15 10.4	158 8.0	-22 36.4				
10	77 9.7	133	4 43.4	111	239 55.8	-15 10.5	188 13.2	-22 36.4				
12	106 14.3	132	5 5.5	110	270 .4	-15 10.6	218 18.4	-22 36.4				
14	135 18.6	131	5 27.6	110	300 5.0	-15 10.7	248 23.6	-22 36.4				
16	164 22.7	130	5 49.6	110	330 9.6	-15 10.8	278 28.8	-22 36.4				
18	193 26.6	128	6 11.6	110	0 14.2	-15 11.0	308 34.0	-22 36.5				
20	222 30.3	127	6 33.5	109	30 18.8	-15 11.1	338 39.2	-22 36.5				
22	251 33.8	126	6 55.3	109	60 23.4	-15 11.2	8 44.4	-22 36.5				
Δ					23	-1	26	0				

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	- 6 13.5	.2	15.8	T _m	4 42	1.9	56.1 15.3		
12	- 6 11.0	T _{m☉}	12 h 6.2 min	Starost	20.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	h min	'	°	h min	'
♂	23 34	.1	184	-4.5	♃	17 59	.0	138	-1.7
♂	23 34	.1	54	-2.6	♄	21 25	.0	86	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 27.9	17 18.3	312 30.6	135 24.4	1 2.1	6 33.9	-26 6.4	
2	208 28.0	17 17.0	342 35.5	165 24.8	0 59.7	36 40.2	-26 6.7	
4	238 28.1	17 15.7	12 40.4	195 25.2	0 57.2	66 46.5	-26 7.0	
6	268 28.2	17 14.4	42 45.3	225 25.5	0 54.8	96 52.8	-26 7.3	
8	298 28.3	17 13.0	72 50.3	255 25.9	0 52.3	126 59.1	-26 7.6	
10	328 28.4	17 11.7	102 55.2	285 26.2	0 49.8	157 5.4	-26 7.9	
12	358 28.6	17 10.4	133 .1	315 26.6	0 47.4	187 11.7	-26 8.2	
14	28 28.7	17 9.0	163 5.1	345 26.9	0 44.9	217 18.0	-26 8.5	
16	58 28.8	17 7.7	193 10.0	15 27.3	0 42.5	247 24.3	-26 8.8	
18	88 28.9	17 6.4	223 14.9	45 27.7	0 40.0	277 30.6	-26 9.1	
20	118 29.0	17 5.0	253 19.8	75 28.0	0 37.5	307 36.9	-26 9.4	
22	148 29.1	17 3.7	283 24.8	105 28.4	0 35.1	337 43.2	-26 9.7	
Δ	1	-7		2	-12	31	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 47	20 23	0 58	:	22 42	.8	12 49	3.5
55	4 14	19 57	0 45	:	22 57	1.1	12 36	3.2
50	4 33	19 38	0 38	2 29	23 8	1.3	12 27	3.0
45	4 49	19 23	0 33	2 2	23 17	1.4	12 19	2.8
40	5 1	19 11	0 30	1 47	23 25	2.1	12 12	2.7
35	5 12	19 0	0 28	1 36	23 31	2.1	12 7	2.6
30	5 21	18 51	0 26	1 29	23 37	2.1	12 2	2.5
20	5 36	18 36	0 23	1 19	23 47	2.1	11 54	2.3
10	5 50	18 22	0 22	1 14	23 56	2.1	11 46	2.2
0	6 3	18 10	0 22	1 12	...	.0	11 39	2.1
10	6 15	17 57	0 22	1 13	...	.0	11 33	1.9
20	6 28	17 44	0 23	1 16	...	.0	11 25	1.8
30	6 43	17 29	0 25	1 22	...	.0	11 17	1.6
35	6 52	17 21	0 27	1 27	...	.0	11 12	1.6
40	7 2	17 11	0 29	1 33	...	.0	11 7	1.4
45	7 13	16 59	0 31	1 41	...	.0	11 0	1.3
50	7 27	16 46	0 35	1 52	...	.0	10 53	1.2
55	7 44	16 28	0 40	2 6	0 1	3.2	10 44	1.0
60	8 8	16 5	0 48	2 27	0 11	3.4	10 32	.7
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♅	δ _♅	S _♅	δ _♅
h	°	'	°	'	°	'	°	'	°	'	°	'
0	280 37.0	125	7 17.1	108	90 27.9	-15 11.3	38 49.5	-22 36.5				
2	309 40.0	124	7 38.7	108	120 32.5	-15 11.5	68 54.7	-22 36.5				
4	338 42.8	123	8 .3	107	150 37.1	-15 11.6	98 59.9	-22 36.5				
6	7 45.3	121	8 21.7	107	180 41.7	-15 11.7	129 5.1	-22 36.6				
8	36 47.6	120	8 43.0	106	210 46.3	-15 11.8	159 10.3	-22 36.6				
10	65 49.6	119	9 4.2	105	240 50.9	-15 12.0	189 15.5	-22 36.6				
12	94 51.3	117	9 25.3	105	270 55.4	-15 12.1	219 20.7	-22 36.6				
14	123 52.8	116	9 46.2	104	301 .0	-15 12.2	249 25.9	-22 36.6				
16	152 53.9	114	10 7.0	103	331 4.6	-15 12.3	279 31.1	-22 36.6				
18	181 54.8	113	10 27.7	102	1 9.2	-15 12.5	309 36.3	-22 36.7				
20	210 55.4	111	10 48.1	101	31 13.8	-15 12.6	339 41.5	-22 36.7				
22	239 55.7	110	11 8.4	101	61 18.3	-15 12.7	9 46.7	-22 36.7				
Δ					23	-1	26	0				

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	- 6 8.5	.2	15.8	T _m	5 28	2.0	56.8 15.5		
12	- 6 5.7	T _{m☉}	12 h 6.1 min	Starost	21.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	h min	'	°	h min	'
♂	23 29	.1	183	-4.5	♃	17 55	.0	138	-1.7
♂	23 29	.1	54	-2.6	♄	21 21	.0	86	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	29.3	17	2.3	313	29.7	135	28.8	0	32.6	7	49.5	-26	9.9
2	208	29.4	17	1.0	343	34.6	165	29.2	0	30.2	37	55.8	-26	10.2
4	238	29.5	16	59.6	13	39.6	195	29.5	0	27.7	68	2.0	-26	10.5
6	268	29.6	16	58.3	43	44.5	225	29.9	0	25.2	98	8.3	-26	10.8
8	298	29.8	16	56.9	73	49.4	255	30.3	0	22.8	128	14.6	-26	11.1
10	328	29.9	16	55.6	103	54.3	285	30.7	0	20.3	158	20.9	-26	11.4
12	358	30.0	16	54.2	133	59.3	315	31.1	0	17.9	188	27.2	-26	11.6
14	28	30.2	16	52.8	164	4.2	345	31.5	0	15.4	218	33.4	-26	11.9
16	58	30.3	16	51.5	194	9.1	15	31.9	0	13.0	248	39.7	-26	12.2
18	88	30.4	16	50.1	224	14.0	45	32.3	0	10.5	278	46.0	-26	12.4
20	118	30.5	16	48.8	254	19.0	75	32.6	0	8.0	308	52.2	-26	12.7
22	148	30.7	16	47.4	284	23.9	105	33.0	0	5.6	338	58.5	-26	13.0
Δ	1	-7					2	-12			31			-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 50	20 20	0 57	:::	23 2	1.1	14 12	3.5
55	4 16	19 55	0 45	3 44	23 23	2.3	13 53	3.2
50	4 35	19 36	0 38	2 28	23 39	2.3	13 39	3.1
45	4 50	19 22	0 33	2 2	23 51	2.3	13 27	2.9
40	5 2	19 9	0 30	1 46	...	.0	13 18	2.8
35	5 12	18 59	0 27	1 36	...	.0	13 9	2.7
30	5 21	18 50	0 26	1 28	...	.0	13 2	2.6
20	5 37	18 35	0 23	1 19	...	.0	12 50	2.5
10	5 50	18 22	0 22	1 14	...	.0	12 39	2.3
0	6 3	18 9	0 22	1 12	0 5	2.2	12 29	2.2
10	6 15	17 57	0 22	1 12	0 14	2.3	12 19	2.1
20	6 28	17 44	0 23	1 16	0 23	2.4	12 9	2.0
30	6 43	17 30	0 25	1 22	0 33	2.6	11 56	1.8
35	6 51	17 21	0 27	1 27	0 39	2.7	11 49	1.8
40	7 1	17 12	0 29	1 33	0 46	2.8	11 41	1.7
45	7 12	17 1	0 31	1 41	0 54	2.9	11 32	1.5
50	7 25	16 47	0 35	1 51	1 4	3.0	11 21	1.4
55	7 43	16 30	0 40	2 6	1 17	3.2	11 7	1.2
60	8 5	16 7	0 47	2 27	1 33	3.5	10 49	.9

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	268	55.7	108	11	28.5	100	91	22.9	-15	12.8	39	51.9	-22	36.7
2	297	55.3	107	11	48.4	99	121	27.5	-15	13.0	69	57.0	-22	36.7
4	326	54.7	105	12	8.1	98	151	32.0	-15	13.1	100	2.2	-22	36.7
6	355	53.7	103	12	27.6	96	181	36.6	-15	13.2	130	7.4	-22	36.8
8	24	52.4	102	12	46.9	95	211	41.2	-15	13.4	160	12.6	-22	36.8
10	53	50.8	100	13	6.0	94	241	45.8	-15	13.5	190	17.8	-22	36.8
12	82	48.8	98	13	24.8	93	271	50.3	-15	13.6	220	23.0	-22	36.8
14	111	46.5	97	13	43.4	92	301	54.9	-15	13.7	250	28.2	-22	36.8
16	140	43.8	95	14	1.7	90	331	59.4	-15	13.9	280	33.4	-22	36.8
18	169	40.8	93	14	19.7	89	2	4.0	-15	14.0	310	38.5	-22	36.9
20	198	37.4	91	14	37.5	87	32	8.6	-15	14.1	340	43.7	-22	36.9
22	227	33.7	90	14	55.0	86	62	13.1	-15	14.3	10	48.9	-22	36.9
Δ							23	-1			26			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 6	2.9	.3	15.8	T _m	6 17	2.2	57.6	15.7
12	- 5	59.8	T _{m☉}	12 h 6.0 min	Starost	22.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 58	.1	182	-4.5	♄	17 52	.0	138	-1.7
	23 24	.1	54	-2.6	♅	21 17	.0	86	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	30.8	16	46.0	314	28.8	135	33.4	0	3.1	9	4.8	-26	13.2
2	208	30.9	16	44.7	344	33.8	165	33.8	0	.7	39	11.0	-26	13.5
4	238	31.1	16	43.3	14	38.7	195	34.2	-0	1.8	69	17.3	-26	13.8
6	268	31.2	16	41.9	44	43.6	225	34.7	-0	4.3	99	23.5	-26	14.0
8	298	31.4	16	40.5	74	48.5	255	35.1	-0	6.7	129	29.8	-26	14.3
10	328	31.5	16	39.2	104	53.5	285	35.5	-0	9.2	159	36.0	-26	14.5
12	358	31.6	16	37.8	134	58.4	315	35.9	-0	11.6	189	42.3	-26	14.8
14	28	31.8	16	36.4	165	3.3	345	36.3	-0	14.1	219	48.5	-26	15.0
16	58	31.9	16	35.0	195	8.3	15	36.7	-0	16.5	249	54.8	-26	15.3
18	88	32.1	16	33.6	225	13.2	45	37.1	-0	19.0	280	1.0	-26	15.5
20	118	32.2	16	32.2	255	18.1	75	37.6	-0	21.5	310	7.2	-26	15.8
22	148	32.4	16	30.8	285	23.0	105	38.0	-0	23.9	340	13.5	-26	16.0
Δ	1	-7					2	-12			31			-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 52	20 18	0 56	:::	23 29	2.4	15 37	3.4
55	4 18	19 53	0 44	3 33	...	.0	15 11	3.2
50	4 36	19 35	0 38	2 26	...	.0	14 52	3.0
45	4 51	19 20	0 33	2 1	...	.0	14 37	2.9
40	5 3	19 8	0 30	1 46	0 2	1.8	14 25	2.8
35	5 13	18 58	0 27	1 35	0 11	1.9	14 14	2.7
30	5 22	18 49	0 26	1 28	0 19	2.0	14 5	2.7
20	5 37	18 34	0 23	1 19	0 33	2.1	13 49	2.6
10	5 50	18 21	0 22	1 14	0 45	2.2	13 35	2.5
0	6 2	18 9	0 22	1 12	0 57	2.3	13 23	2.4
10	6 15	17 57	0 22	1 12	1 8	2.4	13 10	2.3
20	6 27	17 45	0 23	1 15	1 21	2.5	12 56	2.2
30	6 42	17 30	0 25	1 22	1 35	2.7	12 41	2.1
35	6 50	17 22	0 27	1 27	1 43	2.7	12 32	2.0
40	6 60	17 13	0 29	1 33	1 53	2.8	12 21	2.0
45	7 11	17 2	0 31	1 41	2 4	2.9	12 9	1.9
50	7 24	16 49	0 35	1 51	2 17	3.1	11 55	1.7
55	7 41	16 32	0 40	2 6	2 35	3.2	11 36	1.6
60	8 3	16 10	0 47	2 26	2 58	3.5	11 12	1.3

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	256	29.6	88	15	12.1	84	92	17.7	-15	14.4	40	54.1	-22	36.9
2	285	25.2	86	15	29.0	83	122	22.3	-15	14.5	70	59.3	-22	36.9
4	314	20.3	84	15	45.6	81	152	26.8	-15	14.7	101	4.4	-22	37.0
6	343	15.2	82	16	1.8	79	182	31.4	-15	14.8	131	9.6	-22	37.0
8	12	9.6	80	16	17.7	78	212	35.9	-15	14.9	161	14.8	-22	37.0
10	41	3.7	79	16	33.2	76	242	40.5	-15	15.0	191	20.0	-22	37.0
12	69	57.4	77	16	48.3	74	272	45.0	-15	15.2	221	25.2	-22	37.0
14	98	50.8	75	17	3.1	72	302	49.6	-15	15.3	251	30.3	-22	37.0
16	127	43.7	73	17	17.5	70	332	54.1	-15	15.4	281	35.5	-22	37.1
18	156	36.3	71	17	31.6	68	2	58.7	-15	15.6	311	40.7	-22	37.1
20	185	28.6	69	17	45.2	66	33	3.2	-15	15.7	341	45.9	-22	37.1
22	214	20.5	68	17	58.4	64	63	7.8	-15	15.8	11	51.1	-22	37.1
Δ							23	-1			26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 5	56.7	.3	15.8	T _m	7 10	2.3	58.5

UT	SUNCE		PROLEĆ. TAČKA S _T	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 32.5	16 29.5	315 28.0	135 38.4	- 0 26.4	10 19.7	-26 16.3
2	208 32.6	16 28.1	345 32.9	165 38.8	- 0 28.8	40 25.9	-26 16.5
4	238 32.8	16 26.7	15 37.8	195 39.3	- 0 31.3	70 32.2	-26 16.7
6	268 32.9	16 25.3	45 42.8	225 39.7	- 0 33.7	100 38.4	-26 17.0
8	298 33.1	16 23.9	75 47.7	255 40.1	- 0 36.2	130 44.6	-26 17.2
10	328 33.2	16 22.5	105 52.6	285 40.6	- 0 38.7	160 50.8	-26 17.4
12	358 33.4	16 21.1	135 57.5	315 41.0	- 0 41.1	190 57.0	-26 17.7
14	28 33.5	16 19.7	166 2.5	345 41.4	- 0 43.6	221 3.2	-26 17.9
16	58 33.7	16 18.3	196 7.4	15 41.9	- 0 46.0	251 9.5	-26 18.1
18	88 33.9	16 16.9	226 12.3	45 42.3	- 0 48.5	281 15.7	-26 18.3
20	118 34.0	16 15.4	256 17.3	75 42.8	- 0 50.9	311 21.9	-26 18.5
22	148 34.2	16 14.0	286 22.2	105 43.2	- 0 53.4	341 28.1	-26 18.8
Δ	1	-7		2	-12	31	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 55	20 15	0 56	:	:	:	16 58	3.0
55	4 19	19 51	0 44	3 25	0 -3	1.8	16 27	2.9
50	4 38	19 33	0 37	2 25	0 17	2.0	16 4	2.8
45	4 52	19 19	0 33	2 0	0 32	2.1	15 46	2.8
40	5 4	19 7	0 30	1 45	0 46	2.1	15 32	2.7
35	5 14	18 57	0 27	1 35	0 57	2.2	15 20	2.7
30	5 23	18 49	0 26	1 28	1 6	2.2	15 9	2.7
20	5 37	18 34	0 23	1 19	1 23	2.3	14 51	2.6
10	5 50	18 21	0 22	1 14	1 38	2.4	14 35	2.6
0	6 2	18 9	0 22	1 12	1 52	2.5	14 20	2.5
10	6 14	17 57	0 22	1 12	2 6	2.5	14 5	2.5
20	6 27	17 45	0 23	1 15	2 21	2.6	13 49	2.4
30	6 41	17 31	0 25	1 22	2 38	2.7	13 31	2.4
35	6 49	17 23	0 26	1 26	2 49	2.7	13 20	2.3
40	6 58	17 14	0 28	1 32	3 0	2.8	13 8	2.3
45	7 9	17 3	0 31	1 40	3 14	2.9	12 54	2.2
50	7 22	16 50	0 35	1 51	3 31	2.9	12 36	2.2
55	7 39	16 34	0 40	2 5	3 52	3.1	12 14	2.1
60	8 0	16 12	0 47	2 26	4 22	3.2	11 44	1.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	243 12.0	66 18 11.1	62	93 12.3	-15 16.0	41 56.2	-22 37.1	
2	272 3.2	64 18 23.5	59	123 16.9	-15 16.1	72 1.4	-22 37.1	
4	300 54.0	62 18 35.3	57	153 21.4	-15 16.3	102 6.6	-22 37.2	
6	329 44.4	61 18 46.8	55	183 26.0	-15 16.4	132 11.8	-22 37.2	
8	358 34.5	59 18 57.7	52	213 30.5	-15 16.5	162 16.9	-22 37.2	
10	27 24.3	57 19 8.2	50	243 35.0	-15 16.7	192 22.1	-22 37.2	
12	56 13.8	56 19 18.2	48	273 39.6	-15 16.8	222 27.3	-22 37.2	
14	85 2.9	54 19 27.7	45	303 44.1	-15 16.9	252 32.4	-22 37.2	
16	113 51.7	52 19 36.7	42	333 48.7	-15 17.1	282 37.6	-22 37.3	
18	142 40.2	51 19 45.2	40	3 53.2	-15 17.2	312 42.8	-22 37.3	
20	171 28.3	49 19 53.1	37	33 57.7	-15 17.3	342 48.0	-22 37.3	
22	200 16.2	48 20 .6	34	64 2.3	-15 17.5	12 53.1	-22 37.3	
Δ				23	-1	26	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 5 50.0	.3	15.8	T _m	8 6	2.5	59.3 16.2
12	- 5 46.3	T _{m☉}	12 h 5.8 min	Starost 24.9 d Faza ●			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 57	.1	180	-4.6	♄	17 44	.0	138	-1.6
♂	23 14	.1	55	-2.6	♃	21 9	.0	86	.4

8. AVGUST

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _T	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 34.3	16 12.6	316 27.1	135 43.7	- 0 55.8	11 34.3	-26 19.0
2	208 34.5	16 11.2	346 32.0	165 44.1	- 0 58.3	41 40.5	-26 19.2
4	238 34.6	16 9.8	16 37.0	195 44.6	- 1 .7	71 46.6	-26 19.4
6	268 34.8	16 8.4	46 41.9	225 45.0	- 1 3.2	101 52.8	-26 19.6
8	298 35.0	16 7.0	76 46.8	255 45.5	- 1 5.6	131 59.0	-26 19.8
10	328 35.1	16 5.5	106 51.8	285 45.9	- 1 8.1	162 5.2	-26 20.0
12	358 35.3	16 4.1	136 56.7	315 46.4	- 1 10.6	192 11.4	-26 20.2
14	28 35.5	16 2.7	167 1.6	345 46.9	- 1 13.0	222 17.6	-26 20.4
16	58 35.6	16 1.3	197 6.5	15 47.3	- 1 15.5	252 23.7	-26 20.6
18	88 35.8	15 59.8	227 11.5	45 47.8	- 1 17.9	282 29.9	-26 20.8
20	118 36.0	15 58.4	257 16.4	75 48.3	- 1 20.4	312 36.1	-26 21.0
22	148 36.1	15 57.0	287 21.3	105 48.7	- 1 22.8	342 42.2	-26 21.2
Δ	1	-7		2	-12	31	-1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 57	20 13	0 55	:	:	:	18 10	2.4
55	4 21	19 49	0 44	3 19	0 40	2.4	17 36	2.4
50	4 39	19 31	0 37	2 23	1 4	2.4	17 12	2.5
45	4 53	19 17	0 33	1 59	1 22	2.5	16 53	2.5
40	5 5	19 6	0 30	1 45	1 37	2.5	16 38	2.5
35	5 15	18 56	0 27	1 35	1 49	2.5	16 24	2.5
30	5 23	18 48	0 25	1 28	2 0	2.5	16 13	2.6
20	5 38	18 33	0 23	1 18	2 19	2.5	15 54	2.6
10	5 50	18 21	0 22	1 13	2 36	2.6	15 37	2.6
0	6 2	18 9	0 22	1 12	2 51	2.6	15 21	2.6
10	6 14	17 58	0 22	1 12	3 7	2.6	15 5	2.6
20	6 26	17 45	0 23	1 15	3 24	2.6	14 48	2.6
30	6 40	17 32	0 25	1 22	3 43	2.6	14 28	2.6
35	6 48	17 24	0 26	1 26	3 54	2.6	14 17	2.6
40	6 57	17 15	0 28	1 32	4 7	2.6	14 3	2.7
45	7 8	17 4	0 31	1 40	4 22	2.7	13 48	2.7
50	7 21	16 51	0 35	1 51	4 41	2.7	13 29	2.7
55	7 37	16 35	0 39	2 5	5 6	2.7	13 4	2.7
60	7 58	16 14	0 46	2 25	5 40	2.7	12 30	2.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	229 3.8	47 20 7.4	32	94 6.8	-15 17.6	42 58.3	-22 37.3	
2	257 51.2	45 20 13.8	29	124 11.3	-15 17.8	73 3.5	-22 37.3	
4	286 38.3	44 20 19.5	26	154 15.9	-15 17.9	103 8.6	-22 37.4	
6	315 25.1	43 20 24.8	23	184 20.4	-15 18.0	133 13.8	-22 37.4	
8	344 11.7	42 20 29.4	20	214 24.9	-15 18.2	163 19.0	-22 37.4	
10	12 58.0	41 20 33.4	17	244 29.4	-15 18.3	193 24.1	-22 37.4	
12	41 44.1	40 20 36.9	14	274 34.0	-15 18.5	223 29.3	-22 37.4	
14	70 30.1	39 20 39.8	11	304 38.5	-15 18.6	253 34.5	-22 37.4	
16	99 15.8	38 20 42.1	8	334 43.0	-15 18.7	283 39.6	-22 37.5	
18	128 1.4	37 20 43.7	5	4 47.5	-15 18.9	313 44.8	-22 37.5	
20	156 46.8	36 20 44.8	2	34 52.1	-15 19.0	343 50.0	-22 37.5	
22	185 32.1	36 20 45.3	-1	64 56.6	-15 19.2	13 55.1	-22 37.5	
Δ				23	-1	26	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 5 42.7	.3	15.8	T _m	9 6	2.6	60.1 16.4
12	- 5 38.7	T _{m☉}	12 h 5.6 min	Starost 25.9 d Faza ●			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 57	.1	179	-4.6	♄	17 41	.0	138	-1.6
♂	23 9	.1	55	-2.6	♃	21 4	.0	87	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 36.3	15 55.5	317 26.2	135 49.2	- 1 25.3	12 48.4	-26 21.4
2	208 36.5	15 54.1	347 31.2	165 49.7	- 1 27.7	42 54.5	-26 21.6
4	238 36.6	15 52.6	17 36.1	195 50.2	- 1 30.2	73 .7	-26 21.8
6	268 36.8	15 51.2	47 41.0	225 50.7	- 1 32.6	103 6.8	-26 22.0
8	298 37.0	15 49.8	77 46.0	255 51.1	- 1 35.1	133 13.0	-26 22.1
10	328 37.2	15 48.3	107 50.9	285 51.6	- 1 37.5	163 19.1	-26 22.3
12	358 37.3	15 46.9	137 55.8	315 52.1	- 1 39.9	193 25.3	-26 22.5
14	28 37.5	15 45.4	168 .7	345 52.6	- 1 42.4	223 31.4	-26 22.7
16	58 37.7	15 44.0	198 5.7	15 53.1	- 1 44.8	253 37.5	-26 22.8
18	88 37.9	15 42.5	228 10.6	45 53.6	- 1 47.3	283 43.7	-26 23.0
20	118 38.1	15 41.1	258 15.5	75 54.1	- 1 49.7	313 49.8	-26 23.2
22	148 38.2	15 39.6	288 20.5	105 54.6	- 1 52.2	343 55.9	-26 23.4
Δ	1	-7		2	-12	31	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	214 17.2	35 20	45.1	-4	95 1.1	-15 19.3	44 .3	-22 37.5
2	243 2.2	35 20	44.4	-7	125 5.6	-15 19.4	74 5.4	-22 37.5
4	271 47.2	34 20	43.0	-10	155 10.1	-15 19.6	104 10.6	-22 37.6
6	300 32.0	34 20	41.0	-13	185 14.7	-15 19.7	134 15.8	-22 37.6
8	329 16.8	34 20	38.4	-16	215 19.2	-15 19.9	164 20.9	-22 37.6
10	358 1.5	33 20	35.1	-19	245 23.7	-15 20.0	194 26.1	-22 37.6
12	26 46.2	33 20	31.3	-22	275 28.2	-15 20.2	224 31.2	-22 37.6
14	55 30.8	33 20	26.8	-26	305 32.7	-15 20.3	254 36.4	-22 37.6
16	84 15.5	33 20	21.7	-29	335 37.2	-15 20.4	284 41.5	-22 37.7
18	113 .2	33 20	16.0	-32	5 41.7	-15 20.6	314 46.7	-22 37.7
20	141 44.9	34 20	9.6	-35	35 46.2	-15 20.7	344 51.9	-22 37.7
22	170 29.6	34 20	2.7	-38	65 50.8	-15 20.9	14 57.0	-22 37.7
Δ					23	-1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	3 59	20 10	0 54	: : :	1 3	3.1	19 7	1.7
55	4 23	19 47	0 43	3 13	1 37	3.0	18 35	1.9
50	4 41	19 29	0 37	2 22	2 2	2.9	18 12	2.1
45	4 54	19 16	0 33	1 59	2 21	2.8	17 53	2.2
40	5 6	19 5	0 29	1 44	2 36	2.8	17 38	2.3
35	5 15	18 55	0 27	1 34	2 49	2.8	17 26	2.3
30	5 24	18 47	0 25	1 27	3 1	2.7	17 15	2.4
20	5 38	18 33	0 23	1 18	3 20	2.7	16 55	2.5
10	5 51	18 20	0 22	1 13	3 37	2.7	16 39	2.5
0	6 2	18 9	0 21	1 11	3 53	2.6	16 23	2.6
10	6 14	17 58	0 22	1 12	4 9	2.6	16 8	2.7
20	6 26	17 46	0 23	1 15	4 26	2.5	15 51	2.7
30	6 39	17 32	0 25	1 21	4 46	2.5	15 31	2.8
35	6 47	17 24	0 26	1 26	4 58	2.4	15 20	2.9
40	6 56	17 15	0 28	1 32	5 11	2.4	15 7	2.9
45	7 6	17 5	0 31	1 40	5 26	2.4	14 52	3.0
50	7 19	16 53	0 34	1 51	5 46	2.3	14 33	3.1
55	7 35	16 37	0 39	2 5	6 10	2.2	14 8	3.2
60	7 55	16 17	0 46	2 25	6 45	2.0	13 34	3.4
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 5 34.8	.4	15.8	T _m	10 8	2.6	60.8	16.6
12	- 5 30.6	T _{m☉}	12 h 5.5 min	Starost	26.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	14 56	.1	178	-4.6	♃	17 37	.0	138	-1.6
♂	23 4	.1	55	-2.6	♄	21 0	.0	87	.5

10. AVGUST

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 38.4	15 38.2	318 25.4	135 55.1	- 1 54.6	14 2.0	-26 23.5
2	208 38.6	15 36.7	348 30.3	165 55.6	- 1 57.1	44 8.1	-26 23.7
4	238 38.8	15 35.3	18 35.2	195 56.1	- 1 59.5	74 14.2	-26 23.8
6	268 39.0	15 33.8	48 40.2	225 56.6	- 2 2.0	104 20.3	-26 24.0
8	298 39.2	15 32.3	78 45.1	255 57.1	- 2 4.4	134 26.4	-26 24.2
10	328 39.3	15 30.9	108 50.0	285 57.6	- 2 6.8	164 32.5	-26 24.3
12	358 39.5	15 29.4	138 55.0	315 58.1	- 2 9.3	194 38.6	-26 24.5
14	28 39.7	15 27.9	168 59.9	345 58.6	- 2 11.7	224 44.7	-26 24.6
16	58 39.9	15 26.5	199 4.8	15 59.2	- 2 14.2	254 50.8	-26 24.8
18	88 40.1	15 25.0	229 9.7	45 59.7	- 2 16.6	284 56.9	-26 24.9
20	118 40.3	15 23.5	259 14.7	76 .2	- 2 19.1	315 3.0	-26 25.1
22	148 40.5	15 22.0	289 19.6	106 .7	- 2 21.5	345 9.0	-26 25.2
Δ	1	-7		3	-12	30	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	199 14.4	34 19	55.1	-41	95 55.3	-15 21.0	45 2.2	-22 37.7
2	227 59.3	35 19	47.0	-44	125 59.8	-15 21.2	75 7.3	-22 37.7
4	256 44.2	35 19	38.2	-47	156 4.3	-15 21.3	105 12.5	-22 37.8
6	285 29.3	36 19	28.9	-50	186 8.8	-15 21.5	135 17.6	-22 37.8
8	314 14.5	37 19	19.0	-53	216 13.3	-15 21.6	165 22.8	-22 37.8
10	342 59.8	37 19	8.4	-55	246 17.8	-15 21.8	195 27.9	-22 37.8
12	11 45.3	38 18	57.3	-58	276 22.3	-15 21.9	225 33.1	-22 37.8
14	40 30.9	39 18	45.7	-61	306 26.8	-15 22.1	255 38.2	-22 37.8
16	69 16.7	40 18	33.5	-64	336 31.3	-15 22.2	285 43.4	-22 37.9
18	98 2.6	41 18	20.7	-67	6 35.8	-15 22.4	315 48.5	-22 37.9
20	126 48.8	42 18	7.4	-69	36 40.3	-15 22.5	345 53.7	-22 37.9
22	155 35.2	43 17	53.5	-72	66 44.8	-15 22.6	15 58.8	-22 37.9
Δ					23	-1	26	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 2	20 7	0 54	: : :	2 17	3.6	19 49	1.2
55	4 25	19 45	0 43	3 9	2 48	3.4	19 22	1.5
50	4 42	19 28	0 37	2 20	3 11	3.2	19 2	1.7
45	4 56	19 14	0 32	1 58	3 29	3.1	18 46	1.8
40	5 7	19 3	0 29	1 44	3 44	3.0	18 33	2.0
35	5 16	18 54	0 27	1 34	3 56	2.9	18 21	2.1
30	5 24	18 46	0 25	1 27	4 7	2.9	18 12	2.1
20	5 38	18 32	0 23	1 18	4 25	2.8	17 55	2.3
10	5 51	18 20	0 22	1 13	4 41	2.7	17 40	2.4
0	6 2	18 9	0 21	1 11	4 56	2.6	17 26	2.5
10	6 13	17 58	0 22	1 12	5 11	2.5	17 12	2.6
20	6 25	17 46	0 23	1 15	5 27	2.4	16 57	2.8
30	6 38	17 33	0 25	1 21	5 46	2.3	16 39	2.9
35	6 46	17 25	0 26	1 26	5 56	2.2	16 29	3.0
40	6 55	17 16	0 28	1 32	6 8	2.1	16 17	3.1
45	7 5	17 6	0 31	1 40	6 23	2.0	16 3	3.2
50	7 17	16 54	0 34	1 50	6 40	1.9	15 47	3.3
55	7 32	16 39	0 39	2 4	7 3	1.7	15 25	3.5
60	7 53	16 19	0 46	2 24	7 34	1.4	14 55	3.8
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min s	s	'	h min	min	'	'	
00	- 5 26.3	.4	15.8	T _m	11 11	2.5	61.1	16.7
12	- 5 21.8	T _{m☉}	12 h 5.4 min	Starost	27.9 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
	h min	'	°			h min	'	°	
♀	14 56	.1	177	-4.6	♃	17 34	.0	137	-1.6
♂	22 59	.1	56	-2.6	♄	20 56	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 40.7	15 20.6	319 24.5	136 1.3	-2 23.9	15 15.1	-26 25.3	
2	208 40.9	15 19.1	349 29.5	166 1.8	-2 26.4	45 21.2	-26 25.5	
4	238 41.1	15 17.6	19 34.4	196 2.3	-2 28.8	75 27.2	-26 25.6	
6	268 41.3	15 16.1	49 39.3	226 2.9	-2 31.3	105 33.3	-26 25.7	
8	298 41.5	15 14.6	79 44.2	256 3.4	-2 33.7	135 39.4	-26 25.9	
10	328 41.7	15 13.2	109 49.2	286 3.9	-2 36.1	165 45.4	-26 26.0	
12	358 41.9	15 11.7	139 54.1	316 4.5	-2 38.6	195 51.5	-26 26.1	
14	28 42.1	15 10.2	169 59.0	346 5.0	-2 41.0	225 57.5	-26 26.3	
16	58 42.3	15 8.7	200 4.0	16 5.5	-2 43.4	256 3.5	-26 26.4	
18	88 42.5	15 7.2	230 8.9	46 6.1	-2 45.9	286 9.6	-26 26.5	
20	118 42.7	15 5.7	260 13.8	76 6.6	-2 48.3	316 15.6	-26 26.6	
22	148 42.9	15 4.2	290 18.7	106 7.2	-2 50.7	346 21.6	-26 26.7	
Δ	1	-7		3	-12	30	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 4	20 4	0 53	:	3 44	3.9	20 18	.9
55	4 27	19 42	0 43	3 4	4 10	3.6	19 58	1.2
50	4 44	19 26	0 37	2 19	4 29	3.4	19 42	1.4
45	4 57	19 13	0 32	1 57	4 44	3.2	19 30	1.6
40	5 8	19 2	0 29	1 43	4 56	3.1	19 20	1.7
35	5 17	18 53	0 27	1 34	5 6	3.0	19 11	1.8
30	5 25	18 45	0 25	1 27	5 16	2.9	19 3	1.9
20	5 39	18 31	0 23	1 18	5 31	2.7	18 49	2.1
10	5 51	18 20	0 22	1 13	5 45	2.6	18 37	2.3
0	6 2	18 9	0 21	1 11	5 58	2.5	18 26	2.4
10	6 13	17 58	0 22	1 12	6 11	2.3	18 15	2.5
20	6 24	17 46	0 23	1 15	6 24	2.2	18 3	2.7
30	6 37	17 33	0 25	1 21	6 40	2.0	17 49	2.9
35	6 45	17 26	0 26	1 26	6 49	1.9	17 40	3.0
40	6 54	17 17	0 28	1 32	6 59	1.8	17 31	3.1
45	7 3	17 7	0 31	1 40	7 11	1.7	17 20	3.2
50	7 15	16 56	0 34	1 50	7 26	1.5	17 7	3.4
55	7 30	16 41	0 39	2 4	7 44	1.3	16 49	3.6
60	7 50	16 21	0 46	2 24	8 8	1.0	16 27	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	184 21.8	44 17	39.2	-74	96 49.3	-15 22.8	46 4.0	-22 37.9
2	213 8.6	45 17	24.3	-77	126 53.8	-15 22.9	76 9.1	-22 37.9
4	241 55.6	46 17	8.9	-79	156 58.2	-15 23.1	106 14.3	-22 38.0
6	270 42.9	48 16	53.1	-82	187 2.7	-15 23.2	136 19.4	-22 38.0
8	299 30.5	49 16	36.7	-84	217 7.2	-15 23.4	166 24.6	-22 38.0
10	328 18.3	50 16	19.9	-86	247 11.7	-15 23.5	196 29.7	-22 38.0
12	357 6.4	52 16	2.6	-89	277 16.2	-15 23.7	226 34.8	-22 38.0
14	25 54.7	53 15	44.9	-91	307 20.7	-15 23.8	256 40.0	-22 38.0
16	54 43.3	55 15	26.8	-93	337 25.2	-15 24.0	286 45.1	-22 38.1
18	83 32.3	56 15	8.2	-95	7 29.7	-15 24.1	316 50.3	-22 38.1
20	112 21.5	58 14	49.2	-97	37 34.1	-15 24.3	346 55.4	-22 38.1
22	141 11.0	59 14	29.9	-99	67 38.6	-15 24.5	17 .6	-22 38.1
Δ					22	-1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 5 17.3	.4	15.8	T _m	12 12	2.4	61.2 16.7		
12	- 5 12.5	T _{m☉}	12 h 5.2 min	Starost	28.9 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 56	.1	177	-4.7	♄	17 30	.0	137	-1.6
	22 54	.1	56	-2.6	♅	20 52	.0	87	.5

12. AVGUST

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 43.1	15 2.7	320 23.7	136 7.7	-2 53.2	16 27.6	-26 26.8	
2	208 43.3	15 1.2	350 28.6	166 8.3	-2 55.6	46 33.7	-26 27.0	
4	238 43.5	14 59.7	20 33.5	196 8.9	-2 58.0	76 39.7	-26 27.1	
6	268 43.7	14 58.2	50 38.5	226 9.4	-3 .5	106 45.7	-26 27.2	
8	298 43.9	14 56.7	80 43.4	256 10.0	-3 2.9	136 51.7	-26 27.3	
10	328 44.1	14 55.2	110 48.3	286 10.5	-3 5.3	166 57.7	-26 27.4	
12	358 44.3	14 53.7	140 53.2	316 11.1	-3 7.8	197 3.7	-26 27.5	
14	28 44.5	14 52.2	170 58.2	346 11.7	-3 10.2	227 9.7	-26 27.6	
16	58 44.8	14 50.7	201 3.1	16 12.2	-3 12.6	257 15.7	-26 27.7	
18	88 45.0	14 49.2	231 8.0	46 12.8	-3 15.1	287 21.6	-26 27.8	
20	118 45.2	14 47.7	261 12.9	76 13.4	-3 17.5	317 27.6	-26 27.9	
22	148 45.4	14 46.1	291 17.9	106 14.0	-3 19.9	347 33.6	-26 28.0	
Δ	1	-8		3	-12	30	-1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 7	20 2	0 53	:	5 18	3.9	20 40	.7
55	4 29	19 40	0 43	3 1	5 36	3.6	20 26	1.0
50	4 45	19 24	0 36	2 18	5 50	3.4	20 16	1.2
45	4 58	19 11	0 32	1 56	6 1	3.2	20 8	1.4
40	5 9	19 1	0 29	1 43	6 10	3.0	20 1	1.5
35	5 18	18 52	0 27	1 33	6 18	2.9	19 55	1.6
30	5 26	18 44	0 25	1 27	6 25	2.8	19 49	1.7
20	5 39	18 31	0 23	1 18	6 37	2.6	19 40	1.9
10	5 51	18 19	0 22	1 13	6 47	2.5	19 31	2.1
0	6 2	18 8	0 21	1 11	6 57	2.3	19 24	2.3
10	6 12	17 58	0 22	1 12	7 6	2.2	19 16	2.4
20	6 24	17 47	0 23	1 15	7 17	2.0	19 7	2.6
30	6 37	17 34	0 25	1 21	7 28	1.8	18 57	2.8
35	6 44	17 27	0 26	1 26	7 35	1.7	18 51	2.9
40	6 52	17 18	0 28	1 32	7 43	1.6	18 45	3.0
45	7 2	17 9	0 31	1 40	7 52	1.5	18 37	3.2
50	7 14	16 57	0 34	1 50	8 3	1.3	18 28	3.3
55	7 28	16 43	0 39	2 4	8 16	1.1	18 16	3.6
60	7 48	16 23	0 45	2 23	8 33	.8	18 1	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	170 .8	61 14	10.1	-101	97 43.1	-15 24.6	47 5.7	-22 38.1
2	198 50.9	62 13	50.0	-102	127 47.6	-15 24.8	77 10.8	-22 38.1
4	227 41.3	64 13	29.6	-104	157 52.1	-15 24.9	107 16.0	-22 38.1
6	256 32.1	65 13	8.8	-106	187 56.5	-15 25.1	137 21.1	-22 38.2
8	285 23.1	67 12	47.6	-107	218 1.0	-15 25.2	167 26.3	-22 38.2
10	314 14.4	68 12	26.2	-109	248 5.5	-15 25.4	197 31.4	-22 38.2
12	343 6.1	70 12	4.5	-110	278 10.0	-15 25.5	227 36.5	-22 38.2
14	11 58.1	71 11	42.4	-111	308 14.5	-15 25.7	257 41.7	-22 38.2
16	40 50.4	73 11	20.1	-113	338 18.9	-15 25.8	287 46.8	-22 38.2
18	69 42.9	75 10	57.6	-114	8 23.4	-15 26.0	317 51.9	-22 38.3
20	98 35.9	76 10	34.8	-115	38 27.9	-15 26.1	347 57.1	-22 38.3
22	127 29.1	78 10	11.8	-116	68 32.3	-15 26.3	18 2.2	-22 38.3
Δ					22	-1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 5 7.7	.4	15.8	T _m	13 10	2.3	61.0 16.6		
12	- 5 2.6	T _{m☉}	12 h 5.0 min	Starost	.6 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 55	.1	176	-4.7	♄	17 27	.0	137	-1.6
	22 50	.1	56	-2.6	♅	20 48	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 45.6	14 44.6	321 22.8	136 14.6	- 3 22.3	17 39.6	-26 28.1
2	208 45.8	14 43.1	351 27.7	166 15.1	- 3 24.8	47 45.5	-26 28.1
4	238 46.1	14 41.6	21 32.7	196 15.7	- 3 27.2	77 51.5	-26 28.2
6	268 46.3	14 40.1	51 37.6	226 16.3	- 3 29.6	107 57.4	-26 28.3
8	298 46.5	14 38.6	81 42.5	256 16.9	- 3 32.0	138 3.4	-26 28.4
10	328 46.7	14 37.0	111 47.4	286 17.5	- 3 34.5	168 9.3	-26 28.5
12	358 46.9	14 35.5	141 52.4	316 18.1	- 3 36.9	198 15.3	-26 28.5
14	28 47.2	14 34.0	171 57.3	346 18.7	- 3 39.3	228 21.2	-26 28.6
16	58 47.4	14 32.4	202 2.2	16 19.3	- 3 41.7	258 27.2	-26 28.7
18	88 47.6	14 30.9	232 7.2	46 19.9	- 3 44.1	288 33.1	-26 28.8
20	118 47.8	14 29.4	262 12.1	76 20.5	- 3 46.6	318 39.0	-26 28.8
22	148 48.1	14 27.8	292 17.0	106 21.1	- 3 49.0	348 44.9	-26 28.9
Δ	1	-8		3	-12	30	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 9	19 59	0 52	:::	6 51	3.8	20 57	.6
55	4 30	19 38	0 42	2 57	7 2	3.5	20 50	.9
50	4 46	19 22	0 36	2 17	7 11	3.3	20 45	1.1
45	4 59	19 10	0 32	1 56	7 18	3.1	20 41	1.3
40	5 10	18 60	0 29	1 42	7 23	3.0	20 37	1.4
35	5 18	18 51	0 27	1 33	7 28	2.8	20 34	1.5
30	5 26	18 43	0 25	1 26	7 32	2.7	20 31	1.6
20	5 39	18 30	0 23	1 18	7 40	2.5	20 26	1.8
10	5 51	18 19	0 22	1 13	7 46	2.3	20 22	2.0
0	6 1	18 8	0 21	1 11	7 52	2.2	20 18	2.1
10	6 12	17 58	0 22	1 12	7 59	2.0	20 13	2.3
20	6 23	17 47	0 23	1 15	8 5	1.9	20 9	2.5
30	6 36	17 34	0 25	1 21	8 12	1.7	20 4	2.7
35	6 43	17 27	0 26	1 26	8 17	1.6	20 1	2.8
40	6 51	17 19	0 28	1 32	8 21	1.4	19 57	2.9
45	7 1	17 10	0 31	1 39	8 27	1.3	19 53	3.1
50	7 12	16 58	0 34	1 50	8 33	1.1	19 48	3.2
55	7 26	16 44	0 39	2 4	8 42	.9	19 42	3.5
60	7 45	16 26	0 45	2 23	8 52	.7	19 34	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	156 22.6	79	9 48.5	-117	98 36.8	-15 26.5	48 7.3	-22 38.3
2	185 16.4	81	9 25.1	-118	128 41.3	-15 26.6	78 12.5	-22 38.3
4	214 10.5	82	9 1.5	-119	158 45.7	-15 26.8	108 17.6	-22 38.3
6	243 4.9	84	8 37.6	-120	188 50.2	-15 26.9	138 22.7	-22 38.4
8	271 59.7	85	8 13.7	-121	218 54.7	-15 27.1	168 27.9	-22 38.4
10	300 54.7	86	7 49.5	-121	248 59.1	-15 27.2	198 33.0	-22 38.4
12	329 50.0	88	7 25.3	-122	279 3.6	-15 27.4	228 38.1	-22 38.4
14	358 45.5	89	7 .9	-123	309 8.1	-15 27.6	258 43.2	-22 38.4
16	27 41.4	91	6 36.4	-123	339 12.5	-15 27.7	288 48.4	-22 38.4
18	56 37.5	92	6 11.8	-123	9 17.0	-15 27.9	318 53.5	-22 38.5
20	85 33.9	93	5 47.1	-124	39 21.4	-15 28.0	348 58.6	-22 38.5
22	114 30.6	95	5 22.3	-124	69 25.9	-15 28.2	19 3.7	-22 38.5
Δ					22	-1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 4 57.5	.4	15.8	T _m	14 5	2.2	60.4 16.5		
12	- 4 52.2	T _{m☉}	12 h 4.9 min	Starost	1.6 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	14 55	.1	175	-4.7	♃	17 23	.0	137	-1.6
	22 45	.1	56	-2.6	♄	20 44	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 48.3	14 26.3	322 21.9	136 21.7	- 3 51.4	18 50.8	-26 28.9
2	208 48.5	14 24.8	352 26.9	166 22.3	- 3 53.8	48 56.7	-26 29.0
4	238 48.8	14 23.2	22 31.8	196 22.9	- 3 56.2	79 2.6	-26 29.1
6	268 49.0	14 21.7	52 36.7	226 23.5	- 3 58.6	109 8.5	-26 29.1
8	298 49.2	14 20.2	82 41.7	256 24.1	- 4 1.1	139 14.4	-26 29.2
10	328 49.5	14 18.6	112 46.6	286 24.7	- 4 3.5	169 20.3	-26 29.2
12	358 49.7	14 17.1	142 51.5	316 25.4	- 4 5.9	199 26.2	-26 29.3
14	28 49.9	14 15.5	172 56.4	346 26.0	- 4 8.3	229 32.1	-26 29.3
16	58 50.2	14 14.0	203 1.4	16 26.6	- 4 10.7	259 38.0	-26 29.4
18	88 50.4	14 12.4	233 6.3	46 27.2	- 4 13.1	289 43.8	-26 29.4
20	118 50.6	14 10.9	263 11.2	76 27.9	- 4 15.5	319 49.7	-26 29.5
22	148 50.9	14 9.3	293 16.2	106 28.5	- 4 18.0	349 55.6	-26 29.5
Δ	1	-8		3	-12	29	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 12	19 56	0 51	:::	8 23	2.5	21 12	3.3
55	4 32	19 36	0 42	2 54	8 27	2.4	21 12	3.0
50	4 48	19 20	0 36	2 15	8 30	2.3	21 11	2.9
45	5 0	19 8	0 32	1 55	8 32	2.3	21 11	2.7
40	5 10	18 58	0 29	1 42	8 34	2.3	21 11	2.6
35	5 19	18 50	0 27	1 33	8 36	2.2	21 10	2.5
30	5 27	18 42	0 25	1 26	8 38	2.2	21 10	2.4
20	5 40	18 29	0 23	1 17	8 40	2.2	21 10	2.3
10	5 51	18 18	0 22	1 13	8 43	2.1	21 9	2.2
0	6 1	18 8	0 21	1 11	8 45	2.1	21 9	2.1
10	6 12	17 58	0 22	1 12	8 47	2.1	21 9	1.9
20	6 22	17 47	0 23	1 15	8 50	2.0	21 8	1.8
30	6 35	17 35	0 25	1 21	8 53	2.0	21 8	1.7
35	6 42	17 28	0 26	1 26	8 54	2.0	21 7	1.6
40	6 50	17 20	0 28	1 32	8 56	1.9	21 7	1.5
45	6 59	17 11	0 31	1 39	8 58	1.9	21 6	1.4
50	7 10	16 60	0 34	1 50	9 1	1.9	21 6	1.3
55	7 24	16 46	0 38	2 3	9 4	1.8	21 5	1.1
60	7 42	16 28	0 45	2 23	9 8	1.8	21 4	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	143 27.5	96	4 57.5	-124	99 30.3	-15 28.3	49 8.9	-22 38.5
2	172 24.7	97	4 32.6	-125	129 34.8	-15 28.5	79 14.0	-22 38.5
4	201 22.2	98	4 7.6	-125	159 39.3	-15 28.7	109 19.1	-22 38.5
6	230 19.8	100	3 42.7	-125	189 43.7	-15 28.8	139 24.2	-22 38.5
8	259 17.8	101	3 17.7	-125	219 48.2	-15 29.0	169 29.4	-22 38.6
10	288 15.9	102	2 52.7	-125	249 52.6	-15 29.1	199 34.5	-22 38.6
12	317 14.3	103	2 27.7	-125	279 57.1	-15 29.3	229 39.6	-22 38.6
14	346 12.9	104	2 2.7	-125	310 1.5	-15 29.5	259 44.7	-22 38.6
16	15 11.7	105	1 37.8	-125	340 6.0	-15 29.6	289 49.8	-22 38.6
18	44 10.7	106	1 12.8	-124	10 10.4	-15 29.8	319 55.0	-22 38.6
20	73 9.9	107	0 48.0	-124	40 14.9	-15 29.9	350 .1	-22 38.7
22	102 9.3	108	0 23.1	-107	70 19.3	-15 30.1	20 5.2	-22 38.7
Δ					22	-1	26	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 4 46.8	.5	15.8	T _m	14 57	2.1	59.7 16.3		
12	- 4 41.1	T _{m☉}	12 h 4.7 min	Starost	2.6 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	14 54	.1	174	-4.7	♃	17 19	.0	137	-1.6
	22 40	.1	56	-2.6	♄	20 40	.0	87	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	51.1	14	7.8	323	21.1	136	29.1	-4	20.4	20	1.4	-26	29.5	
2	208	51.4	14	6.2	353	26.0	166	29.8	-4	22.8	50	7.3	-26	29.6	
4	238	51.6	14	4.6	23	30.9	196	30.4	-4	25.2	80	13.1	-26	29.6	
6	268	51.9	14	3.1	53	35.9	226	31.0	-4	27.6	110	19.0	-26	29.6	
8	298	52.1	14	1.5	83	40.8	256	31.7	-4	30.0	140	24.8	-26	29.7	
10	328	52.3	14	.0	113	45.7	286	32.3	-4	32.4	170	30.6	-26	29.7	
12	358	52.6	13	58.4	143	50.7	316	33.0	-4	34.8	200	36.4	-26	29.7	
14	28	52.8	13	56.8	173	55.6	346	33.6	-4	37.2	230	42.3	-26	29.7	
16	58	53.1	13	55.3	204	.5	16	34.3	-4	39.6	260	48.1	-26	29.8	
18	88	53.3	13	53.7	234	5.4	46	34.9	-4	42.0	290	53.9	-26	29.8	
20	118	53.6	13	52.1	264	10.4	76	35.6	-4	44.4	320	59.7	-26	29.8	
22	148	53.8	13	50.6	294	15.3	106	36.3	-4	46.8	351	5.5	-26	29.8	
Δ		1		-8				3		-12			29		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 14	19 53	0 51	:::	9 22	.6	22 30	3.5
55	4 34	19 33	0 42	2 51	9 24	.8	22 25	3.2
50	4 49	19 19	0 36	2 14	9 26	1.0	22 20	3.0
45	5 1	19 7	0 32	1 54	9 27	1.2	22 17	2.8
40	5 11	18 57	0 29	1 42	9 29	1.3	22 14	2.7
35	5 20	18 49	0 27	1 32	9 30	1.4	22 11	2.6
30	5 27	18 41	0 25	1 26	9 31	1.5	22 9	2.5
20	5 40	18 29	0 23	1 17	9 32	1.7	22 5	2.3
10	5 51	18 18	0 22	1 13	9 34	1.9	22 2	2.1
0	6 1	18 8	0 21	1 11	9 35	2.0	21 58	2.0
10	6 11	17 58	0 22	1 11	9 37	2.2	21 55	1.9
20	6 22	17 47	0 23	1 15	9 38	2.3	21 52	1.7
30	6 34	17 36	0 25	1 21	9 40	2.5	21 48	1.5
35	6 41	17 29	0 26	1 25	9 41	2.6	21 45	1.4
40	6 48	17 21	0 28	1 31	9 42	2.7	21 43	1.3
45	6 57	17 12	0 30	1 39	9 44	2.9	21 40	1.2
50	7 8	17 1	0 34	1 49	9 45	3.0	21 36	1.0
55	7 22	16 48	0 38	2 3	9 48	3.2	21 32	.9
60	7 40	16 30	0 45	2 22	9 50	3.5	21 26	.6
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	131	8.9	109	0	1.7	124	100	23.7	-15	30.3	50	10.3	-22	38.7		
2	160	8.7	110	0	26.4	123	130	28.2	-15	30.4	80	15.4	-22	38.7		
4	189	8.7	111	0	51.0	123	160	32.6	-15	30.6	110	20.6	-22	38.7		
6	218	8.8	111	1	15.5	122	190	37.1	-15	30.8	140	25.7	-22	38.7		
8	247	9.1	112	1	40.0	122	220	41.5	-15	30.9	170	30.8	-22	38.8		
10	276	9.5	113	2	4.3	121	250	45.9	-15	31.1	200	35.9	-22	38.8		
12	305	10.1	114	2	28.5	121	280	50.4	-15	31.3	230	41.0	-22	38.8		
14	334	10.9	114	2	52.6	120	310	54.8	-15	31.4	260	46.1	-22	38.8		
16	3	11.8	115	3	16.6	119	340	59.3	-15	31.6	290	51.2	-22	38.8		
18	32	12.8	116	3	40.4	118	11	3.7	-15	31.7	320	56.3	-22	38.8		
20	61	13.9	116	4	4.1	118	41	8.1	-15	31.9	351	1.5	-22	38.8		
22	90	15.2	117	4	27.7	117	71	12.6	-15	32.1	21	6.6	-22	38.9		
Δ								22		-1			26		0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	- 4 35.5	.5	15.8	T _m	15 47	2.0	58.8	16.0	
12	- 4 29.6	T _{m☉}	12 h 4.5 min	Starost	3.6 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 54	.1	173	-4.8	♄	17 16	.0	137	-1.6
	22 36	.1	57	-2.6	♅	20 36	.0	87	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	54.1	13	49.0	324	20.2	136	36.9	-4	49.2	21	11.3	-26	29.8	
2	208	54.3	13	47.4	354	25.2	166	37.6	-4	51.6	51	17.1	-26	29.8	
4	238	54.6	13	45.8	24	30.1	196	38.3	-4	54.0	81	22.9	-26	29.9	
6	268	54.8	13	44.3	54	35.0	226	38.9	-4	56.4	111	28.6	-26	29.9	
8	298	55.1	13	42.7	84	39.9	256	39.6	-4	58.8	141	34.4	-26	29.9	
10	328	55.4	13	41.1	114	44.9	286	40.3	-5	1.2	171	40.2	-26	29.9	
12	358	55.6	13	39.5	144	49.8	316	40.9	-5	3.6	201	45.9	-26	29.9	
14	28	55.9	13	37.9	174	54.7	346	41.6	-5	6.0	231	51.7	-26	29.9	
16	58	56.1	13	36.3	204	59.6	16	42.3	-5	8.4	261	57.4	-26	29.9	
18	88	56.4	13	34.8	235	4.6	46	43.0	-5	10.8	292	3.2	-26	29.9	
20	118	56.7	13	33.2	265	9.5	76	43.7	-5	13.2	322	8.9	-26	29.8	
22	148	56.9	13	31.6	295	14.4	106	44.4	-5	15.5	352	14.7	-26	29.8	
Δ		1		-8				3		-12			29		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 16	19 51	0 51	:::	9 36	.6	23 53	3.3
55	4 36	19 31	0 41	2 48	9 44	.9	23 41	3.1
50	4 51	19 17	0 36	2 13	9 51	1.1	23 32	2.9
45	5 3	19 5	0 32	1 54	9 56	1.2	23 25	2.7
40	5 12	18 56	0 29	1 41	10 0	1.3	23 18	2.6
35	5 21	18 47	0 27	1 32	10 4	1.5	23 13	2.5
30	5 28	18 40	0 25	1 26	10 7	1.5	23 8	2.4
20	5 40	18 28	0 23	1 17	10 13	1.7	23 0	2.2
10	5 51	18 17	0 22	1 12	10 19	1.9	22 53	2.1
0	6 1	18 8	0 21	1 11	10 24	2.0	22 46	2.0
10	6 11	17 58	0 22	1 11	10 29	2.1	22 40	1.9
20	6 21	17 48	0 23	1 15	10 34	2.3	22 33	1.7
30	6 33	17 36	0 25	1 21	10 40	2.4	22 25	1.6
35	6 39	17 30	0 26	1 25	10 44	2.5	22 20	1.5
40	6 47	17 22	0 28	1 31	10 48	2.6	22 15	1.4
45	6 56	17 13	0 30	1 39	10 53	2.8	22 9	1.3
50	7 6	17 3	0 34	1 49	10 58	2.9	22 1	1.1
55	7 20	16 50	0 38	2 3	11 6	3.1	21 52	.9
60	7 37	16 33	0 45	2 22	11 15	3.4	21 41	.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	119	16.6	117	4	51.1	116	101	17.0	-15	32.2	51	11.7	-22	38.9		
2	148	18.1	118	5	14.3	115	131	21.4	-15	32.4	81	16.8	-22	38.9		
4	177	19.7	118	5	37.4	114	161	25.8	-15	32.6	111	21.9	-22	38.9		
6	206	21.4	119	6	.2	113	191	30.3	-15	32.7	141	27.0	-22	38.9		
8	235	23.1	119	6	22.9	112	221	34.7	-15	32.9	171	32.1	-22	38.9		
10	264	25.0	120	6	45.4	111	251	39.1	-15	33.1	201	37.2	-22	39.0		
12	293	26.9	120	7	7.7	110	281	43.6	-15	33.2	231	42.3	-22	39.0		
14	322	28.9	120	7	29.8	109	311	48.0	-15	33.4	261	47.4	-22	39.0		
16	351	31.0	121	7	51.7	108	341	52.4	-15	33.6	291	52.5	-22	39.0		
18	20	33.2	121	8	13.4	107	11	56.8	-15	33.7	321	57.6	-22	39.0		
20	49	35.4	121	8	34.8	106	42	1.2	-15	33.9	352	2.7	-22	39.0		
22	78	37.6	122	8	56.0	105	72	5.7	-15	34.1	22	7.8	-22	39.0		
Δ								22		-1			26		0	

SUNCE				MESEC			
UT	e = T _p - UT						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 57.2	13 30.0	325 19.4	136 45.0	- 5 17.9	22 20.4	-26 29.8	
2	208 57.4	13 28.4	355 24.3	166 45.7	- 5 20.3	52 26.1	-26 29.8	
4	238 57.7	13 26.8	25 29.2	196 46.4	- 5 22.7	82 31.8	-26 29.8	
6	268 58.0	13 25.2	55 34.1	226 47.1	- 5 25.1	112 37.6	-26 29.8	
8	298 58.2	13 23.6	85 39.1	256 47.8	- 5 27.5	142 43.3	-26 29.8	
10	328 58.5	13 22.0	115 44.0	286 48.5	- 5 29.9	172 49.0	-26 29.7	
12	358 58.8	13 20.4	145 48.9	316 49.2	- 5 32.2	202 54.7	-26 29.7	
14	28 59.0	13 18.8	175 53.9	346 50.0	- 5 34.6	233 .4	-26 29.7	
16	58 59.3	13 17.2	205 58.8	16 50.7	- 5 37.0	263 6.1	-26 29.7	
18	88 59.6	13 15.6	236 3.7	46 51.4	- 5 39.4	293 11.7	-26 29.6	
20	118 59.9	13 14.0	266 8.6	76 52.1	- 5 41.8	323 17.4	-26 29.6	
22	149 .1	13 12.4	296 13.6	106 52.8	- 5 44.1	353 23.1	-26 29.6	
Δ	1	-8		4	-12	28	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 19	19 48	0 50	:::	9 51	.7	...	.0
55	4 38	19 29	0 41	2 46	10 5	1.0	...	.0
50	4 52	19 15	0 36	2 12	10 16	1.2	...	.0
45	5 4	19 3	0 32	1 53	10 25	1.3	...	.0
40	5 13	18 54	0 29	1 41	10 32	1.4	...	.0
35	5 21	18 46	0 27	1 32	10 39	1.5	...	.0
30	5 28	18 39	0 25	1 25	10 45	1.6	...	.0
20	5 41	18 27	0 23	1 17	10 54	1.7	23 54	2.2
10	5 51	18 17	0 22	1 12	11 3	1.9	23 44	2.1
0	6 1	18 7	0 21	1 11	11 11	2.0	23 34	2.0
10	6 10	17 58	0 22	1 11	11 20	2.1	23 24	1.9
20	6 20	17 48	0 23	1 14	11 28	2.2	23 14	1.8
30	6 32	17 37	0 25	1 21	11 39	2.4	23 2	1.6
35	6 38	17 30	0 26	1 25	11 45	2.5	22 55	1.6
40	6 46	17 23	0 28	1 31	11 51	2.5	22 48	1.5
45	6 54	17 14	0 30	1 39	11 59	2.7	22 39	1.4
50	7 5	17 4	0 34	1 49	12 9	2.8	22 28	1.2
55	7 17	16 52	0 38	2 3	12 21	3.0	22 15	1.1
60	7 34	16 35	0 44	2 22	12 36	3.3	21 57	.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	107 39.9	122 9	17.0	104	102 10.1	-15 34.2	52 12.9	-22 39.1
2	136 42.3	122 9	37.8	103	132 14.5	-15 34.4	82 18.0	-22 39.1
4	165 44.7	122 9	58.3	101	162 18.9	-15 34.6	112 23.1	-22 39.1
6	194 47.1	122 10	18.6	100	192 23.3	-15 34.8	142 28.2	-22 39.1
8	223 49.5	122 10	38.6	99	222 27.7	-15 34.9	172 33.3	-22 39.1
10	252 52.0	122 10	58.3	97	252 32.2	-15 35.1	202 38.4	-22 39.1
12	281 54.5	123 11	17.8	96	282 36.6	-15 35.3	232 43.5	-22 39.2
14	310 57.0	123 11	37.0	95	312 41.0	-15 35.4	262 48.6	-22 39.2
16	339 59.5	123 11	56.0	93	342 45.4	-15 35.6	292 53.7	-22 39.2
18	9 2.0	123 12	14.7	92	12 49.8	-15 35.8	322 58.8	-22 39.2
20	38 4.6	123 12	33.1	91	42 54.2	-15 35.9	353 3.9	-22 39.2
22	67 7.1	123 12	51.2	89	72 58.6	-15 36.1	23 9.0	-22 39.2
Δ					22	-1	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	- 4 11.3	.5	15.8	T _m	17 23	2.0	56.9 15.5
12	- 4 4.8	T _{m☉}	12 h 4.1 min	Starost	5.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 53	.1	171	-4.8	♄	17 9	.0	137	-1.6
♂	22 26	.1	57	-2.5	♂	20 28	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 .4	13 10.8	326 18.5	136 53.5	- 5 46.5	23 28.7	-26 29.5	
2	209 .7	13 9.2	356 23.4	166 54.2	- 5 48.9	53 34.4	-26 29.5	
4	239 1.0	13 7.6	26 28.4	196 55.0	- 5 51.3	83 40.1	-26 29.4	
6	269 1.2	13 5.9	56 33.3	226 55.7	- 5 53.6	113 45.7	-26 29.4	
8	299 1.5	13 4.3	86 38.2	256 56.4	- 5 56.0	143 51.4	-26 29.4	
10	329 1.8	13 2.7	116 43.1	286 57.2	- 5 58.4	173 57.0	-26 29.3	
12	359 2.1	13 1.1	146 48.1	316 57.9	- 6 .8	204 2.6	-26 29.3	
14	29 2.4	12 59.5	176 53.0	346 58.6	- 6 3.1	234 8.3	-26 29.2	
16	59 2.6	12 57.9	206 57.9	16 59.4	- 6 5.5	264 13.9	-26 29.2	
18	89 2.9	12 56.2	237 2.9	47 .1	- 6 7.9	294 19.5	-26 29.1	
20	119 3.2	12 54.6	267 7.8	77 .9	- 6 10.2	324 25.1	-26 29.1	
22	149 3.5	12 53.0	297 12.7	107 1.6	- 6 12.6	354 30.7	-26 29.0	
Δ	1	-8		4	-12	28	0	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 21	19 45	0 50	:::	10 9	.9	1 14	3.2
55	4 40	19 27	0 41	2 43	10 29	1.1	0 55	2.9
50	4 54	19 13	0 35	2 11	10 44	1.3	0 41	2.7
45	5 5	19 2	0 32	1 52	10 56	1.4	0 30	2.6
40	5 14	18 53	0 29	1 40	11 6	1.5	0 21	2.5
35	5 22	18 45	0 27	1 32	11 15	1.6	0 13	2.4
30	5 29	18 38	0 25	1 25	11 23	1.7	0 6	2.3
20	5 41	18 27	0 23	1 17	11 36	1.8	...	.0
10	5 51	18 17	0 22	1 12	11 48	1.9	...	.0
0	6 0	18 7	0 21	1 11	11 59	2.0	...	.0
10	6 10	17 58	0 21	1 11	12 10	2.1	...	.0
20	6 20	17 48	0 23	1 14	12 22	2.2	23 56	1.8
30	6 31	17 37	0 25	1 21	12 35	2.3	23 41	1.7
35	6 37	17 31	0 26	1 25	12 43	2.4	23 33	1.7
40	6 44	17 24	0 28	1 31	12 52	2.4	23 23	1.6
45	6 53	17 16	0 30	1 39	13 3	2.5	23 11	1.5
50	7 3	17 6	0 34	1 49	13 16	2.7	22 58	1.4
55	7 15	16 53	0 38	2 2	13 32	2.8	22 40	1.3
60	7 31	16 37	0 44	2 21	13 54	3.1	22 17	1.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	96 9.6	123 13	9.0	88	103 3.0	-15 36.3	53 14.1	-22 39.2
2	125 12.2	123 13	26.6	86	133 7.4	-15 36.5	83 19.2	-22 39.3
4	154 14.7	123 13	43.8	85	163 11.8	-15 36.6	113 24.3	-22 39.3
6	183 17.2	122 14	.8	83	193 16.2	-15 36.8	143 29.4	-22 39.3
8	212 19.7	122 14	17.4	82	223 20.6	-15 37.0	173 34.5	-22 39.3
10	241 22.1	122 14	33.7	80	253 25.0	-15 37.2	203 39.6	-22 39.3
12	270 24.6	122 14	49.8	79	283 29.4	-15 37.3	233 44.6	-22 39.3
14	299 27.0	122 15	5.5	77	313 33.8	-15 37.5	263 49.7	-22 39.4
16	328 29.4	122 15	20.9	75	343 38.2	-15 37.7	293 54.8	-22 39.4
18	357 31.8	122 15	35.9	74	13 42.6	-15 37.8	323 59.9	-22 39.4
20	26 34.2	122 15	50.7	72	43 47.0	-15 38.0	354 5.0	-22 39.4
22	55 36.5	121 16	5.1	70	73 51.4	-15 38.2	24 10.1	-22 39.4
Δ					22	-1	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	- 3 58.4	.6	15.8	T _m	18 10	2.0	56.1 15.3
12	- 3 51.6	T _{m☉}	12 h 3.9 min	Starost	6.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 52	.1	171	-4.8	♄	17 5	.0	137	-1.6
♂	22 22	.1	57	-2.5	♂	20 24	.0	87	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	3.8	12	51.4	327	17.6	137	2.4	-6	15.0	24	36.3	-26	28.9
2	209	4.1	12	49.7	357	22.6	167	3.1	-6	17.3	54	41.9	-26	28.9
4	239	4.3	12	48.1	27	27.5	197	3.9	-6	19.7	84	47.5	-26	28.8
6	269	4.6	12	46.5	57	32.4	227	4.6	-6	22.0	114	53.1	-26	28.7
8	299	4.9	12	44.8	87	37.4	257	5.4	-6	24.4	144	58.7	-26	28.7
10	329	5.2	12	43.2	117	42.3	287	6.1	-6	26.8	175	4.2	-26	28.6
12	359	5.5	12	41.6	147	47.2	317	6.9	-6	29.1	205	9.8	-26	28.5
14	29	5.8	12	39.9	177	52.1	347	7.7	-6	31.5	235	15.3	-26	28.5
16	59	6.1	12	38.3	207	57.1	17	8.5	-6	33.8	265	20.9	-26	28.4
18	89	6.4	12	36.7	238	2.0	47	9.2	-6	36.2	295	26.5	-26	28.3
20	119	6.7	12	35.0	268	6.9	77	10.0	-6	38.5	325	32.0	-26	28.2
22	149	7.0	12	33.4	298	11.8	107	10.8	-6	40.9	355	37.5	-26	28.1
Δ		1		-8				4		-12		28		0

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	84	38.8	121	16	19.2	69	103	55.8	-15	38.4	54	15.2	-22	39.4
2	113	41.0	121	16	32.9	67	134	.2	-15	38.5	84	20.3	-22	39.4
4	142	43.3	121	16	46.4	65	164	4.6	-15	38.7	114	25.3	-22	39.5
6	171	45.5	121	16	59.4	64	194	9.0	-15	38.9	144	30.4	-22	39.5
8	200	47.6	121	17	12.2	62	224	13.4	-15	39.1	174	35.5	-22	39.5
10	229	49.7	120	17	24.6	60	254	17.8	-15	39.2	204	40.6	-22	39.5
12	258	51.8	120	17	36.6	58	284	22.2	-15	39.4	234	45.7	-22	39.5
14	287	53.9	120	17	48.3	57	314	26.6	-15	39.6	264	50.7	-22	39.5
16	316	55.9	120	17	59.6	55	344	31.0	-15	39.8	294	55.8	-22	39.5
18	345	57.9	120	18	10.6	53	14	35.3	-15	40.0	325	.9	-22	39.6
20	14	59.8	120	18	21.2	51	44	39.7	-15	40.1	355	6.0	-22	39.6
22	44	1.7	119	18	31.5	50	74	44.1	-15	40.3	25	11.1	-22	39.6
Δ								22		-1		25		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 24	19 42	0 49	:	10 31	1.2	2 30	2.9
55	4 42	19 24	0 41	2 41	10 56	1.4	2 5	2.7
50	4 55	19 11	0 35	2 10	11 15	1.5	1 47	2.6
45	5 6	19 0	0 31	1 52	11 30	1.6	1 33	2.5
40	5 15	18 51	0 29	1 40	11 43	1.7	1 21	2.4
35	5 23	18 44	0 27	1 31	11 54	1.7	1 11	2.3
30	5 30	18 37	0 25	1 25	12 3	1.8	1 2	2.3
20	5 41	18 26	0 23	1 17	12 19	1.9	0 47	2.2
10	5 51	18 16	0 22	1 12	12 33	1.9	0 34	2.1
0	6 0	18 7	0 21	1 10	12 46	2.0	0 22	2.0
10	6 9	17 58	0 21	1 11	12 60	2.1	0 9	1.9
20	6 19	17 49	0 23	1 14	13 14	2.1	...	.0
30	6 30	17 38	0 24	1 20	13 31	2.2	...	.0
35	6 36	17 32	0 26	1 25	13 40	2.3	...	.0
40	6 43	17 25	0 28	1 31	13 51	2.3	...	.0
45	6 51	17 17	0 30	1 39	14 4	2.4	23 48	1.7
50	7 1	17 7	0 33	1 49	14 20	2.5	23 31	1.6
55	7 13	16 55	0 38	2 2	14 40	2.6	23 10	1.5
60	7 29	16 40	0 44	2 21	15 8	2.8	22 42	1.3
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 3 44.9	.6	15.8	T _m	18 58	2.0	55.4	15.1	
12	- 3 37.9	T _{m☉}	12 h 3.6 min	Starost	7.6 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 51	.1	170	-4.9	♃	17 2	.0	137	-1.6
♂	22 17	.1	57	-2.5	♄	20 20	.0	87	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	7.3	12	31.7	328	16.8	137	11.6	-6	43.2	25	43.1	-26	28.1
2	209	7.6	12	30.1	358	21.7	167	12.3	-6	45.6	55	48.6	-26	28.0
4	239	7.8	12	28.5	28	26.6	197	13.1	-6	47.9	85	54.1	-26	27.9
6	269	8.1	12	26.8	58	31.6	227	13.9	-6	50.3	115	59.6	-26	27.8
8	299	8.4	12	25.2	88	36.5	257	14.7	-6	52.6	146	5.1	-26	27.7
10	329	8.7	12	23.5	118	41.4	287	15.5	-6	55.0	176	10.6	-26	27.6
12	359	9.0	12	21.9	148	46.3	317	16.3	-6	57.3	206	16.1	-26	27.5
14	29	9.3	12	20.2	178	51.3	347	17.1	-6	59.7	236	21.6	-26	27.4
16	59	9.6	12	18.6	208	56.2	17	17.9	-7	2.0	266	27.1	-26	27.3
18	89	10.0	12	16.9	239	1.1	47	18.7	-7	4.3	296	32.6	-26	27.2
20	119	10.3	12	15.2	269	6.1	77	19.5	-7	6.7	326	38.1	-26	27.1
22	149	10.6	12	13.6	299	11.0	107	20.3	-7	9.0	356	43.5	-26	27.0
Δ		2		-8				4		-12		27		0

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	73	3.6	119	18	41.4	48	104	48.5	-15	40.5	55	16.1	-22	39.6
2	102	5.4	119	18	50.9	46	134	52.9	-15	40.7	85	21.2	-22	39.6
4	131	7.2	119	19	.1	44	164	57.3	-15	40.8	115	26.3	-22	39.6
6	160	9.0	119	19	8.9	42	195	1.6	-15	41.0	145	31.4	-22	39.6
8	189	10.7	119	19	17.3	40	225	6.0	-15	41.2	175	36.4	-22	39.7
10	218	12.4	118	19	25.4	38	255	10.4	-15	41.4	205	41.5	-22	39.7
12	247	14.1	118	19	33.1	37	285	14.8	-15	41.6	235	46.6	-22	39.7
14	276	15.7	118	19	40.4	35	315	19.1	-15	41.7	265	51.7	-22	39.7
16	305	17.4	118	19	47.3	33	345	23.5	-15	41.9	295	56.7	-22	39.7
18	334	18.9	118	19	53.9	31	15	27.9	-15	42.1	326	1.8	-22	39.7
20	3	20.5	118	20	.0	29	45	32.3	-15	42.3	356	6.9	-22	39.8
22	32	22.1	118	20	5.8	27	75	36.6	-15	42.5	26	11.9	-22	39.8
Δ								22		-1		25		0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 26	19 39	0 49	:	10 59	1.5	3 40	2.6
55	4 44	19 22	0 40	2 39	11 29	1.7	3 11	2.5
50	4 57	19 9	0 35	2 9	11 51	1.7	2 49	2.4
45	5 7	18 59	0 31	1 51	12 9	1.8	2 32	2.3
40	5 16	18 50	0 29	1 39	12 23	1.8	2 18	2.3
35	5 24	18 43	0 26	1 31	12 35	1.9	2 7	2.2
30	5 30	18 36	0 25	1 25	12 46	1.9	1 57	2.2
20	5 41	18 25	0 23	1 16	13 4	1.9	1 39	2.1
10	5 51	18 16	0 22	1 12	13 20	2.0	1 24	2.1
0	6 0	18 7	0 21	1 10	13 35	2.0	1 10	2.0
10	6 9	17 58	0 21	1 11	13 49	2.0	0 55	2.0
20	6 18	17 49	0 22	1 14	14 5	2.1	0 40	1.9
30	6 29	17 38	0 24	1 20	14 24	2.1	0 23	1.8
35	6 35	17 32	0 26	1 25	14 35	2.2	0 13	1.8
40	6 42	17 26	0 28	1 31	14 47	2.2	0 1	1.8
45	6 49	17 18	0 30	1 39	15 2	2.2	...	.0
50	6 59	17 9	0 33	1 49	15 20	2.3	...	.0
55	7 11	16 57	0 38	2 2	15 43	2.3	23 46	1.8
60	7 26	16 42	0 44	2 21	16 15	2.4	23 14	1.7
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	-						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 10.9 12 11.9		329 15.9	137 21.1 - 7 11.4	26 49.0 -26 26.9		
2	209 11.2 12 10.3		359 20.8	167 22.0 - 7 13.7	56 54.4 -26 26.8		
4	239 11.5 12 8.6		29 25.8	197 22.8 - 7 16.0	86 59.9 -26 26.7		
6	269 11.8 12 6.9		59 30.7	227 23.6 - 7 18.4	117 5.3 -26 26.6		
8	299 12.1 12 5.3		89 35.6	257 24.4 - 7 20.7	147 10.8 -26 26.4		
10	329 12.4 12 3.6		119 40.6	287 25.2 - 7 23.0	177 16.2 -26 26.3		
12	359 12.7 12 2.0		149 45.5	317 26.1 - 7 25.3	207 21.6 -26 26.2		
14	29 13.0 12 .3		179 50.4	347 26.9 - 7 27.7	237 27.1 -26 26.1		
16	59 13.3 11 58.6		209 55.3	17 27.7 - 7 30.0	267 32.5 -26 26.0		
18	89 13.7 11 56.9		240 .3	47 28.6 - 7 32.3	297 37.9 -26 25.8		
20	119 14.0 11 55.3		270 5.2	77 29.4 - 7 34.6	327 43.3 -26 25.7		
22	149 14.3 11 53.6		300 10.1	107 30.3 - 7 37.0	357 48.7 -26 25.6		
Δ	2	-8		4	-12	27	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 28	19 36	0 48	4 5	11 36	2.0	4 43	2.2
55	4 45	19 20	0 40	2 37	12 9	2.0	4 10	2.2
50	4 58	19 7	0 35	2 8	12 33	2.0	3 46	2.1
45	5 9	18 57	0 31	1 51	12 52	2.0	3 28	2.1
40	5 17	18 48	0 28	1 39	13 7	2.0	3 13	2.1
35	5 24	18 41	0 26	1 31	13 20	2.0	2 60	2.1
30	5 31	18 35	0 25	1 24	13 31	2.0	2 49	2.1
20	5 42	18 24	0 23	1 16	13 50	2.0	2 30	2.1
10	5 51	18 15	0 22	1 12	14 7	2.0	2 13	2.0
0	5 60	18 6	0 21	1 10	14 23	2.0	1 58	2.0
10	6 8	17 58	0 21	1 11	14 39	2.0	1 42	2.0
20	6 17	17 49	0 22	1 14	14 56	2.0	1 26	2.0
30	6 28	17 39	0 24	1 20	15 15	2.0	1 7	2.0
35	6 34	17 33	0 26	1 25	15 26	2.0	0 56	1.9
40	6 40	17 27	0 28	1 31	15 39	2.0	0 43	1.9
45	6 48	17 19	0 30	1 38	15 55	2.0	0 28	1.9
50	6 57	17 10	0 33	1 48	16 14	2.0	0 10	1.9
55	7 8	16 59	0 38	2 2	16 38	2.0	...	.0
60	7 23	16 44	0 44	2 20	17 13	2.0	23 56	2.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	61 23.6 118 20 11.2 25				105 41.0 -15 42.6	56 17.0 -22 39.8		
2	90 25.1 118 20 16.2 23				135 45.4 -15 42.8	86 22.1 -22 39.8		
4	119 26.6 117 20 20.9 21				165 49.8 -15 43.0	116 27.2 -22 39.8		
6	148 28.1 117 20 25.1 19				195 54.1 -15 43.2	146 32.2 -22 39.8		
8	177 29.6 117 20 29.0 17				225 58.5 -15 43.4	176 37.3 -22 39.8		
10	206 31.1 117 20 32.5 15				256 2.9 -15 43.5	206 42.4 -22 39.9		
12	235 32.5 117 20 35.6 14				286 7.2 -15 43.7	236 47.4 -22 39.9		
14	264 34.0 117 20 38.3 12				316 11.6 -15 43.9	266 52.5 -22 39.9		
16	293 35.5 117 20 40.6 10				346 15.9 -15 44.1	296 57.5 -22 39.9		
18	322 36.9 117 20 42.5 8				16 20.3 -15 44.3	327 2.6 -22 39.9		
20	351 38.4 117 20 44.1 6				46 24.7 -15 44.5	357 7.7 -22 39.9		
22	20 39.9 118 20 45.2 4				76 29.0 -15 44.6	27 12.7 -22 39.9		
Δ					22	-1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 3 16.5	.6	15.8	T _m	20 35	2.0	54.4 14.8		
12	- 3 9.1	T _{m☉}	12 h 3,2 min	Starost	9.6 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 50	.1	168	-4.9	♃	16 55	.0	136	-1.6
♂	22 9	.1	58	-2.5	♄	20 11	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 14.6 11 51.9		330 15.1	137 31.1 - 7 39.3	27 54.1 -26 25.5		
2	209 14.9 11 50.2		0 20.0	167 31.9 - 7 41.6	57 59.5 -26 25.3		
4	239 15.2 11 48.6		30 24.9	197 32.8 - 7 43.9	88 4.9 -26 25.2		
6	269 15.5 11 46.9		60 29.8	227 33.7 - 7 46.2	118 10.2 -26 25.1		
8	299 15.9 11 45.2		90 34.8	257 34.5 - 7 48.6	148 15.6 -26 24.9		
10	329 16.2 11 43.5		120 39.7	287 35.4 - 7 50.9	178 21.0 -26 24.8		
12	359 16.5 11 41.9		150 44.6	317 36.2 - 7 53.2	208 26.3 -26 24.6		
14	29 16.8 11 40.2		180 49.6	347 37.1 - 7 55.5	238 31.7 -26 24.5		
16	59 17.1 11 38.5		210 54.5	17 38.0 - 7 57.8	268 37.0 -26 24.3		
18	89 17.5 11 36.8		240 59.4	47 38.8 - 8 .1	298 42.3 -26 24.2		
20	119 17.8 11 35.1		271 4.3	77 39.7 - 8 2.4	328 47.7 -26 24.0		
22	149 18.1 11 33.4		301 9.3	107 40.6 - 8 4.7	358 53.0 -26 23.9		
Δ	2	-8		4	-12	27	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 31	19 33	0 48	3 49	12 23	2.4	5 35	1.7
55	4 47	19 17	0 40	2 35	12 57	2.3	5 1	1.8
50	4 60	19 5	0 35	2 7	13 21	2.2	4 37	1.9
45	5 10	18 55	0 31	1 50	13 40	2.2	4 18	1.9
40	5 18	18 47	0 28	1 39	13 55	2.2	4 3	1.9
35	5 25	18 40	0 26	1 30	14 8	2.1	3 50	1.9
30	5 31	18 34	0 25	1 24	14 19	2.1	3 38	1.9
20	5 42	18 24	0 23	1 16	14 39	2.1	3 19	2.0
10	5 51	18 15	0 21	1 12	14 55	2.0	3 2	2.0
0	5 60	18 6	0 21	1 10	15 11	2.0	2 46	2.0
10	6 8	17 58	0 21	1 11	15 27	2.0	2 30	2.0
20	6 17	17 49	0 22	1 14	15 44	1.9	2 13	2.0
30	6 27	17 40	0 24	1 20	16 3	1.9	1 54	2.1
35	6 32	17 34	0 26	1 25	16 14	1.9	1 42	2.1
40	6 39	17 28	0 28	1 31	16 27	1.8	1 29	2.1
45	6 46	17 20	0 30	1 38	16 43	1.8	1 14	2.1
50	6 55	17 12	0 33	1 48	17 2	1.7	0 55	2.1
55	7 6	17 1	0 37	2 2	17 26	1.6	0 30	2.1
60	7 20	16 47	0 43	2 20	17 60	1.5	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	49 41.4 118 20 46.0 2				106 33.4 -15 44.8	57 17.8 -22 40.0		
2	78 43.0 118 20 46.3 0				136 37.8 -15 45.0	87 22.9 -22 40.0		
4	107 44.5 118 20 46.3 -2				166 42.1 -15 45.2	117 27.9 -22 40.0		
6	136 46.1 118 20 45.9 -4				196 46.5 -15 45.4	147 33.0 -22 40.0		
8	165 47.7 118 20 45.1 -6				226 50.8 -15 45.6	177 38.0 -22 40.0		
10	194 49.3 118 20 44.0 -8				256 55.2 -15 45.7	207 43.1 -22 40.0		
12	223 51.0 118 20 42.4 -10				286 59.5 -15 45.9	237 48.1 -22 40.0		
14	252 52.7 119 20 40.5 -12				317 3.9 -15 46.1	267 53.2 -22 40.1		
16	281 54.4 119 20 38.1 -14				347 8.2 -15 46.3	297 58.3 -22 40.1		
18	310 56.2 119 20 35.4 -15				17 12.6 -15 46.5	328 3.3 -22 40.1		
20	339 58.0 119 20 32.3 -17				47 16.9 -15 46.7	358 8.4 -22 40.1		
22	8 59.9 120 20 28.8 -19				77 21.3 -15 46.9	28 13.4 -22 40.1		
Δ					22	-1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	- 3 1.6	.6	15.8	T _m	21 23	2.0	54.2 14.8		
12	- 2 53.9	T _{m☉}	12 h 2.9 min	Starost	10.6 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 50	.1	167	-4.9	♃	16 51	.0	136	-1.6
♂	22 4	.1	58	-2.5	♄	20 7	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 18.4	11 31.7	331 14.2	137 41.5 - 8	7.0	28 58.3 -26	23.7
2	209 18.8	11 30.0	1 19.1	167 42.3 - 8	9.3	59 3.6 -26	23.6
4	239 19.1	11 28.3	31 24.1	197 43.2 - 8	11.6	89 9.0 -26	23.4
6	269 19.4	11 26.7	61 29.0	227 44.1 - 8	13.9	119 14.3 -26	23.3
8	299 19.8	11 25.0	91 33.9	257 45.0 - 8	16.2	149 19.6 -26	23.1
10	329 20.1	11 23.3	121 38.8	287 45.9 - 8	18.5	179 24.9 -26	23.0
12	359 20.4	11 21.6	151 43.8	317 46.8 - 8	20.8	209 30.1 -26	22.8
14	29 20.7	11 19.9	181 48.7	347 47.7 - 8	23.1	239 35.4 -26	22.6
16	59 21.1	11 18.2	211 53.6	17 48.6 - 8	25.4	269 40.7 -26	22.5
18	89 21.4	11 16.5	241 58.5	47 49.5 - 8	27.7	299 46.0 -26	22.3
20	119 21.7	11 14.8	272 3.5	77 50.4 - 8	30.0	329 51.2 -26	22.1
22	149 22.1	11 13.1	302 8.4	107 51.3 - 8	32.3	359 56.5 -26	21.9
Δ	2	-8		4	-11	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 33	19 30	0 48	3 39	13 20	2.7	6 17	1.3
55	4 49	19 15	0 40	2 33	13 52	2.5	5 45	1.5
50	5 1	19 3	0 35	2 6	14 14	2.4	5 22	1.6
45	5 11	18 53	0 31	1 50	14 32	2.3	5 4	1.7
40	5 19	18 46	0 28	1 38	14 47	2.3	4 49	1.7
35	5 26	18 39	0 26	1 30	14 59	2.2	4 36	1.8
30	5 32	18 33	0 25	1 24	15 10	2.2	4 25	1.8
20	5 42	18 23	0 23	1 16	15 28	2.1	4 6	1.9
10	5 51	18 14	0 21	1 12	15 44	2.0	3 50	1.9
0	5 59	18 6	0 21	1 10	15 59	2.0	3 34	2.0
10	6 7	17 58	0 21	1 11	16 14	1.9	3 19	2.0
20	6 16	17 50	0 22	1 14	16 30	1.8	3 2	2.1
30	6 26	17 40	0 24	1 20	16 48	1.7	2 43	2.1
35	6 31	17 35	0 26	1 25	16 59	1.7	2 32	2.2
40	6 37	17 29	0 28	1 31	17 11	1.6	2 19	2.2
45	6 44	17 21	0 30	1 38	17 25	1.6	2 4	2.3
50	6 53	17 13	0 33	1 48	17 43	1.5	1 46	2.3
55	7 4	17 2	0 37	2 2	18 5	1.3	1 22	2.4
60	7 17	16 49	0 43	2 20	18 36	1.2	0 48	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	38 1.8	120 20	25.0 -21	107 25.6 -15	47.0	58 18.5 -22	40.1	
2	67 3.8	120 20	20.7 -23	137 30.0 -15	47.2	88 23.5 -22	40.1	
4	96 5.8	121 20	16.1 -25	167 34.3 -15	47.4	118 28.6 -22	40.2	
6	125 8.0	121 20	11.2 -27	197 38.7 -15	47.6	148 33.6 -22	40.2	
8	154 10.1	121 20	5.8 -29	227 43.0 -15	47.8	178 38.7 -22	40.2	
10	183 12.4	122 20	.1 -30	257 47.4 -15	48.0	208 43.7 -22	40.2	
12	212 14.7	122 19	54.0 -32	287 51.7 -15	48.2	238 48.8 -22	40.2	
14	241 17.0	122 19	47.5 -34	317 56.0 -15	48.4	268 53.8 -22	40.2	
16	270 19.5	123 19	40.7 -36	348 .4 -15	48.5	298 58.9 -22	40.2	
18	299 22.0	123 19	33.5 -38	18 4.7 -15	48.7	329 3.9 -22	40.3	
20	328 24.6	123 19	26.0 -40	48 9.1 -15	48.9	359 9.0 -22	40.3	
22	357 27.3	124 19	18.1 -41	78 13.4 -15	49.1	29 14.0 -22	40.3	
Δ				22	-1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min / ' / "	° / ' / "	h min		
00	- 2 46.2	.7	15.8	T _m	22 11	1.9	54.0 14.7		
12	- 2 38.3	T _{m☉}	12 h 2.6 min	Starost	11.6 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	14 49 .1	166	-5.0	♃	16 48 .0	136	-1.6		
	22 0 .1	58	-2.5	♄	20 3 .0	87	.5		

24. AVGUST

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 22.4	11 11.4	332 13.3	137 52.2 - 8	34.6	30 1.7 -26	21.8
2	209 22.7	11 9.7	2 18.3	167 53.1 - 8	36.9	60 7.0 -26	21.6
4	239 23.1	11 7.9	32 23.2	197 54.1 - 8	39.1	90 12.2 -26	21.4
6	269 23.4	11 6.2	62 28.1	227 55.0 - 8	41.4	120 17.4 -26	21.2
8	299 23.7	11 4.5	92 33.0	257 55.9 - 8	43.7	150 22.7 -26	21.1
10	329 24.1	11 2.8	122 38.0	287 56.8 - 8	46.0	180 27.9 -26	20.9
12	359 24.4	11 1.1	152 42.9	317 57.8 - 8	48.3	210 33.1 -26	20.7
14	29 24.8	10 59.4	182 47.8	347 58.7 - 8	50.5	240 38.3 -26	20.5
16	59 25.1	10 57.7	212 52.8	17 59.6 - 8	52.8	270 43.5 -26	20.3
18	89 25.4	10 56.0	242 57.7	48 .6 - 8	55.1	300 48.7 -26	20.1
20	119 25.8	10 54.2	273 2.6	78 1.5 - 8	57.4	330 53.9 -26	19.9
22	149 26.1	10 52.5	303 7.5	108 2.5 - 8	59.6	0 59.1 -26	19.7
Δ	2	-9		5	-11	26	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 36	19 28	0 47	3 31	14 25	2.9	6 49	1.0
55	4 51	19 12	0 40	2 31	14 53	2.7	6 21	1.2
50	5 3	19 1	0 35	2 5	15 13	2.6	6 0	1.4
45	5 12	18 52	0 31	1 49	15 28	2.5	5 44	1.5
40	5 20	18 44	0 28	1 38	15 41	2.4	5 30	1.6
35	5 27	18 38	0 26	1 30	15 52	2.3	5 19	1.6
30	5 32	18 32	0 25	1 24	16 2	2.2	5 9	1.7
20	5 42	18 22	0 23	1 16	16 18	2.1	4 51	1.8
10	5 51	18 14	0 21	1 12	16 33	2.0	4 36	1.9
0	5 59	18 6	0 21	1 10	16 46	1.9	4 22	1.9
10	6 7	17 58	0 21	1 11	16 59	1.8	4 8	2.0
20	6 15	17 50	0 22	1 14	17 14	1.7	3 52	2.1
30	6 24	17 41	0 24	1 20	17 30	1.6	3 35	2.2
35	6 30	17 35	0 26	1 25	17 40	1.6	3 24	2.3
40	6 36	17 29	0 28	1 31	17 50	1.5	3 13	2.3
45	6 43	17 23	0 30	1 38	18 3	1.4	2 59	2.4
50	6 51	17 14	0 33	1 48	18 18	1.3	2 42	2.5
55	7 1	17 4	0 37	2 1	18 38	1.1	2 20	2.6
60	7 15	16 51	0 43	2 20	19 4	.9	1 50	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	26 30.1	124 19	9.8 -43	108 17.7 -15	49.3	59 19.0 -22	40.3	
2	55 33.0	125 19	1.2 -45	138 22.1 -15	49.5	89 24.1 -22	40.3	
4	84 35.9	125 18	52.2 -47	168 26.4 -15	49.7	119 29.1 -22	40.3	
6	113 39.0	126 18	42.9 -48	198 30.7 -15	49.9	149 34.2 -22	40.4	
8	142 42.1	126 18	33.3 -50	228 35.1 -15	50.1	179 39.2 -22	40.4	
10	171 45.3	127 18	23.3 -52	258 39.4 -15	50.2	209 44.3 -22	40.4	
12	200 48.7	127 18	13.0 -53	288 43.7 -15	50.4	239 49.3 -22	40.4	
14	229 52.1	128 18	2.3 -55	318 48.1 -15	50.6	269 54.3 -22	40.4	
16	258 55.6	128 17	51.3 -57	348 52.4 -15	50.8	299 59.4 -22	40.4	
18	287 59.2	129 17	40.0 -58	18 56.7 -15	51.0	330 4.4 -22	40.4	
20	317 2.9	129 17	28.4 -60	49 1.1 -15	51.2	0 9.5 -22	40.5	
22	346 6.7	130 17	16.4 -61	79 5.4 -15	51.4	30 14.5 -22	40.5	
Δ				22	-1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min / ' / "	° / ' / "	h min		
00	- 2 30.4	.7	15.8	T _m	22 57	1.9	54.1 14.7		
12	- 2 22.2	T _{m☉}	12 h 2.4 min	Starost	12.6 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	14 48 .1	166	-5.0	♃	16 44 .0	136	-1.5		
	21 56 .1	58	-2.4	♄	19 59 .0	87	.5		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 26.5	10 50.8	333 12.5	138 3.4 - 9 1.9	31 4.3 -26 19.5			
2	209 26.8	10 49.1	3 17.4	168 4.4 - 9 4.2	61 9.4 -26 19.3			
4	239 27.2	10 47.4	33 22.3	198 5.3 - 9 6.4	91 14.6 -26 19.1			
6	269 27.5	10 45.6	63 27.3	228 6.3 - 9 8.7	121 19.8 -26 18.9			
8	299 27.9	10 43.9	93 32.2	258 7.3 - 9 11.0	151 24.9 -26 18.7			
10	329 28.2	10 42.2	123 37.1	288 8.2 - 9 13.2	181 30.1 -26 18.5			
12	359 28.5	10 40.5	153 42.0	318 9.2 - 9 15.5	211 35.2 -26 18.3			
14	29 28.9	10 38.7	183 47.0	348 10.2 - 9 17.7	241 40.3 -26 18.1			
16	59 29.2	10 37.0	213 51.9	18 11.1 - 9 20.0	271 45.5 -26 17.9			
18	89 29.6	10 35.3	243 56.8	48 12.1 - 9 22.3	301 50.6 -26 17.7			
20	119 29.9	10 33.6	274 1.8	78 13.1 - 9 24.5	331 55.7 -26 17.5			
22	149 30.3	10 31.8	304 6.7	108 14.1 - 9 26.8	2 .8 -26 17.3			
Δ	2	-9		5	-11	26	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 38	19 25	0 47	3 25	15 36	3.1	7 14	.8
55	4 53	19 10	0 39	2 30	15 58	2.8	6 50	1.0
50	5 4	18 59	0 34	2 4	16 14	2.7	6 33	1.2
45	5 13	18 50	0 31	1 48	16 27	2.5	6 19	1.3
40	5 21	18 43	0 28	1 38	16 38	2.4	6 7	1.4
35	5 27	18 36	0 26	1 30	16 47	2.3	5 58	1.5
30	5 33	18 31	0 25	1 24	16 55	2.2	5 49	1.6
20	5 43	18 21	0 23	1 16	17 9	2.1	5 34	1.7
10	5 51	18 13	0 21	1 11	17 21	2.0	5 21	1.8
0	5 59	18 5	0 21	1 10	17 32	1.9	5 8	1.9
10	6 6	17 58	0 21	1 11	17 43	1.8	4 56	2.0
20	6 14	17 50	0 22	1 14	17 55	1.6	4 43	2.1
30	6 23	17 41	0 24	1 20	18 9	1.5	4 28	2.2
35	6 29	17 36	0 26	1 25	18 17	1.4	4 19	2.3
40	6 34	17 30	0 28	1 30	18 26	1.3	4 8	2.4
45	6 41	17 24	0 30	1 38	18 36	1.2	3 57	2.5
50	6 49	17 16	0 33	1 48	18 49	1.1	3 42	2.6
55	6 59	17 6	0 37	2 1	19 4	.9	3 23	2.8
60	7 12	16 53	0 43	2 20	19 25	.7	2 58	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	15 10.6	130	17 4.2	-63	109 9.7 -15 51.6	60 19.5 -22 40.5		
2	44 14.7	131	16 51.6	-64	139 14.0 -15 51.8	90 24.6 -22 40.5		
4	73 18.8	131	16 38.7	-66	169 18.4 -15 52.0	120 29.6 -22 40.5		
6	102 23.0	132	16 25.5	-67	199 22.7 -15 52.2	150 34.6 -22 40.5		
8	131 27.3	132	16 12.1	-69	229 27.0 -15 52.4	180 39.7 -22 40.5		
10	160 31.7	133	15 58.3	-70	259 31.3 -15 52.5	210 44.7 -22 40.5		
12	189 36.2	133	15 44.2	-72	289 35.6 -15 52.7	240 49.7 -22 40.6		
14	218 40.9	134	15 29.8	-73	319 40.0 -15 52.9	270 54.8 -22 40.6		
16	247 45.6	134	15 15.2	-75	349 44.3 -15 53.1	300 59.8 -22 40.6		
18	276 50.4	135	15 .3	-76	19 48.6 -15 53.3	331 4.8 -22 40.6		
20	305 55.3	135	14 45.1	-77	49 52.9 -15 53.5	1 9.8 -22 40.6		
22	335 .3	136	14 29.6	-79	79 57.2 -15 53.7	31 14.9 -22 40.6		
Δ					22	-1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 2 14.1	.7	15.8	T _m 23 43	1.9	54.2	14.8		
12	- 2 5.8	T _{m☉} 12 h 2.1 min	Starost 13.6 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 47	.1	165	-5.0	♄	16 41	.0	136	-1.5
♂	21 52	.1	58	-2.4	♄	19 55	.0	87	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 30.6	10 30.1	334 11.6	138 15.1 - 9 29.0	32 5.9 -26 17.1			
2	209 31.0	10 28.4	4 16.5	168 16.0 - 9 31.3	62 11.0 -26 16.8			
4	239 31.4	10 26.6	34 21.5	198 17.0 - 9 33.5	92 16.1 -26 16.6			
6	269 31.7	10 24.9	64 26.4	228 18.0 - 9 35.8	122 21.2 -26 16.4			
8	299 32.1	10 23.1	94 31.3	258 19.0 - 9 38.0	152 26.3 -26 16.2			
10	329 32.4	10 21.4	124 36.3	288 20.0 - 9 40.2	182 31.4 -26 15.9			
12	359 32.8	10 19.7	154 41.2	318 21.0 - 9 42.5	212 36.4 -26 15.7			
14	29 33.1	10 17.9	184 46.1	348 22.0 - 9 44.7	242 41.5 -26 15.5			
16	59 33.5	10 16.2	214 51.0	18 23.1 - 9 47.0	272 46.6 -26 15.3			
18	89 33.8	10 14.4	244 56.0	48 24.1 - 9 49.2	302 51.6 -26 15.0			
20	119 34.2	10 12.7	275 .9	78 25.1 - 9 51.4	332 56.7 -26 14.8			
22	149 34.6	10 10.9	305 5.8	108 26.1 - 9 53.7	3 1.7 -26 14.6			
Δ	2	-9		5	-11	25	1	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 40	19 22	0 47	3 19	16 50	3.1	7 33	.6
55	4 55	19 8	0 39	2 28	17 6	2.9	7 15	.9
50	5 6	18 57	0 34	2 4	17 18	2.7	7 1	1.0
45	5 15	18 48	0 31	1 48	17 28	2.6	6 50	1.2
40	5 22	18 41	0 28	1 37	17 36	2.4	6 41	1.3
35	5 28	18 35	0 26	1 29	17 43	2.3	6 33	1.4
30	5 34	18 30	0 25	1 23	17 49	2.3	6 26	1.5
20	5 43	18 20	0 22	1 16	17 59	2.1	6 14	1.6
10	5 51	18 12	0 21	1 11	18 9	2.0	6 4	1.7
0	5 58	18 5	0 21	1 10	18 17	1.8	5 54	1.9
10	6 6	17 58	0 21	1 11	18 26	1.7	5 44	2.0
20	6 14	17 50	0 22	1 14	18 35	1.6	5 33	2.1
30	6 22	17 42	0 24	1 20	18 45	1.4	5 21	2.2
35	6 27	17 37	0 26	1 24	18 51	1.4	5 14	2.3
40	6 33	17 31	0 27	1 30	18 58	1.3	5 6	2.4
45	6 39	17 25	0 30	1 38	19 6	1.1	4 56	2.5
50	6 47	17 17	0 33	1 48	19 15	1.0	4 45	2.7
55	6 57	17 8	0 37	2 1	19 27	.8	4 30	2.9
60	7 9	16 56	0 43	2 20	19 42	.6	4 11	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	4 5.4	136	14 13.9	-80	110 1.5 -15 53.9	61 19.9 -22 40.6		
2	33 10.7	136	13 57.9	-81	140 5.9 -15 54.1	91 24.9 -22 40.7		
4	62 16.0	137	13 41.7	-82	170 10.2 -15 54.3	121 30.0 -22 40.7		
6	91 21.3	137	13 25.2	-84	200 14.5 -15 54.5	151 35.0 -22 40.7		
8	120 26.8	138	13 8.4	-85	230 18.8 -15 54.7	181 40.0 -22 40.7		
10	149 32.4	138	12 51.4	-86	260 23.1 -15 54.9	211 45.0 -22 40.7		
12	178 38.0	139	12 34.2	-87	290 27.4 -15 55.1	241 50.1 -22 40.7		
14	207 43.8	139	12 16.8	-88	320 31.7 -15 55.3	271 55.1 -22 40.7		
16	236 49.6	139	11 59.1	-90	350 36.0 -15 55.5	302 .1 -22 40.8		
18	265 55.5	140	11 41.2	-91	20 40.3 -15 55.7	332 5.1 -22 40.8		
20	295 1.5	140	11 23.1	-92	50 44.6 -15 55.9	2 10.1 -22 40.8		
22	324 7.5	141	11 4.7	-93	80 48.9 -15 56.1	32 15.2 -22 40.8		
Δ					22	-1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	- 1 57.4	.7	15.9	T _m . . .	1.0	54.4	14.8		
12	- 1 48.9	T _{m☉} 12 h 1.8 min	Starost 14.6 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 47	.1	164	-5.0	♄	16 38	.0	136	-1.5
♂	21 48	.1	58	-2.4	♄	19 51	.0	87	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	34.9	10	9.2	335	10.7	138	27.1	-9	55.9	33	6.7	-26	14.3	
2	209	35.3	10	7.5	5	15.7	168	28.2	-9	58.1	63	11.8	-26	14.1	
4	239	35.6	10	5.7	35	20.6	198	29.2	-10	.3	93	16.8	-26	13.8	
6	269	36.0	10	4.0	65	25.5	228	30.2	-10	2.6	123	21.8	-26	13.6	
8	299	36.4	10	2.2	95	30.5	258	31.3	-10	4.8	153	26.8	-26	13.3	
10	329	36.7	10	.5	125	35.4	288	32.3	-10	7.0	183	31.8	-26	13.1	
12	359	37.1	9	58.7	155	40.3	318	33.3	-10	9.2	213	36.8	-26	12.9	
14	29	37.5	9	56.9	185	45.2	348	34.4	-10	11.4	243	41.8	-26	12.6	
16	59	37.8	9	55.2	215	50.2	18	35.4	-10	13.7	273	46.8	-26	12.4	
18	89	38.2	9	53.4	245	55.1	48	36.5	-10	15.9	303	51.8	-26	12.1	
20	119	38.6	9	51.7	276	.0	78	37.6	-10	18.1	333	56.8	-26	11.8	
22	149	38.9	9	49.9	306	5.0	108	38.6	-10	20.3	4	1.7	-26	11.6	
Δ		2		-9				5		-11			25		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 43	19 19	0 46	3 15	18 5	3.2	7 48	.6
55	4 57	19 5	0 39	2 27	18 15	2.9	7 36	.8
50	5 7	18 55	0 34	2 3	18 23	2.7	7 26	1.0
45	5 16	18 46	0 31	1 47	18 29	2.6	7 19	1.1
40	5 23	18 40	0 28	1 37	18 35	2.5	7 12	1.2
35	5 29	18 34	0 26	1 29	18 39	2.4	7 7	1.3
30	5 34	18 28	0 25	1 23	18 43	2.3	7 2	1.4
20	5 43	18 20	0 22	1 15	18 50	2.1	6 53	1.6
10	5 51	18 12	0 21	1 11	18 56	2.0	6 46	1.7
0	5 58	18 5	0 21	1 10	19 1	1.8	6 39	1.8
10	6 5	17 58	0 21	1 11	19 7	1.7	6 31	2.0
20	6 13	17 51	0 22	1 14	19 13	1.6	6 24	2.1
30	6 21	17 42	0 24	1 20	19 20	1.4	6 15	2.3
35	6 26	17 38	0 26	1 24	19 24	1.3	6 10	2.4
40	6 31	17 32	0 27	1 30	19 28	1.2	6 4	2.5
45	6 38	17 26	0 30	1 38	19 33	1.1	5 57	2.6
50	6 45	17 19	0 33	1 48	19 39	.9	5 49	2.7
55	6 54	17 10	0 37	2 1	19 47	.8	5 39	2.9
60	7 6	16 58	0 43	2 19	19 56	.5	5 26	3.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	353	13.7	141	10	46.2	-94	110	53.2	-15	56.3	62	20.2	-22	40.8		
2	22	19.8	141	10	27.4	-95	140	57.6	-15	56.5	92	25.2	-22	40.8		
4	51	26.1	142	10	8.5	-96	171	1.9	-15	56.6	122	30.2	-22	40.8		
6	80	32.4	142	9	49.4	-97	201	6.2	-15	56.8	152	35.2	-22	40.9		
8	109	38.8	142	9	30.0	-97	231	10.5	-15	57.0	182	40.2	-22	40.9		
10	138	45.2	142	9	10.5	-98	261	14.8	-15	57.2	212	45.3	-22	40.9		
12	167	51.7	143	8	50.9	-99	291	19.1	-15	57.4	242	50.3	-22	40.9		
14	196	58.2	143	8	31.0	-100	321	23.3	-15	57.6	272	55.3	-22	40.9		
16	226	4.8	143	8	11.0	-101	351	27.6	-15	57.8	303	.3	-22	40.9		
18	255	11.4	143	7	50.8	-102	21	31.9	-15	58.0	333	5.3	-22	40.9		
20	284	18.1	143	7	30.5	-102	51	36.2	-15	58.2	3	10.3	-22	41.0		
22	313	24.7	144	7	10.0	-103	81	40.5	-15	58.4	33	15.3	-22	41.0		
Δ								21		-1			25		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 1 40.3	.7	15.9	T _m	0 28	1.8	54.6	14.9
12	- 1 31.6	T _{m☉}	12 h 1.5 min	Starost	15.6 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♀	14 46	.1	163	-5.1	♃	16 34	.0	136	-1.5
♂	21 44	.1	58	-2.4	♄	19 47	.0	87	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	39.3	9	48.2	336	9.9	138	39.7	-10	22.5	34	6.7	-26	11.3	
2	209	39.7	9	46.4	6	14.8	168	40.8	-10	24.7	64	11.6	-26	11.1	
4	239	40.0	9	44.6	36	19.7	198	41.8	-10	26.9	94	16.6	-26	10.8	
6	269	40.4	9	42.9	66	24.7	228	42.9	-10	29.1	124	21.5	-26	10.6	
8	299	40.8	9	41.1	96	29.6	258	44.0	-10	31.3	154	26.5	-26	10.3	
10	329	41.1	9	39.3	126	34.5	288	45.1	-10	33.5	184	31.4	-26	10.0	
12	359	41.5	9	37.6	156	39.5	318	46.1	-10	35.7	214	36.3	-26	9.8	
14	29	41.9	9	35.8	186	44.4	348	47.2	-10	37.9	244	41.2	-26	9.5	
16	59	42.3	9	34.0	216	49.3	18	48.3	-10	40.1	274	46.2	-26	9.2	
18	89	42.6	9	32.3	246	54.2	48	49.4	-10	42.3	304	51.1	-26	8.9	
20	119	43.0	9	30.5	276	59.2	78	50.5	-10	44.5	334	56.0	-26	8.7	
22	149	43.4	9	28.7	307	4.1	108	51.6	-10	46.7	5	.9	-26	8.4	
Δ		2		-9				5		-11			25		1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 45	19 16	0 46	3 10	19 21	2.4	8 1	.5
55	4 59	19 3	0 39	2 25	19 26	2.3	7 55	.7
50	5 9	18 53	0 34	2 2	19 29	2.2	7 49	.9
45	5 17	18 45	0 31	1 47	19 32	2.2	7 45	1.1
40	5 24	18 38	0 28	1 36	19 34	2.1	7 42	1.2
35	5 30	18 32	0 26	1 29	19 36	2.1	7 38	1.3
30	5 35	18 27	0 24	1 23	19 37	2.0	7 36	1.4
20	5 43	18 19	0 22	1 15	19 40	2.0	7 31	1.5
10	5 51	18 11	0 21	1 11	19 43	1.9	7 27	1.7
0	5 58	18 5	0 21	1 10	19 45	1.8	7 23	1.8
10	6 5	17 58	0 21	1 10	19 48	1.8	7 19	2.0
20	6 12	17 51	0 22	1 14	19 50	1.7	7 14	2.1
30	6 20	17 43	0 24	1 20	19 53	1.7	7 9	2.3
35	6 25	17 38	0 26	1 24	19 55	1.6	7 6	2.4
40	6 30	17 33	0 27	1 30	19 57	1.6	7 3	2.5
45	6 36	17 27	0 30	1 38	19 59	1.5	6 59	2.6
50	6 43	17 20	0 33	1 48	20 2	1.5	6 55	2.8
55	6 52	17 12	0 37	2 1	20 5	1.4	6 49	3.0
60	7 3	17 0	0 43	2 19	20 9	1.3	6 42	3.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	342	31.4	144	6	49.4	-104	111	44.8	-15	58.6	63	20.4	-22	41.0		
2	11	38.2	144	6	28.7	-104	141	49.1	-15	58.8	93	25.4	-22	41.0		
4	40	44.9	144	6	7.8	-105	171	53.4	-15	59.0	123	30.4	-22	41.0		
6	69	51.7	144	5	46.7	-106	201	57.7	-15	59.2	153	35.4	-22	41.0		
8	98	58.5	144	5	25.6	-106	232	2.0	-15	59.4	183	40.4	-22	41.0		
10	128	5.3	144	5	4.3	-107	262	6.3	-15	59.6	213	45.4	-22	41.1		
12	157	12.0	144	4	43.0	-107	292	10.6	-15	59.8	243	50.4	-22	41.1		
14	186	18.8	144	4	21.5	-108	322	14.8	-16	.0	273	55.4	-22	41.1		
16	215	25.6	144	3	59.9	-108	352	19.1	-16	.2	304	.4	-22	41.1		
18	244	32.3	144	3	38.2	-109	22	23.4	-16	.4	334	5.4	-22	41.1		
20	273	39.1	144	3	16.5	-109	52	27.7	-16	.6	4	10.4	-22	41.1		
22	302	45.8	143	2	54.7	-110	82	32.0	-16	.8	34	15.4	-22	41.1		
Δ								21		-1			25		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 43.7	9 27.0	337 9.0	138 52.7	-10 48.9	35 5.8	-26 8.1
2	209 44.1	9 25.2	7 14.0	168 53.8	-10 51.1	65 10.6	-26 7.8
4	239 44.5	9 23.4	37 18.9	198 54.9	-10 53.3	95 15.5	-26 7.6
6	269 44.9	9 21.6	67 23.8	228 56.0	-10 55.4	125 20.4	-26 7.3
8	299 45.3	9 19.9	97 28.7	258 57.2	-10 57.6	155 25.3	-26 7.0
10	329 45.6	9 18.1	127 33.7	288 58.3	-10 59.8	185 30.1	-26 6.7
12	359 46.0	9 16.3	157 38.6	318 59.4	-11 2.0	215 35.0	-26 6.4
14	29 46.4	9 14.5	187 43.5	349 .5	-11 4.1	245 39.8	-26 6.1
16	59 46.8	9 12.7	217 48.5	19 1.7	-11 6.3	275 44.7	-26 5.8
18	89 47.2	9 11.0	247 53.4	49 2.8	-11 8.5	305 49.5	-26 5.5
20	119 47.5	9 9.2	277 58.3	79 4.0	-11 10.7	335 54.3	-26 5.3
22	149 47.9	9 7.4	308 3.2	109 5.1	-11 12.8	5 59.2	-26 5.0
Δ	2	-9		6	-11	24	1

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 47	19 13	0 46	3 7	20 20	.6	8 14	2.6
55	5 0	19 0	0 39	2 24	20 22	.8	8 12	2.5
50	5 10	18 51	0 34	2 1	20 23	1.0	8 11	2.4
45	5 18	18 43	0 30	1 46	20 24	1.1	8 11	2.3
40	5 25	18 36	0 28	1 36	20 25	1.2	8 10	2.2
35	5 30	18 31	0 26	1 29	20 26	1.4	8 9	2.2
30	5 35	18 26	0 24	1 23	20 26	1.4	8 9	2.1
20	5 44	18 18	0 22	1 15	20 27	1.6	8 8	2.0
10	5 51	18 11	0 21	1 11	20 29	1.7	8 7	1.9
0	5 58	18 4	0 21	1 10	20 30	1.9	8 7	1.9
10	6 4	17 58	0 21	1 10	20 31	2.0	8 6	1.8
20	6 11	17 51	0 22	1 14	20 32	2.2	8 5	1.7
30	6 19	17 43	0 24	1 20	20 33	2.3	8 4	1.6
35	6 23	17 39	0 26	1 24	20 34	2.4	8 3	1.6
40	6 28	17 34	0 27	1 30	20 35	2.5	8 3	1.5
45	6 34	17 28	0 30	1 38	20 36	2.7	8 2	1.4
50	6 41	17 22	0 33	1 48	20 37	2.8	8 1	1.4
55	6 49	17 13	0 37	2 1	20 38	3.0	7 60	1.3
60	7 0	17 3	0 42	2 19	20 40	3.2	7 59	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	331 52.5	143	2 32.7	-110	112 36.3	-16 1.0	64 20.4	-22 41.1
2	0 59.1	143	2 10.8	-110	142 40.5	-16 1.2	94 25.4	-22 41.2
4	30 5.7	143	1 48.7	-111	172 44.8	-16 1.4	124 30.4	-22 41.2
6	59 12.3	143	1 26.6	-111	202 49.1	-16 1.6	154 35.4	-22 41.2
8	88 18.8	142	1 4.4	-111	232 53.4	-16 1.9	184 40.4	-22 41.2
10	117 25.2	142	0 42.2	-111	262 57.7	-16 2.1	214 45.4	-22 41.2
12	146 31.6	142	0 20.0	-88	293 1.9	-16 2.3	244 50.4	-22 41.2
14	175 37.9	141	0 2.3	112	323 6.2	-16 2.5	274 55.4	-22 41.2
16	204 44.2	141	0 24.6	112	353 10.5	-16 2.7	305 .4	-22 41.3
18	233 50.3	140	0 46.9	112	23 14.8	-16 2.9	335 5.4	-22 41.3
20	262 56.4	140	1 9.3	112	53 19.0	-16 3.1	5 10.4	-22 41.3
22	292 2.4	139	1 31.7	112	83 23.3	-16 3.3	35 15.4	-22 41.3
Δ					21	-1	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 5.0	.8	15.9	T _m	1 56	1.8	55.4 15.1
12	- 0 55.9	T _{m☉}	12 h .9 min	Starost	17.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	14 44	.1	162	-5.1	♃	16 27	.0	135	-1.5
♂	21 36	.1	58	-2.4	♄	19 39	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 48.3	9 5.6	338 8.2	139 6.2	-11 15.0	36 4.0	-26 4.7
2	209 48.7	9 3.8	8 13.1	169 7.4	-11 17.1	66 8.8	-26 4.4
4	239 49.1	9 2.0	38 18.0	199 8.6	-11 19.3	96 13.6	-26 4.1
6	269 49.4	9 .2	68 23.0	229 9.7	-11 21.5	126 18.4	-26 3.8
8	299 49.8	8 58.4	98 27.9	259 10.9	-11 23.6	156 23.2	-26 3.5
10	329 50.2	8 56.7	128 32.8	289 12.0	-11 25.8	186 28.0	-26 3.2
12	359 50.6	8 54.9	158 37.7	319 13.2	-11 27.9	216 32.8	-26 2.8
14	29 51.0	8 53.1	188 42.7	349 14.4	-11 30.1	246 37.5	-26 2.5
16	59 51.4	8 51.3	218 47.6	19 15.6	-11 32.2	276 42.3	-26 2.2
18	89 51.8	8 49.5	248 52.5	49 16.7	-11 34.4	306 47.1	-26 1.9
20	119 52.1	8 47.7	278 57.4	79 17.9	-11 36.5	336 51.8	-26 1.6
22	149 52.5	8 45.9	309 2.4	109 19.1	-11 38.7	6 56.6	-26 1.3
Δ	2	-9		6	-11	24	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 50	19 10	0 45	3 3	20 34	.6	9 17	3.3
55	5 2	18 58	0 38	2 23	20 41	.8	9 12	3.1
50	5 12	18 48	0 34	2 0	20 46	1.0	9 9	2.9
45	5 19	18 41	0 30	1 46	20 51	1.2	9 6	2.7
40	5 26	18 35	0 28	1 36	20 55	1.3	9 3	2.6
35	5 31	18 30	0 26	1 28	20 58	1.4	9 1	2.5
30	5 36	18 25	0 24	1 23	21 1	1.5	8 60	2.4
20	5 44	18 17	0 22	1 15	21 6	1.7	8 56	2.2
10	5 51	18 10	0 21	1 11	21 10	1.8	8 54	2.1
0	5 57	18 4	0 21	1 10	21 15	2.0	8 51	1.9
10	6 4	17 58	0 21	1 10	21 19	2.1	8 48	1.8
20	6 10	17 51	0 22	1 14	21 24	2.2	8 46	1.6
30	6 18	17 44	0 24	1 20	21 29	2.4	8 43	1.5
35	6 22	17 40	0 26	1 24	21 32	2.5	8 41	1.4
40	6 27	17 35	0 27	1 30	21 35	2.6	8 39	1.3
45	6 32	17 30	0 30	1 38	21 39	2.7	8 36	1.1
50	6 39	17 23	0 33	1 48	21 44	2.9	8 34	1.0
55	6 47	17 15	0 37	2 1	21 50	3.1	8 30	.8
60	6 57	17 5	0 42	2 19	21 58	3.4	8 26	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	321 8.3	139	1 54.0	112	113 27.6	-16 3.5	65 20.4	-22 41.3
2	350 14.1	138	2 16.4	112	143 31.8	-16 3.7	95 25.4	-22 41.3
4	19 19.7	138	2 38.7	112	173 36.1	-16 3.9	125 30.4	-22 41.3
6	48 25.3	137	3 1.1	112	203 40.4	-16 4.1	155 35.4	-22 41.3
8	77 30.7	137	3 23.4	111	233 44.7	-16 4.3	185 40.4	-22 41.4
10	106 36.0	136	3 45.6	111	263 48.9	-16 4.5	215 45.4	-22 41.4
12	135 41.2	135	4 7.9	111	293 53.2	-16 4.7	245 50.3	-22 41.4
14	164 46.2	134	4 30.1	111	323 57.5	-16 4.9	275 55.3	-22 41.4
16	193 51.1	134	4 52.2	110	354 1.7	-16 5.1	306 .3	-22 41.4
18	222 55.8	133	5 14.3	110	24 6.0	-16 5.3	336 5.3	-22 41.4
20	252 .4	132	5 36.4	110	54 10.2	-16 5.5	6 10.3	-22 41.4
22	281 4.8	131	5 58.3	109	84 14.5	-16 5.7	36 15.3	-22 41.5
Δ					21	-1	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 0 46.8	.8	15.9	T _m	2 40	1.9	55.8 15.2
12	- 0 37.6	T _{m☉}	12 h .6 min	Starost	18.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	'	h	min	'	°	'
♀	14 43	.1	161	-5.2	♃	16 24	.0	135	-1.5
♂	21 32	.1	58	-2.4	♄	19 35	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 52.9	8 44.1	339 7.3	139 20.3 -11 40.8	37 1.3 -26 1.0		
2	209 53.3	8 42.3	9 12.2	169 21.5 -11 42.9	67 6.1 -26 .7		
4	239 53.7	8 40.5	39 17.2	199 22.7 -11 45.1	97 10.8 -26 .3		
6	269 54.1	8 38.7	69 22.1	229 23.9 -11 47.2	127 15.5 -26 .0		
8	299 54.5	8 36.9	99 27.0	259 25.1 -11 49.3	157 20.2 -25 59.7		
10	329 54.9	8 35.1	129 31.9	289 26.3 -11 51.5	187 25.0 -25 59.4		
12	359 55.3	8 33.3	159 36.9	319 27.5 -11 53.6	217 29.7 -25 59.1		
14	29 55.7	8 31.5	189 41.8	349 28.7 -11 55.7	247 34.4 -25 58.7		
16	59 56.1	8 29.7	219 46.7	19 30.0 -11 57.9	277 39.1 -25 58.4		
18	89 56.4	8 27.9	249 51.7	49 31.2 -11 60.0	307 43.8 -25 58.1		
20	119 56.8	8 26.1	279 56.6	79 32.4 -12 2.1	337 48.5 -25 57.7		
22	149 57.2	8 24.3	310 1.5	109 33.6 -12 4.2	7 53.1 -25 57.4		
Δ	2	-9		6	-11	24	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 52	19 7	0 45	3 0	20 48	.7	10 37	3.4
55	5 4	18 55	0 38	2 21	21 1	1.0	10 26	3.1
50	5 13	18 46	0 34	1 60	21 11	1.2	10 17	2.9
45	5 21	18 39	0 30	1 46	21 19	1.3	10 11	2.8
40	5 27	18 33	0 28	1 35	21 26	1.5	10 5	2.6
35	5 32	18 28	0 26	1 28	21 32	1.6	10 1	2.5
30	5 36	18 24	0 24	1 22	21 37	1.6	9 56	2.4
20	5 44	18 16	0 22	1 15	21 46	1.8	9 49	2.3
10	5 51	18 10	0 21	1 11	21 54	1.9	9 43	2.1
0	5 57	18 4	0 21	1 9	22 2	2.1	9 37	2.0
10	6 3	17 58	0 21	1 10	22 9	2.2	9 31	1.9
20	6 9	17 51	0 22	1 13	22 17	2.3	9 25	1.7
30	6 17	17 44	0 24	1 20	22 27	2.5	9 18	1.6
35	6 21	17 40	0 25	1 24	22 32	2.6	9 14	1.5
40	6 25	17 36	0 27	1 30	22 38	2.7	9 9	1.4
45	6 31	17 31	0 30	1 38	22 45	2.8	9 4	1.2
50	6 37	17 25	0 33	1 48	22 54	3.0	8 57	1.1
55	6 44	17 17	0 37	2 1	23 5	2.1	8 49	.9
60	6 54	17 7	0 42	2 19	23 19	2.1	8 39	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	310 9.1 130	6 20.2 109	114 18.8 -16 5.9	66 20.3 -22 41.5				
2	339 13.1 129	6 42.0 109	144 23.0 -16 6.2	96 25.3 -22 41.5				
4	8 17.0 128	7 3.7 108	174 27.3 -16 6.4	126 30.2 -22 41.5				
6	37 20.7 127	7 25.3 108	204 31.5 -16 6.6	156 35.2 -22 41.5				
8	66 24.2 126	7 46.8 107	234 35.8 -16 6.8	186 40.2 -22 41.5				
10	95 27.5 125	8 8.2 106	264 40.1 -16 7.0	216 45.2 -22 41.5				
12	124 30.6 124	8 29.5 106	294 44.3 -16 7.2	246 50.2 -22 41.5				
14	153 33.4 123	8 50.6 105	324 48.6 -16 7.4	276 55.1 -22 41.6				
16	182 36.1 122	9 11.6 104	354 52.8 -16 7.6	307 .1 -22 41.6				
18	211 38.5 121	9 32.5 104	24 57.1 -16 7.8	337 5.1 -22 41.6				
20	240 40.7 120	9 53.2 103	55 1.3 -16 8.0	7 10.1 -22 41.6				
22	269 42.7 119	10 13.8 102	85 5.6 -16 8.2	37 15.1 -22 41.6				
Δ			21	-1	25	0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	' / "	' / "	h min	min	' / "	' / "		
00	- 0 28.3	.8	15.9	T _m	3 26	2.0	56.4 15.4		
12	- 0 18.9	T _{m☉} 12 h .3 min	Starost 19.6 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	14 42	.1	160	-5.2	♃	16 20	.0	135	-1.5
♂	21 29	.1	58	-2.3	♄	19 31	.0	87	.6

1. SEPTEMBAR

SUBOTA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 57.6	8 22.5	340 6.4	139 34.9 -12 6.3	37 57.8 -25 57.1		
2	209 58.0	8 20.6	10 11.4	169 36.1 -12 8.4	68 2.5 -25 56.7		
4	239 58.4	8 18.8	40 16.3	199 37.4 -12 10.6	98 7.1 -25 56.4		
6	269 58.8	8 17.0	70 21.2	229 38.6 -12 12.7	128 11.8 -25 56.1		
8	299 59.2	8 15.2	100 26.2	259 39.9 -12 14.8	158 16.4 -25 55.7		
10	329 59.6	8 13.4	130 31.1	289 41.1 -12 16.9	188 21.1 -25 55.4		
12	0 .0	8 11.6	160 36.0	319 42.4 -12 19.0	218 25.7 -25 55.0		
14	30 .4	8 9.8	190 40.9	349 43.7 -12 21.1	248 30.4 -25 54.7		
16	60 .8	8 8.0	220 45.9	19 44.9 -12 23.2	278 35.0 -25 54.3		
18	90 1.2	8 6.1	250 50.8	49 46.2 -12 25.3	308 39.6 -25 54.0		
20	120 1.6	8 4.3	280 55.7	79 47.5 -12 27.4	338 44.2 -25 53.7		
22	150 2.0	8 2.5	311 .7	109 48.8 -12 29.5	8 48.8 -25 53.3		
Δ	2	-9		6	-11	23	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 55	19 4	0 45	2 57	21 6	1.0	11 58	3.4
55	5 6	18 53	0 38	2 20	21 25	1.2	11 41	3.2
50	5 15	18 44	0 34	1 59	21 40	1.4	11 28	3.0
45	5 22	18 37	0 30	1 45	21 51	1.6	11 17	2.8
40	5 28	18 32	0 28	1 35	22 1	1.7	11 9	2.7
35	5 33	18 27	0 26	1 28	22 9	1.8	11 2	2.6
30	5 37	18 23	0 24	1 22	22 17	1.8	10 55	2.5
20	5 44	18 15	0 22	1 15	22 29	2.0	10 44	2.4
10	5 51	18 9	0 21	1 11	22 41	2.1	10 34	2.2
0	5 57	18 3	0 21	1 9	22 51	2.2	10 25	2.1
10	6 3	17 58	0 21	1 10	23 2	2.3	10 16	2.0
20	6 9	17 52	0 22	1 13	23 13	2.2	10 6	1.9
30	6 15	17 45	0 24	1 20	23 26	2.2	9 55	1.7
35	6 19	17 41	0 25	1 24	23 34	2.2	9 49	1.6
40	6 24	17 37	0 27	1 30	23 43	2.2	9 42	1.5
45	6 29	17 32	0 30	1 38	23 53	2.2	9 33	1.4
50	6 35	17 26	0 33	1 48	.. .	.0	9 23	1.3
55	6 42	17 19	0 37	2 1	23 56	3.3	9 11	1.1
60	6 51	17 10	0 42	2 19	.. .	.0	8 55	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	298 44.4 117	10 34.1 101	115 9.8 -16 8.4	67 20.0 -22 41.6				
2	327 45.9 116	10 54.3 100	145 14.1 -16 8.6	97 25.0 -22 41.6				
4	356 47.1 115	11 14.4 99	175 18.3 -16 8.9	127 30.0 -22 41.7				
6	25 48.1 114	11 34.2 98	205 22.6 -16 9.1	157 35.0 -22 41.7				
8	54 48.8 112	11 53.8 97	235 26.8 -16 9.3	187 39.9 -22 41.7				
10	83 49.2 111	12 13.2 96	265 31.1 -16 9.5	217 44.9 -22 41.7				
12	112 49.4 109	12 32.5 95	295 35.3 -16 9.7	247 49.9 -22 41.7				
14	141 49.3 108	12 51.4 94	325 39.5 -16 9.9	277 54.9 -22 41.7				
16	170 48.9 107	13 10.2 93	355 43.8 -16 10.1	307 59.8 -22 41.7				
18	199 48.2 105	13 28.7 91	25 48.0 -16 10.3	338 4.8 -22 41.7				
20	228 47.3 104	13 46.9 90	55 52.3 -16 10.5	8 9.8 -22 41.8				
22	257 46.0 102	14 4.9 89	85 56.5 -16 10.7	38 14.7 -22 41.8				
Δ			21	-1	25	0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	' / "	' / "	h min	min	' / "	' / "		
00	- 0 9.5	.8	15.9	T _m	4 13	2.1	57.0 15.5		
12	0 .1	T _{m☉} 11 h 60.0 min	Starost 20.6 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	</

2. SEPTEMBAR

2018.

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 2.4 8 .7		341 5.6	139 50.0 -12 31.6	38 53.4 -25 52.9		
2	210 2.8 7 58.9		11 10.5	169 51.3 -12 33.7	68 58.0 -25 52.6		
4	240 3.2 7 57.0		41 15.4	199 52.6 -12 35.7	99 2.6 -25 52.2		
6	270 3.6 7 55.2		71 20.4	229 53.9 -12 37.8	129 7.2 -25 51.9		
8	300 4.0 7 53.4		101 25.3	259 55.2 -12 39.9	159 11.8 -25 51.5		
10	330 4.4 7 51.6		131 30.2	289 56.5 -12 42.0	189 16.4 -25 51.2		
12	0 4.8 7 49.7		161 35.2	319 57.8 -12 44.1	219 20.9 -25 50.8		
14	30 5.2 7 47.9		191 40.1	349 59.1 -12 46.1	249 25.5 -25 50.4		
16	60 5.6 7 46.1		221 45.0	20 .5 -12 48.2	279 30.1 -25 50.1		
18	90 6.0 7 44.3		251 49.9	50 1.8 -12 50.3	309 34.6 -25 49.7		
20	120 6.4 7 42.4		281 54.9	80 3.1 -12 52.4	339 39.2 -25 49.3		
22	150 6.8 7 40.6		311 59.8	110 4.4 -12 54.4	9 43.7 -25 49.0		
Δ	2	-9		7	-10	23	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 57	19 1	0 45	2 55	21 30	1.4	13 21	3.4
55	5 8	18 50	0 38	2 19	21 55	1.6	12 57	3.1
50	5 16	18 42	0 33	1 58	22 14	1.7	12 39	2.9
45	5 23	18 36	0 30	1 45	22 29	1.8	12 25	2.8
40	5 28	18 30	0 28	1 35	22 41	1.9	12 14	2.7
35	5 33	18 26	0 26	1 28	22 51	2.0	12 4	2.6
30	5 37	18 21	0 24	1 22	23 1	2.1	11 55	2.6
20	5 45	18 15	0 22	1 15	23 17	2.3	11 41	2.5
10	5 51	18 9	0 21	1 11	23 31	2.3	11 28	2.4
0	5 56	18 3	0 21	1 9	23 44	2.3	11 16	2.3
10	6 2	17 58	0 21	1 10	23 57	2.3	11 4	2.2
20	6 8	17 52	0 22	1 13	...	...	10 51	2.1
30	6 14	17 45	0 24	1 20	...	...	10 37	1.9
35	6 18	17 42	0 25	1 24	...	...	10 28	1.9
40	6 22	17 38	0 27	1 30	...	...	10 19	1.8
45	6 27	17 33	0 30	1 38	...	...	10 8	1.7
50	6 33	17 28	0 33	1 48	0 5	3.0	9 54	1.6
55	6 40	17 21	0 37	2 1	...	...	9 37	1.4
60	6 49	17 12	0 42	2 19	0 42	3.4	9 15	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	286 44.5 101	14 22.6	87	116 .8 -16	11.0	68 19.7 -22	41.8	
2	315 42.6 99	14 40.1	86	146 5.0 -16	11.2	98 24.7 -22	41.8	
4	344 40.5 98	14 57.2	84	176 9.2 -16	11.4	128 29.6 -22	41.8	
6	13 38.0 96	15 14.1	83	206 13.5 -16	11.6	158 34.6 -22	41.8	
8	42 35.3 95	15 30.7	81	236 17.7 -16	11.8	188 39.6 -22	41.8	
10	71 32.2 93	15 46.9	80	266 21.9 -16	12.0	218 44.5 -22	41.8	
12	100 28.8 92	16 2.8	78	296 26.2 -16	12.2	248 49.5 -22	41.9	
14	129 25.2 90	16 18.4	76	326 30.4 -16	12.4	278 54.4 -22	41.9	
16	158 21.2 88	16 33.7	74	356 34.6 -16	12.7	308 59.4 -22	41.9	
18	187 16.8 87	16 48.6	73	26 38.9 -16	12.9	339 4.4 -22	41.9	
20	216 12.2 85	17 3.1	71	56 43.1 -16	13.1	9 9.3 -22	41.9	
22	245 7.3 84	17 17.3	69	86 47.3 -16	13.3	39 14.3 -22	41.9	
Δ				21	-1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	0 9.6	.8	15.9	T _m	5 4	2.2	57.6 15.7		
12	0 19.3	T _{m☉}	11 h 59.7 min	Starost	21.6 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 40	.1	159	-5.3	♃	16 14	.0	135	-1.5
♂	21 21	.1	58	-2.3	♄	19 23	.0	87	.6

3. SEPTEMBAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 7.2 7 38.8		342 4.7	140 5.8 -12 56.5	39 48.2 -25 48.6		
2	210 7.6 7 36.9		12 9.6	170 7.1 -12 58.5	69 52.8 -25 48.2		
4	240 8.1 7 35.1		42 14.6	200 8.4 -13 .6	99 57.3 -25 47.9		
6	270 8.5 7 33.3		72 19.5	230 9.8 -13 2.7	130 1.8 -25 47.5		
8	300 8.9 7 31.4		102 24.4	260 11.1 -13 4.7	160 6.3 -25 47.1		
10	330 9.3 7 29.6		132 29.4	290 12.5 -13 6.8	190 10.8 -25 46.7		
12	0 9.7 7 27.8		162 34.3	320 13.9 -13 8.8	220 15.3 -25 46.4		
14	30 10.1 7 25.9		192 39.2	350 15.2 -13 10.9	250 19.8 -25 46.0		
16	60 10.5 7 24.1		222 44.1	20 16.6 -13 12.9	280 24.3 -25 45.6		
18	90 10.9 7 22.3		252 49.1	50 18.0 -13 15.0	310 28.8 -25 45.2		
20	120 11.3 7 20.4		282 54.0	80 19.3 -13 17.0	340 33.2 -25 44.8		
22	150 11.7 7 18.6		312 58.9	110 20.7 -13 19.0	10 37.7 -25 44.4		
Δ	2	-9		7	-10	22	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	4 59	18 58	0 44	2 52	22 2	1.9	14 41	3.1
55	5 10	18 48	0 38	2 18	22 33	2.1	14 12	2.9
50	5 18	18 40	0 33	1 58	22 55	2.2	13 50	2.8
45	5 24	18 34	0 30	1 44	23 13	2.4	13 33	2.7
40	5 29	18 29	0 28	1 35	23 27	2.4	13 19	2.7
35	5 34	18 24	0 26	1 27	23 40	2.4	13 8	2.6
30	5 38	18 20	0 24	1 22	23 50	2.4	12 57	2.6
20	5 45	18 14	0 22	1 15	...	...	12 40	2.5
10	5 51	18 8	0 21	1 11	...	...	12 24	2.5
0	5 56	18 3	0 21	1 9	...	...	12 10	2.4
10	6 1	17 57	0 21	1 10	...	...	11 56	2.3
20	6 7	17 52	0 22	1 13	0 11	2.5	11 41	2.3
30	6 13	17 46	0 24	1 20	0 28	2.6	11 23	2.2
35	6 17	17 43	0 25	1 24	0 37	2.7	11 13	2.1
40	6 21	17 39	0 27	1 30	0 48	2.7	11 2	2.0
45	6 25	17 34	0 29	1 38	1 1	2.8	10 48	2.1
50	6 30	17 29	0 32	1 48	1 17	2.9	10 31	1.9
55	6 37	17 23	0 36	2 1	1 37	3.0	10 10	1.8
60	6 46	17 14	0 42	2 19	2 5	3.3	9 42	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	274 2.0 82	17 31.1	67	116 51.6 -16	13.5	69 19.3 -22	41.9	
2	302 56.4 81	17 44.5	65	146 55.8 -16	13.7	99 24.2 -22	41.9	
4	331 50.6 79	17 57.5	63	177 .0 -16	13.9	129 29.2 -22	42.0	
6	0 44.4 77	18 10.1	61	207 4.2 -16	14.1	159 34.1 -22	42.0	
8	29 37.9 76	18 22.3	59	237 8.5 -16	14.4	189 39.1 -22	42.0	
10	58 31.0 74	18 34.1	57	267 12.7 -16	14.6	219 44.0 -22	42.0	
12	87 23.9 73	18 45.4	55	297 16.9 -16	14.8	249 49.0 -22	42.0	
14	116 16.5 71	18 56.3	52	327 21.1 -16	15.0	279 53.9 -22	42.0	
16	145 8.8 70	19 6.8	50	357 25.4 -16	15.2	309 58.9 -22	42.0	
18	174 .8 69	19 16.8	48	27 29.6 -16	15.4	340 3.8 -22	42.0	
20	202 52.5 67	19 26.3	45	57 33.8 -16	15.6	10 8.8 -22	42.1	
22	231 43.9 66	19 35.4	43	87 38.0 -16	15.9	40 13.7 -22	42.1	
Δ				21	-1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	0 29.0	.8	15.9	T _m	5 57	2.4	58.3 15.9		
12	0 38.8	T _{m☉}	11 h 59.4 min	Starost	22.6 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 39	.1	158	-5.3	♃	16 10	.0	135	-1.5
♂	21 18	.1	58	-2.3	♄	19 20	.0	87	.6

4. SEPTEMBAR

2018.

UTORAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 12.1	7 16.7	343 3.9	140 22.1 -13 21.1	40 42.2 -25 44.1		
2	210 12.6	7 14.9	13 8.8	170 23.5 -13 23.1	70 46.6 -25 43.7		
4	240 13.0	7 13.1	43 13.7	200 24.9 -13 25.1	100 51.1 -25 43.3		
6	270 13.4	7 11.2	73 18.6	230 26.3 -13 27.2	130 55.5 -25 42.9		
8	300 13.8	7 9.4	103 23.6	260 27.7 -13 29.2	160 60.0 -25 42.5		
10	330 14.2	7 7.5	133 28.5	290 29.1 -13 31.2	191 4.4 -25 42.1		
12	0 14.6	7 5.7	163 33.4	320 30.5 -13 33.2	221 8.8 -25 41.7		
14	30 15.0	7 3.8	193 38.4	350 31.9 -13 35.3	251 13.3 -25 41.3		
16	60 15.4	7 2.0	223 43.3	20 33.3 -13 37.3	281 17.7 -25 40.9		
18	90 15.9	7 1.1	253 48.2	50 34.8 -13 39.3	311 22.1 -25 40.5		
20	120 16.3	6 58.3	283 53.1	80 36.2 -13 41.3	341 26.5 -25 40.1		
22	150 16.7	6 56.4	313 58.1	110 37.6 -13 43.3	11 30.9 -25 39.7		
Δ	2	-9		7	-10	22	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 2	18 55	0 44	2 50	22 49	2.6	15 55	2.6
55	5 12	18 45	0 38	2 17	23 23	2.5	15 22	2.6
50	5 19	18 38	0 33	1 57	23 47	2.5	14 57	2.5
45	5 25	18 32	0 30	1 44	...	.0	14 39	2.5
40	5 30	18 27	0 28	1 34	...	.0	14 24	2.5
35	5 35	18 23	0 26	1 27	...	.0	14 11	2.5
30	5 39	18 19	0 24	1 22	...	.0	13 59	2.5
20	5 45	18 13	0 22	1 14	0 9	2.4	13 40	2.5
10	5 51	18 7	0 21	1 11	0 25	2.4	13 23	2.5
0	5 56	18 2	0 21	1 9	0 40	2.5	13 8	2.5
10	6 1	17 57	0 21	1 10	0 55	2.5	12 52	2.5
20	6 6	17 52	0 22	1 13	1 11	2.5	12 35	2.5
30	6 12	17 47	0 24	1 20	1 30	2.6	12 16	2.4
35	6 15	17 43	0 25	1 24	1 41	2.6	12 5	2.4
40	6 19	17 40	0 27	1 30	1 53	2.6	11 52	2.4
45	6 23	17 35	0 29	1 38	2 8	2.7	11 36	2.4
50	6 28	17 31	0 32	1 48	2 27	2.7	11 18	2.4
55	6 35	17 24	0 36	2 1	2 50	2.8	10 54	2.3
60	6 43	17 17	0 42	2 19	3 23	2.9	10 20	2.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	260 35.0	64 19 43.9	40	117 42.2 -16 16.1	70 18.7 -22 42.1			
2	289 25.9	63 19 52.0	38	147 46.5 -16 16.3	100 23.6 -22 42.1			
4	318 16.5	62 19 59.6	35	177 50.7 -16 16.5	130 28.6 -22 42.1			
6	347 6.8	60 20 6.7	33	207 54.9 -16 16.7	160 33.5 -22 42.1			
8	15 56.9	59 20 13.3	30	237 59.1 -16 16.9	190 38.5 -22 42.1			
10	44 46.7	58 20 19.3	28	268 3.3 -16 17.2	220 43.4 -22 42.1			
12	73 36.3	57 20 24.9	25	298 7.5 -16 17.4	250 48.4 -22 42.2			
14	102 25.7	56 20 29.9	22	328 11.8 -16 17.6	280 53.3 -22 42.2			
16	131 14.9	55 20 34.3	20	358 16.0 -16 17.8	310 58.3 -22 42.2			
18	160 3.8	54 20 38.2	17	28 20.2 -16 18.0	341 3.2 -22 42.2			
20	188 52.5	53 20 41.6	14	58 24.4 -16 18.2	11 8.2 -22 42.2			
22	217 41.1	52 20 44.4	11	88 28.6 -16 18.5	41 13.1 -22 42.2			
Δ				21	-1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	' / "	' / "	h min	min	' / "	' / "		
00	0 48.6	.8	15.9	T _m	6 54	2.5	59.0	16.1	
12	0 58.5	T _{m☉}	11 h 59.0 min	Starost	23.6 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	14 38	.1	157	-5.3	♄	16 7	.0	135	-1.5
♂	21 14	.1	58	-2.3	♃	19 16	.0	87	.6

5. SEPTEMBAR

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 17.1	6 54.6	344 3.0	140 39.1 -13 45.3	41 35.3 -25 39.3		
2	210 17.5	6 52.7	14 7.9	170 40.5 -13 47.3	71 39.7 -25 38.9		
4	240 17.9	6 50.9	44 12.9	200 42.0 -13 49.3	101 44.1 -25 38.5		
6	270 18.3	6 49.0	74 17.8	230 43.4 -13 51.3	131 48.4 -25 38.1		
8	300 18.8	6 47.2	104 22.7	260 44.9 -13 53.3	161 52.8 -25 37.7		
10	330 19.2	6 45.3	134 27.6	290 46.3 -13 55.3	191 57.2 -25 37.3		
12	0 19.6	6 43.5	164 32.6	320 47.8 -13 57.3	222 1.5 -25 36.8		
14	30 20.0	6 41.6	194 37.5	350 49.3 -13 59.3	252 5.9 -25 36.4		
16	60 20.4	6 39.8	224 42.4	20 50.7 -14 1.3	282 10.2 -25 36.0		
18	90 20.9	6 37.9	254 47.4	50 52.2 -14 3.3	312 14.6 -25 35.6		
20	120 21.3	6 36.0	284 52.3	80 53.7 -14 5.3	342 18.9 -25 35.2		
22	150 21.7	6 34.2	314 57.2	110 55.2 -14 7.3	12 23.2 -25 34.8		
Δ	2	-9		7	-10	22	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 4	18 52	0 44	2 48	23 52	2.6	16 57	1.9
55	5 13	18 43	0 38	2 16	...	.0	16 23	2.1
50	5 21	18 36	0 33	1 57	...	.0	15 59	2.2
45	5 27	18 30	0 30	1 44	0 6	2.6	15 40	2.3
40	5 31	18 25	0 28	1 34	0 22	2.6	15 24	2.3
35	5 35	18 21	0 26	1 27	0 35	2.6	15 11	2.4
30	5 39	18 18	0 24	1 22	0 46	2.6	14 60	2.4
20	5 45	18 12	0 22	1 14	1 6	2.6	14 40	2.4
10	5 51	18 7	0 21	1 10	1 23	2.5	14 23	2.5
0	5 55	18 2	0 21	1 9	1 39	2.5	14 7	2.5
10	6 0	17 57	0 21	1 10	1 55	2.5	13 51	2.6
20	6 5	17 52	0 22	1 13	2 12	2.5	13 34	2.6
30	6 11	17 47	0 24	1 19	2 32	2.5	13 14	2.7
35	6 14	17 44	0 25	1 24	2 43	2.5	13 3	2.7
40	6 17	17 41	0 27	1 30	2 56	2.4	12 50	2.7
45	6 21	17 37	0 29	1 38	3 12	2.4	12 34	2.8
50	6 26	17 32	0 32	1 48	3 31	2.4	12 15	2.8
55	6 32	17 26	0 36	2 1	3 56	2.3	11 50	2.9
60	6 40	17 19	0 42	2 19	4 32	2.3	11 15	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	246 29.4	51 20 46.7	8	118 32.8 -16 18.7	71 18.0 -22 42.2			
2	275 17.6	50 20 48.4	6	148 37.0 -16 18.9	101 23.0 -22 42.2			
4	304 5.7	49 20 49.5	3	178 41.2 -16 19.1	131 27.9 -22 42.3			
6	332 53.6	49 20 50.1	0	208 45.4 -16 19.3	161 32.9 -22 42.3			
8	1 41.3	48 20 50.0	-3	238 49.6 -16 19.6	191 37.8 -22 42.3			
10	30 28.9	48 20 49.4	-6	268 53.8 -16 19.8	221 42.7 -22 42.3			
12	59 16.4	47 20 48.3	-9	298 58.0 -16 20.0	251 47.7 -22 42.3			
14	88 3.8	47 20 46.5	-12	329 2.2 -16 20.2	281 52.6 -22 42.3			
16	116 51.2	46 20 44.1	-15	359 6.4 -16 20.4	311 57.5 -22 42.3			
18	145 38.4	46 20 41.2	-18	29 10.6 -16 20.6	342 2.5 -22 42.3			
20	174 25.6	46 20 37.7	-21	59 14.8 -16 20.9	12 7.4 -22 42.4			
22	203 12.7	45 20 33.6	-23	89 19.0 -16 21.1	42 12.3 -22 42.4			
Δ				21	-1	25	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	' / "	' / "	h min	min	' / "	' / "		
00	1 8.4	.8	15.9	T _m	7 53	2.5	59.6	16.2	
12	1 18.4	T _{m☉}	11 h 58.7 min	Starost	24.6 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 22.1	6 32.3	345 2.1	140 56.7	-14 9.2	42 27.6	-25 34.3
2	210 22.5	6 30.5	15 7.1	170 58.2	-14 11.2	72 31.9	-25 33.9
4	240 23.0	6 28.6	45 12.0	200 59.7	-14 13.2	102 36.2	-25 33.5
6	270 23.4	6 26.7	75 16.9	231 1.2	-14 15.2	132 40.5	-25 33.1
8	300 23.8	6 24.9	105 21.9	261 2.7	-14 17.1	162 44.8	-25 32.6
10	330 24.2	6 23.0	135 26.8	291 4.2	-14 19.1	192 49.1	-25 32.2
12	0 24.6	6 21.2	165 31.7	321 5.8	-14 21.1	222 53.4	-25 31.8
14	30 25.1	6 19.3	195 36.6	351 7.3	-14 23.0	252 57.7	-25 31.3
16	60 25.5	6 17.4	225 41.6	21 8.8	-14 25.0	283 2.0	-25 30.9
18	90 25.9	6 15.6	255 46.5	51 10.4	-14 26.9	313 6.2	-25 30.5
20	120 26.3	6 13.7	285 51.4	81 11.9	-14 28.9	343 10.5	-25 30.0
22	150 26.8	6 11.8	315 56.3	111 13.5	-14 30.8	13 14.8	-25 29.6
Δ	2	-9		8	-10	21	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 6	18 49	0 44	2 46	. . .	.0	17 43	1.4
55	5 15	18 40	0 37	2 15	0 26	3.1	17 13	1.7
50	5 22	18 34	0 33	1 56	0 50	3.0	16 51	1.8
45	5 28	18 28	0 30	1 43	1 8	2.9	16 34	1.9
40	5 32	18 24	0 27	1 34	1 24	2.9	16 20	2.0
35	5 36	18 20	0 26	1 27	1 36	2.8	16 8	2.1
30	5 40	18 17	0 24	1 21	1 48	2.7	15 57	2.2
20	5 45	18 11	0 22	1 14	2 7	2.7	15 39	2.3
10	5 50	18 6	0 21	1 10	2 24	2.6	15 23	2.4
0	5 55	18 2	0 21	1 9	2 39	2.5	15 8	2.5
10	5 60	17 57	0 21	1 10	2 55	2.5	14 53	2.6
20	6 4	17 53	0 22	1 13	3 12	2.4	14 37	2.7
30	6 10	17 48	0 24	1 19	3 31	2.3	14 18	2.8
35	6 12	17 45	0 25	1 24	3 42	2.2	14 8	2.9
40	6 16	17 42	0 27	1 30	3 55	2.2	13 55	2.9
45	6 20	17 38	0 29	1 38	4 10	2.1	13 40	3.0
50	6 24	17 33	0 32	1 48	4 29	2.0	13 22	3.2
55	6 30	17 28	0 36	2 1	4 52	1.9	12 59	3.3
60	6 37	17 21	0 42	2 20	5 26	1.6	12 26	3.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	231 59.8	45 20 28.9	-26	119 23.2	-16 21.3	72 17.3	-22 42.4	
2	260 46.8	45 20 23.6	-29	149 27.4	-16 21.5	102 22.2	-22 42.4	
4	289 33.9	45 20 17.7	-32	179 31.6	-16 21.7	132 27.1	-22 42.4	
6	318 20.9	45 20 11.3	-35	209 35.8	-16 22.0	162 32.1	-22 42.4	
8	347 8.0	45 20 4.3	-38	239 40.0	-16 22.2	192 37.0	-22 42.4	
10	15 55.1	46 19 56.7	-41	269 44.2	-16 22.4	222 41.9	-22 42.4	
12	44 42.2	46 19 48.5	-44	299 48.4	-16 22.6	252 46.9	-22 42.5	
14	73 29.3	46 19 39.7	-47	329 52.6	-16 22.8	282 51.8	-22 42.5	
16	102 16.5	46 19 30.4	-49	359 56.8	-16 23.1	312 56.7	-22 42.5	
18	131 3.8	47 19 20.5	-52	30 1.0	-16 23.3	343 1.6	-22 42.5	
20	159 51.2	47 19 10.1	-55	60 5.2	-16 23.5	13 6.6	-22 42.5	
22	188 38.7	48 18 59.1	-58	90 9.4	-16 23.7	43 11.5	-22 42.5	
Δ				21	-1	25	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	1 28.5	.8	15.9	T _m	8 54	2.5	60.2 16.4
12	1 38.6	T _{m☉}	11 h 58.4 min	Starost	25.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 35	.1	156	-5.4	♄	16 0	.0	134	-1.5
♂	21 7	.1	57	-2.2	♅	19 8	.0	87	.6

7. SEPTEMBAR

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 27.2	6 10.0	346 1.3	141 15.0	-14 32.8	43 19.0	-25 29.2
2	210 27.6	6 8.1	16 6.2	171 16.6	-14 34.7	73 23.3	-25 28.7
4	240 28.0	6 6.2	46 11.1	201 18.1	-14 36.7	103 27.5	-25 28.3
6	270 28.4	6 4.3	76 16.1	231 19.7	-14 38.6	133 31.8	-25 27.9
8	300 28.9	6 2.5	106 21.0	261 21.3	-14 40.6	163 36.0	-25 27.4
10	330 29.3	6 .6	136 25.9	291 22.9	-14 42.5	193 40.2	-25 27.0
12	0 29.7	5 58.7	166 30.8	321 24.5	-14 44.4	223 44.4	-25 26.5
14	30 30.2	5 56.9	196 35.8	351 26.0	-14 46.4	253 48.7	-25 26.1
16	60 30.6	5 55.0	226 40.7	21 27.6	-14 48.3	283 52.9	-25 25.6
18	90 31.0	5 53.1	256 45.6	51 29.2	-14 50.2	313 57.1	-25 25.2
20	120 31.4	5 51.2	286 50.6	81 30.8	-14 52.1	344 1.3	-25 24.7
22	150 31.9	5 49.4	316 55.5	111 32.5	-14 54.0	14 5.5	-25 24.3
Δ	2	-9		8	-10	21	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 9	18 46	0 43	2 44	1 12	3.7	18 17	1.0
55	5 17	18 38	0 37	2 14	1 41	3.5	17 53	1.3
50	5 24	18 31	0 33	1 56	2 2	3.3	17 35	1.5
45	5 29	18 26	0 30	1 43	2 18	3.1	17 21	1.7
40	5 33	18 22	0 27	1 34	2 32	3.0	17 9	1.8
35	5 37	18 19	0 26	1 27	2 43	2.9	16 59	1.9
30	5 40	18 15	0 24	1 21	2 54	2.8	16 50	2.0
20	5 46	18 10	0 22	1 14	3 11	2.7	16 35	2.2
10	5 50	18 6	0 21	1 10	3 26	2.6	16 21	2.3
0	5 55	18 1	0 21	1 9	3 40	2.5	16 8	2.4
10	5 59	17 57	0 21	1 10	3 54	2.4	15 55	2.6
20	6 3	17 53	0 22	1 13	4 9	2.2	15 42	2.7
30	6 8	17 48	0 24	1 19	4 26	2.1	15 26	2.8
35	6 11	17 45	0 25	1 24	4 36	2.0	15 16	2.9
40	6 14	17 42	0 27	1 30	4 47	1.9	15 6	3.0
45	6 18	17 39	0 29	1 38	5 1	1.8	14 53	3.2
50	6 22	17 35	0 32	1 48	5 17	1.7	14 38	3.3
55	6 27	17 30	0 36	2 1	5 37	1.5	14 18	3.6
60	6 34	17 24	0 42	2 20	6 5	1.2	13 52	3.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	217 26.2	48 18 47.5	-60	120 13.6	-16 24.0	73 16.4	-22 42.5	
2	246 13.9	49 18 35.5	-63	150 17.8	-16 24.2	103 21.3	-22 42.5	
4	275 1.7	50 18 22.8	-66	180 21.9	-16 24.4	133 26.3	-22 42.6	
6	303 49.6	50 18 9.7	-68	210 26.1	-16 24.6	163 31.2	-22 42.6	
8	332 37.7	51 17 56.0	-71	240 30.3	-16 24.8	193 36.1	-22 42.6	
10	1 26.0	52 17 41.8	-73	270 34.5	-16 25.1	223 41.0	-22 42.6	
12	30 14.4	53 17 27.2	-76	300 38.7	-16 25.3	253 45.9	-22 42.6	
14	59 2.9	54 17 12.0	-78	330 42.9	-16 25.5	283 50.9	-22 42.6	
16	87 51.7	55 16 56.3	-81	0 47.0	-16 25.7	313 55.8	-22 42.6	
18	116 40.6	56 16 40.2	-83	30 51.2	-16 26.0	344 .7	-22 42.6	
20	145 29.7	57 16 23.6	-85	60 55.4	-16 26.2	14 5.6	-22 42.7	
22	174 19.0	58 16 6.5	-88	90 59.6	-16 26.4	44 10.5	-22 42.7	
Δ				21	-1	25	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	1 48.7	.9	15.9	T _m	9 54	2.5	60.5 16.5
12	1 58.9	T _{m☉}	11 h 58.0 min	Starost	26.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 34	.1	155	-5.4	♄	15 57	.0	134	-1.5
♂	21 4	.1	57	-2.2	♅	19 4	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 32.3	5 47.5	347 .4	141 34.1	-14 56.0	44 9.7	-25 23.8
2	210 32.7	5 45.6	17 5.3	171 35.7	-14 57.9	74 13.8	-25 23.4
4	240 33.1	5 43.7	47 10.3	201 37.3	-14 59.8	104 18.0	-25 22.9
6	270 33.6	5 41.8	77 15.2	231 38.9	-15 1.7	134 22.2	-25 22.4
8	300 34.0	5 40.0	107 20.1	261 40.6	-15 3.6	164 26.4	-25 22.0
10	330 34.4	5 38.1	137 25.1	291 42.2	-15 5.5	194 30.5	-25 21.5
12	0 34.9	5 36.2	167 30.0	321 43.9	-15 7.4	224 34.7	-25 21.1
14	30 35.3	5 34.3	197 34.9	351 45.5	-15 9.3	254 38.8	-25 20.6
16	60 35.7	5 32.4	227 39.8	21 47.2	-15 11.2	284 43.0	-25 20.1
18	90 36.1	5 30.6	257 44.8	51 48.8	-15 13.1	314 47.1	-25 19.7
20	120 36.6	5 28.7	287 49.7	81 50.5	-15 15.0	344 51.2	-25 19.2
22	150 37.0	5 26.8	317 54.6	111 52.2	-15 16.9	14 55.4	-25 18.7
Δ	2	-9		8	-9	21	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 11	18 43	0 43	2 42	2 42	3.9	18 41	.8
55	5 19	18 35	0 37	2 13	3 4	3.6	18 24	1.1
50	5 25	18 29	0 33	1 55	3 20	3.4	18 11	1.3
45	5 30	18 24	0 30	1 42	3 33	3.2	18 1	1.5
40	5 34	18 21	0 27	1 33	3 44	3.1	17 52	1.6
35	5 38	18 17	0 26	1 26	3 53	2.9	17 45	1.7
30	5 41	18 14	0 24	1 21	4 2	2.8	17 38	1.8
20	5 46	18 9	0 22	1 14	4 15	2.7	17 26	2.0
10	5 50	18 5	0 21	1 10	4 28	2.5	17 16	2.2
0	5 54	18 1	0 21	1 9	4 39	2.4	17 6	2.3
10	5 58	17 57	0 21	1 10	4 50	2.2	16 57	2.5
20	6 3	17 53	0 22	1 13	5 2	2.1	16 46	2.6
30	6 7	17 49	0 24	1 19	5 16	1.9	16 34	2.8
35	6 10	17 46	0 25	1 24	5 24	1.8	16 27	2.9
40	6 13	17 43	0 27	1 30	5 33	1.7	16 19	3.0
45	6 16	17 40	0 29	1 38	5 44	1.6	16 10	3.2
50	6 20	17 36	0 32	1 48	5 57	1.4	15 58	3.4
55	6 25	17 32	0 36	2 1	6 12	1.2	15 44	3.6
60	6 31	17 26	0 42	2 20	6 34	.9	15 25	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	203 8.5	59	15 49.0	-90	121 3.8	-16 26.6	74 15.4	-22 42.7
2	231 58.2	60	15 31.0	-92	151 7.9	-16 26.8	104 20.4	-22 42.7
4	260 48.2	61	15 12.7	-94	181 12.1	-16 27.1	134 25.3	-22 42.7
6	289 38.3	62	14 53.9	-96	211 16.3	-16 27.3	164 30.2	-22 42.7
8	318 28.7	63	14 34.7	-98	241 20.5	-16 27.5	194 35.1	-22 42.7
10	347 19.3	64	14 15.1	-100	271 24.6	-16 27.7	224 40.0	-22 42.7
12	16 10.2	65	13 55.1	-102	301 28.8	-16 28.0	254 44.9	-22 42.8
14	45 1.3	67	13 34.8	-103	331 33.0	-16 28.2	284 49.8	-22 42.8
16	73 52.6	68	13 14.1	-105	1 37.2	-16 28.4	314 54.7	-22 42.8
18	102 44.1	69	12 53.1	-107	31 41.3	-16 28.6	344 59.6	-22 42.8
20	131 35.9	70	12 31.7	-108	61 45.5	-16 28.9	15 4.5	-22 42.8
22	160 27.9	71	12 10.0	-110	91 49.7	-16 29.1	45 9.5	-22 42.8
Δ					21	-1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	2 9.1	.9	15.9	T _m	10 53	2.3	60.7	16.5	
12	2 19.5	T _{m☉}	11 h 57.7 min	Starost	27.6 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	14 33	.1	155	-5.4	♃	15 54	.0	134	-1.5
♂	21 0	.1	57	-2.2	♄	18 60	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 37.4	5 24.9	347 59.6	141 53.9	-15 18.7	44 59.5	-25 18.3
2	210 37.9	5 23.0	18 4.5	171 55.6	-15 20.6	75 3.6	-25 17.8
4	240 38.3	5 21.1	48 9.4	201 57.2	-15 22.5	105 7.7	-25 17.3
6	270 38.7	5 19.2	78 14.3	231 58.9	-15 24.4	135 11.8	-25 16.9
8	300 39.2	5 17.4	108 19.3	262 .6	-15 26.2	165 15.9	-25 16.4
10	330 39.6	5 15.5	138 24.2	292 2.4	-15 28.1	195 20.0	-25 15.9
12	0 40.0	5 13.6	168 29.1	322 4.1	-15 30.0	225 24.1	-25 15.4
14	30 40.5	5 11.7	198 34.1	352 5.8	-15 31.8	255 28.2	-25 14.9
16	60 40.9	5 9.8	228 39.0	22 7.5	-15 33.7	285 32.3	-25 14.5
18	90 41.3	5 7.9	258 43.9	52 9.2	-15 35.6	315 36.3	-25 14.0
20	120 41.8	5 6.0	288 48.8	82 11.0	-15 37.4	345 40.4	-25 13.5
22	150 42.2	5 4.1	318 53.8	112 12.7	-15 39.3	15 44.5	-25 13.0
Δ	2	-9		9	-9	20	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 13	18 40	0 43	2 40	4 15	3.9	19 0	.7
55	5 21	18 33	0 37	2 12	4 30	3.6	18 50	.9
50	5 27	18 27	0 33	1 54	4 41	3.4	18 42	1.1
45	5 31	18 23	0 30	1 42	4 50	3.2	18 36	1.3
40	5 35	18 19	0 27	1 33	4 58	3.0	18 31	1.5
35	5 38	18 16	0 25	1 26	5 4	2.9	18 26	1.6
30	5 41	18 13	0 24	1 21	5 10	2.8	18 22	1.7
20	5 46	18 8	0 22	1 14	5 19	2.6	18 14	1.9
10	5 50	18 4	0 21	1 10	5 28	2.4	18 8	2.1
0	5 54	18 1	0 21	1 9	5 36	2.3	18 2	2.2
10	5 58	17 57	0 21	1 10	5 44	2.1	17 56	2.4
20	6 2	17 53	0 22	1 13	5 52	1.9	17 49	2.5
30	6 6	17 49	0 24	1 19	6 2	1.8	17 42	2.7
35	6 8	17 47	0 25	1 24	6 8	1.6	17 37	2.9
40	6 11	17 44	0 27	1 30	6 14	1.5	17 32	3.0
45	6 14	17 41	0 29	1 38	6 21	1.4	17 26	3.1
50	6 18	17 38	0 32	1 48	6 30	1.2	17 19	3.3
55	6 22	17 34	0 36	2 1	6 41	1.0	17 10	3.6
60	6 28	17 28	0 42	2 20	6 55	.7	16 59	3.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	189 20.2	73	11 48.1	-111	121 53.9	-16 29.3	75 14.4	-22 42.8
2	218 12.7	74	11 25.8	-113	151 58.0	-16 29.5	105 19.3	-22 42.8
4	247 5.5	75	11 3.2	-114	182 2.2	-16 29.8	135 24.2	-22 42.8
6	275 58.5	76	10 40.4	-115	212 6.4	-16 30.0	165 29.1	-22 42.9
8	304 51.7	77	10 17.3	-117	242 10.5	-16 30.2	195 34.0	-22 42.9
10	333 45.2	79	9 54.0	-118	272 14.7	-16 30.4	225 38.9	-22 42.9
12	2 39.0	80	9 30.5	-119	302 18.9	-16 30.7	255 43.8	-22 42.9
14	31 32.9	81	9 6.7	-120	332 23.0	-16 30.9	285 48.7	-22 42.9
16	60 27.1	82	8 42.7	-121	2 27.2	-16 31.1	315 53.6	-22 42.9
18	89 21.6	83	8 18.6	-122	32 31.3	-16 31.4	345 58.5	-22 42.9
20	118 16.3	85	7 54.2	-122	62 35.5	-16 31.6	16 3.4	-22 42.9
22	147 11.2	86	7 29.7	-123	92 39.7	-16 31.8	46 8.3	-22 43.0
Δ					21	-1	25	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	2 29.8	.9	15.9	T _m	11 49	2.2	60.6	16.5	
12	2 40.1	T _{m☉}	11 h 57.3 min	Starost	28.6 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	14 32	.1	154	-5.5	♃	15 50	.0	134	-1.5
♂	20 57	.1	57	-2.2	♄	18 56	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 42.6	5 2.2	348 58.7	142 14.5	-15 41.1	45 48.5	-25 12.5
2	210 43.1	5 .3	19 3.6	172 16.2	-15 43.0	75 52.6	-25 12.0
4	240 43.5	4 58.5	49 8.5	202 18.0	-15 44.8	105 56.6	-25 11.6
6	270 43.9	4 56.6	79 13.5	232 19.8	-15 46.7	136 .6	-25 11.1
8	300 44.4	4 54.7	109 18.4	262 21.5	-15 48.5	166 4.7	-25 10.6
10	330 44.8	4 52.8	139 23.3	292 23.3	-15 50.3	196 8.7	-25 10.1
12	0 45.2	4 50.9	169 28.3	322 25.1	-15 52.2	226 12.7	-25 9.6
14	30 45.7	4 49.0	199 33.2	352 26.9	-15 54.0	256 16.7	-25 9.1
16	60 46.1	4 47.1	229 38.1	22 28.7	-15 55.8	286 20.8	-25 8.6
18	90 46.5	4 45.2	259 43.0	52 30.5	-15 57.6	316 24.8	-25 8.1
20	120 47.0	4 43.3	289 48.0	82 32.3	-15 59.5	346 28.8	-25 7.6
22	150 47.4	4 41.4	319 52.9	112 34.1	-16 1.3	16 32.8	-25 7.1
Δ	2	-9		9	-9	20	2

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 16	18 37	0 43	2 39	5 49	3.8	19 16	1.9
55	5 23	18 30	0 37	2 12	5 56	3.5	19 13	1.9
50	5 28	18 25	0 33	1 54	6 2	3.3	19 10	1.9
45	5 32	18 21	0 30	1 42	6 6	3.1	19 7	2.0
40	5 36	18 17	0 27	1 33	6 10	2.9	19 6	2.0
35	5 39	18 14	0 25	1 26	6 13	2.8	19 4	2.0
30	5 42	18 12	0 24	1 21	6 16	2.7	19 2	2.0
20	5 46	18 7	0 22	1 14	6 22	2.5	18 60	2.1
10	5 50	18 4	0 21	1 10	6 26	2.3	18 57	2.1
0	5 54	18 0	0 21	1 9	6 30	2.2	18 55	2.1
10	5 57	17 57	0 21	1 10	6 34	2.0	18 53	2.2
20	6 1	17 54	0 22	1 13	6 39	1.8	18 50	2.2
30	6 5	17 50	0 24	1 19	6 44	1.6	18 47	2.2
35	6 7	17 48	0 25	1 24	6 47	1.5	18 46	2.3
40	6 9	17 45	0 27	1 30	6 50	1.4	18 44	2.3
45	6 12	17 43	0 29	1 38	6 54	1.3	18 42	2.3
50	6 15	17 39	0 32	1 48	6 59	1.1	18 39	2.4
55	6 20	17 35	0 36	2 1	7 4	.9	18 36	2.4
60	6 25	17 30	0 42	2 20	7 12	.6	18 31	2.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 6.3	87	7 5.1	-124	122 43.8	-16 32.0	76 13.2	-22 43.0
2	205 1.6	88	6 40.3	-125	152 48.0	-16 32.3	106 18.1	-22 43.0
4	233 57.2	89	6 15.4	-125	182 52.1	-16 32.5	136 23.0	-22 43.0
6	262 53.0	90	5 50.3	-126	212 56.3	-16 32.7	166 27.9	-22 43.0
8	291 49.0	91	5 25.2	-126	243 .5	-16 32.9	196 32.8	-22 43.0
10	320 45.3	92	5 .0	-126	273 4.6	-16 33.2	226 37.6	-22 43.0
12	349 41.7	93	4 34.7	-127	303 8.8	-16 33.4	256 42.5	-22 43.0
14	18 38.3	94	4 9.3	-127	333 12.9	-16 33.6	286 47.4	-22 43.0
16	47 35.2	95	3 43.9	-127	3 17.1	-16 33.9	316 52.3	-22 43.1
18	76 32.2	96	3 18.5	-127	33 21.2	-16 34.1	346 57.2	-22 43.1
20	105 29.4	97	2 53.0	-127	63 25.4	-16 34.3	17 2.1	-22 43.1
22	134 26.8	98	2 27.5	-128	93 29.5	-16 34.5	47 7.0	-22 43.1
Δ					21	-1	24	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	2 50.5	.9	15.9	T _m	12 43	2.1	60.2	16.4
12	3 1.0	T _m ☉	11 h 57.0 min	Starost	.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 30	.1	153	-5.5	♄	15 47	.0	134	-1.5
♂	20 54	.1	57	-2.1	♂	18 52	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 47.9	4 39.5	349 57.8	142 35.9	-16 3.1	46 36.8	-25 6.6
2	210 48.3	4 37.6	20 2.8	172 37.7	-16 4.9	76 40.7	-25 6.1
4	240 48.7	4 35.7	50 7.7	202 39.6	-16 6.7	106 44.7	-25 5.6
6	270 49.2	4 33.8	80 12.6	232 41.4	-16 8.5	136 48.7	-25 5.1
8	300 49.6	4 31.9	110 17.5	262 43.2	-16 10.3	166 52.7	-25 4.6
10	330 50.0	4 30.0	140 22.5	292 45.1	-16 12.1	196 56.6	-25 4.1
12	0 50.5	4 28.1	170 27.4	322 47.0	-16 13.9	227 .6	-25 3.6
14	30 50.9	4 26.2	200 32.3	352 48.8	-16 15.7	257 4.5	-25 3.1
16	60 51.4	4 24.3	230 37.3	22 50.7	-16 17.5	287 8.5	-25 2.6
18	90 51.8	4 22.4	260 42.2	52 52.6	-16 19.3	317 12.4	-25 2.0
20	120 52.2	4 20.5	290 47.1	82 54.4	-16 21.1	347 16.4	-25 1.5
22	150 52.7	4 18.6	320 52.0	112 56.3	-16 22.8	17 20.3	-25 1.0
Δ	2	-10		9	-9	20	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 18	18 34	0 43	2 37	7 19	.9	20 1	3.6
55	5 25	18 27	0 37	2 11	7 20	1.1	19 58	3.4
50	5 30	18 23	0 33	1 54	7 20	1.3	19 56	3.1
45	5 34	18 19	0 30	1 41	7 20	1.4	19 55	3.0
40	5 37	18 16	0 27	1 33	7 21	1.5	19 53	2.8
35	5 40	18 13	0 25	1 26	7 21	1.6	19 52	2.7
30	5 42	18 11	0 24	1 21	7 21	1.7	19 51	2.6
20	5 47	18 6	0 22	1 14	7 22	1.8	19 49	2.4
10	5 50	18 3	0 21	1 10	7 22	2.0	19 48	2.2
0	5 53	17 60	0 21	1 9	7 22	2.1	19 46	2.1
10	5 57	17 57	0 21	1 10	7 23	2.2	19 45	1.9
20	5 60	17 54	0 22	1 13	7 23	2.4	19 43	1.8
30	6 3	17 50	0 24	1 19	7 24	2.5	19 41	1.6
35	6 5	17 48	0 25	1 24	7 24	2.6	19 40	1.5
40	6 8	17 46	0 27	1 30	7 24	2.7	19 39	1.4
45	6 10	17 44	0 29	1 38	7 25	2.8	19 37	1.2
50	6 13	17 41	0 32	1 48	7 25	3.0	19 36	1.1
55	6 17	17 37	0 36	2 2	7 26	3.2	19 34	.8
60	6 22	17 33	0 42	2 21	7 26	3.4	19 31	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	163 24.4	99	2 2.0	-127	123 33.7	-16 34.8	77 11.9	-22 43.1
2	192 22.1	100	1 36.5	-127	153 37.8	-16 35.0	107 16.8	-22 43.1
4	221 20.1	100	1 11.0	-127	183 42.0	-16 35.2	137 21.7	-22 43.1
6	250 18.1	101	0 45.6	-127	213 46.1	-16 35.5	167 26.5	-22 43.1
8	279 16.4	102	0 20.2	-75	243 50.3	-16 35.7	197 31.4	-22 43.1
10	308 14.8	103	0 5.2	127	273 54.4	-16 35.9	227 36.3	-22 43.2
12	337 13.4	104	0 30.5	126	303 58.6	-16 36.1	257 41.2	-22 43.2
14	6 12.1	104	0 55.8	126	334 2.7	-16 36.4	287 46.1	-22 43.2
16	35 10.9	105	1 20.9	125	4 6.9	-16 36.6	317 51.0	-22 43.2
18	64 9.9	106	1 46.0	125	34 11.0	-16 36.8	347 55.8	-22 43.2
20	93 9.0	106	2 11.0	124	64 15.1	-16 37.1	18 .7	-22 43.2
22	122 8.3	107	2 35.8	124	94 19.3	-16 37.3	48 5.6	-22 43.2
Δ					21	-1	24	0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	3 11.4	.9	15.9	T _m	13 34	2.1	59.5	16.2
12	3 22.0	T _m ☉	11 h 56.6 min	Starost	1.2 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 29	.1	153	-5.5	♄	15 44	.0	134	-1.5
♂	20 51	.1	57	-2.1	♂	18 48	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS							
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂						
h	°	'	°	'	°	'	°	'					
0	180	53.1	4	16.7	350	57.0	142	58.2 -16 24.6	47	24.2 -25 .5			
2	210	53.6	4	14.7	21	1.9	173	.1 -16 26.4	77	28.1 -24 60.0			
4	240	54.0	4	12.8	51	6.8	203	2.0 -16 28.2	107	32.1 -24 59.5			
6	270	54.4	4	10.9	81	11.8	233	3.9 -16 29.9	137	36.0 -24 58.9			
8	300	54.9	4	9.0	111	16.7	263	5.9 -16 31.7	167	39.9 -24 58.4			
10	330	55.3	4	7.1	141	21.6	293	7.8 -16 33.5	197	43.8 -24 57.9			
12	0	55.8	4	5.2	171	26.5	323	9.7 -16 35.2	227	47.7 -24 57.4			
14	30	56.2	4	3.3	201	31.5	353	11.7 -16 37.0	257	51.6 -24 56.8			
16	60	56.6	4	1.4	231	36.4	23	13.6 -16 38.7	287	55.4 -24 56.3			
18	90	57.1	3	59.5	261	41.3	53	15.6 -16 40.5	317	59.3 -24 55.8			
20	120	57.5	3	57.6	291	46.3	83	17.5 -16 42.2	348	3.2 -24 55.3			
22	150	58.0	3	55.7	321	51.2	113	19.5 -16 44.0	18	7.1 -24 54.7			
Δ		2		-10			10		-9		19		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 20	18 31	0 43	2 36	7 40	.6	21 28	3.5
55	5 26	18 25	0 37	2 10	7 46	.9	21 19	3.2
50	5 31	18 20	0 33	1 53	7 50	1.1	21 12	3.0
45	5 35	18 17	0 30	1 41	7 54	1.2	21 6	2.9
40	5 38	18 14	0 27	1 32	7 57	1.4	21 1	2.7
35	5 41	18 11	0 25	1 26	7 59	1.5	20 57	2.6
30	5 43	18 9	0 24	1 21	8 2	1.6	20 53	2.5
20	5 47	18 6	0 22	1 14	8 6	1.8	20 47	2.3
10	5 50	18 2	0 21	1 10	8 9	1.9	20 41	2.2
0	5 53	17 60	0 21	1 9	8 13	2.1	20 36	2.0
10	5 56	17 57	0 21	1 10	8 16	2.2	20 31	1.9
20	5 59	17 54	0 22	1 13	8 20	2.4	20 25	1.8
30	6 2	17 51	0 24	1 19	8 24	2.5	20 19	1.6
35	6 4	17 49	0 25	1 24	8 26	2.6	20 15	1.5
40	6 6	17 47	0 27	1 30	8 29	2.8	20 11	1.4
45	6 8	17 45	0 29	1 38	8 33	2.9	20 7	1.3
50	6 11	17 42	0 32	1 48	8 37	3.1	20 1	1.1
55	6 14	17 39	0 36	2 2	8 41	3.3	19 54	.9
60	6 19	17 35	0 41	2 21	8 48	3.6	19 45	.7

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	151	7.6	107	3 .6	123	124	23.4 -16 37.5	78	10.5 -22 43.2			
2	180	7.1	108	3 25.2	122	154	27.6 -16 37.8	108	15.4 -22 43.2			
4	209	6.7	108	3 49.7	122	184	31.7 -16 38.0	138	20.2 -22 43.3			
6	238	6.4	109	4 14.0	121	214	35.8 -16 38.2	168	25.1 -22 43.3			
8	267	6.2	109	4 38.2	120	244	40.0 -16 38.4	198	30.0 -22 43.3			
10	296	6.1	110	5 2.3	119	274	44.1 -16 38.7	228	34.9 -22 43.3			
12	325	6.1	110	5 26.1	118	304	48.3 -16 38.9	258	39.7 -22 43.3			
14	354	6.2	111	5 49.8	117	334	52.4 -16 39.1	288	44.6 -22 43.3			
16	23	6.3	111	6 13.3	117	4	56.5 -16 39.4	318	49.5 -22 43.3			
18	52	6.6	112	6 36.6	116	35	.7 -16 39.6	348	54.4 -22 43.3			
20	81	6.9	112	6 59.7	114	65	4.8 -16 39.8	18	59.2 -22 43.4			
22	110	7.3	112	7 22.6	113	95	8.9 -16 40.1	49	4.1 -22 43.4			
Δ						21		-1		24		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	3 32.5	.9	15.9	T _m	14 24	2.1	58.8 16.0
12	3 43.1			T _{m☉}	11 h 56.3 min	Starost	2.2 d Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	14 27	.1	152	-5.6	♂	15 40	.0	133	-1.4
♂	20 48	.1	56	-2.1	♂	18 44	.0	87	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS							
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂						
h	°	'	°	'	°	'	°	'					
0	180	58.4	3	53.8	351	56.1	143	21.5 -16 45.7	48	10.9 -24 54.2			
2	210	58.9	3	51.8	22	1.0	173	23.4 -16 47.4	78	14.8 -24 53.7			
4	240	59.3	3	49.9	52	6.0	203	25.4 -16 49.2	108	18.6 -24 53.1			
6	270	59.7	3	48.0	82	10.9	233	27.4 -16 50.9	138	22.5 -24 52.6			
8	301	.2	3	46.1	112	15.8	263	29.4 -16 52.6	168	26.3 -24 52.1			
10	331	.6	3	44.2	142	20.8	293	31.4 -16 54.3	198	30.2 -24 51.5			
12	1	1.1	3	42.3	172	25.7	323	33.4 -16 56.1	228	34.0 -24 51.0			
14	31	1.5	3	40.4	202	30.6	353	35.5 -16 57.8	258	37.8 -24 50.5			
16	61	1.9	3	38.4	232	35.5	23	37.5 -16 59.5	288	41.6 -24 49.9			
18	91	2.4	3	36.5	262	40.5	53	39.5 -17 1.2	318	45.5 -24 49.4			
20	121	2.8	3	34.6	292	45.4	83	41.6 -17 2.9	348	49.3 -24 48.8			
22	151	3.3	3	32.7	322	50.3	113	43.6 -17 4.6	18	53.1 -24 48.3			
Δ		2		-10			10		-9		19		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 23	18 28	0 42	2 35	7 55	.7	22 52	3.3
55	5 28	18 22	0 37	2 9	8 7	1.0	22 36	3.1
50	5 33	18 18	0 33	1 53	8 16	1.1	22 24	2.9
45	5 36	18 15	0 30	1 41	8 23	1.3	22 14	2.7
40	5 39	18 12	0 27	1 32	8 29	1.4	22 6	2.6
35	5 41	18 10	0 25	1 26	8 35	1.5	21 59	2.5
30	5 43	18 8	0 24	1 21	8 39	1.6	21 53	2.4
20	5 47	18 5	0 22	1 14	8 48	1.8	21 43	2.3
10	5 50	18 2	0 21	1 10	8 55	1.9	21 34	2.2
0	5 53	17 59	0 21	1 9	9 2	2.0	21 25	2.0
10	5 55	17 57	0 21	1 10	9 9	2.2	21 17	1.9
20	5 58	17 54	0 22	1 13	9 16	2.3	21 8	1.8
30	6 1	17 51	0 24	1 19	9 25	2.5	20 57	1.6
35	6 3	17 50	0 25	1 24	9 30	2.6	20 51	1.6
40	6 4	17 48	0 27	1 30	9 36	2.7	20 45	1.5
45	6 7	17 46	0 29	1 38	9 42	2.8	20 37	1.3
50	6 9	17 44	0 32	1 48	9 50	2.9	20 27	1.2
55	6 12	17 41	0 36	2 2	10 0	3.1	20 16	1.0
60	6 16	17 37	0 41	2 21	10 13	3.4	20 1	.8

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	139	7.7	113	7 45.3	112	125	13.1 -16 40.3	79	9.0 -22 43.4			
2	168	8.2	113	8 7.7	111	155	17.2 -16 40.5	109	13.9 -22 43.4			
4	197	8.8	113	8 29.9	110	185	21.3 -16 40.8	139	18.7 -22 43.4			
6	226	9.4	113	8 51.9	109	215	25.5 -16 41.0	169	23.6 -22 43.4			
8	255	10.0	114	9 13.7	108	245	29.6 -16 41.2	199	28.5 -22 43.4			
10	284	10.7	114	9 35.2	106	275	33.7 -16 41.5	229	33.3 -22 43.4			
12	313	11.5	114	9 56.4	105	305	37.8 -16 41.7	259	38.2 -22 43.4			
14	342	12.3	114	10 17.4	104	335	42.0 -16 41.9	289	43.1 -22 43.4			
16	11	13.1	114	10 38.1	102	5	46.1 -16 42.2	319	47.9 -22 43.5			
18	40	13.9	114	10 58.6	101	35	50.2 -16 42.4	349	52.8 -22 43.5			
20	69	14.8	114	11 18.8	99	65	54.3 -16 42.6	19	57.6 -22 43.5			
22	98	15.7	115	11 38.7	98	95	58.5 -16 42.9	50	2.5 -22 43.5			
Δ						21		-1		24		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	3 53.6	.9	15.9	T _m	15 14	2.0	57.9 15.8
12	4 4.3			T _{m☉}	11 h 55.9 min	Starost	3.2 d Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	14 26	.1	151	-5.6	♂	15 37	.0	133	-1.4
♂	20 45	.1	56	-2.1	♂	18 40	.0	87	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	3.7	3	30.8	352	55.2	143	45.7	-17	6.3	48	56.9	-24	47.7
2	211	4.2	3	28.9	23	.2	173	47.7	-17	8.0	79	.7	-24	47.2
4	241	4.6	3	26.9	53	5.1	203	49.8	-17	9.7	109	4.5	-24	46.6
6	271	5.1	3	25.0	83	10.0	233	51.9	-17	11.4	139	8.2	-24	46.1
8	301	5.5	3	23.1	113	15.0	263	54.0	-17	13.1	169	12.0	-24	45.5
10	331	5.9	3	21.2	143	19.9	293	56.1	-17	14.8	199	15.8	-24	45.0
12	1	6.4	3	19.3	173	24.8	323	58.2	-17	16.4	229	19.6	-24	44.4
14	31	6.8	3	17.3	203	29.7	354	.3	-17	18.1	259	23.3	-24	43.9
16	61	7.3	3	15.4	233	34.7	24	2.4	-17	19.8	289	27.1	-24	43.3
18	91	7.7	3	13.5	263	39.6	54	4.5	-17	21.4	319	30.9	-24	42.8
20	121	8.2	3	11.6	293	44.5	84	6.6	-17	23.1	349	34.6	-24	42.2
22	151	8.6	3	9.7	323	49.5	114	8.8	-17	24.8	19	38.4	-24	41.7
Δ		2		-10				11		-8		19		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 25	18 25	0 42	2 33	8 12	.8	. . . .	.0
55	5 30	18 20	0 37	2 9	8 30	1.1	23 50	2.9
50	5 34	18 16	0 33	1 52	8 43	1.3	23 33	2.7
45	5 37	18 13	0 29	1 41	8 54	1.4	23 20	2.6
40	5 40	18 11	0 27	1 32	9 3	1.5	23 9	2.5
35	5 42	18 9	0 25	1 25	9 11	1.6	22 60	2.4
30	5 44	18 7	0 24	1 20	9 18	1.7	22 52	2.3
20	5 47	18 4	0 22	1 14	9 30	1.8	22 38	2.2
10	5 50	18 1	0 21	1 10	9 41	1.9	22 26	2.1
0	5 52	17 59	0 21	1 9	9 51	2.0	22 14	2.0
10	5 55	17 57	0 21	1 10	10 1	2.1	22 3	1.9
20	5 57	17 54	0 22	1 13	10 12	2.2	21 51	1.8
30	5 60	17 52	0 24	1 19	10 24	2.4	21 37	1.7
35	6 1	17 51	0 25	1 24	10 31	2.5	21 29	1.7
40	6 3	17 49	0 27	1 30	10 40	2.6	21 20	1.6
45	6 5	17 47	0 29	1 38	10 49	2.7	21 9	1.5
50	6 7	17 45	0 32	1 48	11 1	2.8	20 56	1.4
55	6 9	17 43	0 36	2 2	11 16	3.0	20 40	1.2
60	6 13	17 40	0 41	2 22	11 35	3.2	20 19	1.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	127	16.6	115	11	58.3	97	126	2.6	-16	43.1	80	7.4	-22	43.5		
2	156	17.5	115	12	17.6	95	156	6.7	-16	43.3	110	12.2	-22	43.5		
4	185	18.5	115	12	36.6	94	186	10.8	-16	43.6	140	17.1	-22	43.5		
6	214	19.5	115	12	55.3	92	216	14.9	-16	43.8	170	21.9	-22	43.5		
8	243	20.4	115	13	13.7	90	246	19.1	-16	44.0	200	26.8	-22	43.5		
10	272	21.4	115	13	31.8	89	276	23.2	-16	44.3	230	31.7	-22	43.6		
12	301	22.4	115	13	49.5	87	306	27.3	-16	44.5	260	36.5	-22	43.6		
14	330	23.4	115	14	7.0	86	336	31.4	-16	44.7	290	41.4	-22	43.6		
16	359	24.4	115	14	24.1	84	6	35.5	-16	45.0	320	46.2	-22	43.6		
18	28	25.4	115	14	40.9	82	36	39.7	-16	45.2	350	51.1	-22	43.6		
20	57	26.4	115	14	57.4	81	66	43.8	-16	45.4	20	55.9	-22	43.6		
22	86	27.4	115	15	13.5	79	96	47.9	-16	45.7	51	.8	-22	43.6		
Δ								21		-1		24		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	4 14.9	.9	15.9	T _m	16 2	2.0	57.0 15.5		
12	4 25.6			T _{m☉}	11 h 55.6 min	Starost	4.2 d Faza ●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 24	.1	151	-5.6	♃	15 34	.0	133	-1.4
♂	20 42	.1	56	-2.1	♄	18 36	.0	87	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	9.1	3	7.7	353	54.4	144	10.9	-17	26.4	49	42.1	-24	41.1
2	211	9.5	3	5.8	23	59.3	174	13.0	-17	28.1	79	45.8	-24	40.5
4	241	9.9	3	3.9	54	4.2	204	15.2	-17	29.7	109	49.6	-24	40.0
6	271	10.4	3	2.0	84	9.2	234	17.4	-17	31.4	139	53.3	-24	39.4
8	301	10.8	3	.0	114	14.1	264	19.5	-17	33.0	169	57.0	-24	38.8
10	331	11.3	2	58.1	144	19.0	294	21.7	-17	34.7	200	.7	-24	38.3
12	1	11.7	2	56.2	174	24.0	324	23.9	-17	36.3	230	4.4	-24	37.7
14	31	12.2	2	54.3	204	28.9	354	26.1	-17	37.9	260	8.1	-24	37.1
16	61	12.6	2	52.3	234	33.8	24	28.3	-17	39.6	290	11.8	-24	36.6
18	91	13.1	2	50.4	264	38.7	54	30.5	-17	41.2	320	15.5	-24	36.0
20	121	13.5	2	48.5	294	43.7	84	32.7	-17	42.8	350	19.2	-24	35.4
22	151	14.0	2	46.6	324	48.6	114	35.0	-17	44.4	20	22.9	-24	34.9
Δ		2		-10				11		-8		19		3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 27	18 22	0 42	2 32	8 32	1.1	0 13	3.1
55	5 32	18 17	0 37	2 8	8 56	1.3	. . . .	.0
50	5 36	18 14	0 32	1 52	9 14	1.4	. . . .	.0
45	5 38	18 11	0 29	1 40	9 28	1.6	. . . .	.0
40	5 41	18 9	0 27	1 32	9 40	1.6	. . . .	.0
35	5 43	18 7	0 25	1 25	9 50	1.7	23 58	2.3
30	5 44	18 6	0 24	1 20	9 58	1.8	23 48	2.3
20	5 47	18 3	0 22	1 14	10 14	1.9	23 31	2.2
10	5 50	18 1	0 21	1 10	10 27	2.0	23 17	2.1
0	5 52	17 58	0 21	1 9	10 40	2.0	23 3	2.0
10	5 54	17 57	0 21	1 10	10 52	2.1	22 49	2.0
20	5 56	17 55	0 22	1 13	11 6	2.2	22 35	1.9
30	5 58	17 52	0 24	1 19	11 21	2.3	22 18	1.8
35	6 0	17 51	0 25	1 24	11 30	2.4	22 8	1.8
40	6 1	17 50	0 27	1 30	11 41	2.4	21 57	1.7
45	6 3	17 48	0 29	1 38	11 53	2.5	21 44	1.6
50	6 5	17 47	0 32	1 48	12 8	2.6	21 29	1.6
55	6 7	17 45	0 36	2 2	12 27	2.8	21 9	1.4
60	6 10	17 42	0 41	2 22	12 53	3.0	20 42	1.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	115	28.4	115	15	29.3	77	126	52.0	-16	45.9	81	5.6	-22	43.6		
2	144	29.3	115	15	44.7	75	156	56.1	-16	46.1	111	10.5	-22	43.6		
4	173	30.3	115	15	59.8	74	187	.2	-16	46.4	141	15.4	-22	43.7		
6	202	31.3	115	16	14.6	72	217	4.3	-16	46.6	171	20.2	-22	43.7		
8	231	32.2	115	16	29.0	70	247	8.4	-16	46.9	201	25.1	-22	43.7		
10	260	33.2	115	16	43.0	68	277	12.6	-16	47.1	231	29.9	-22	43.7		
12	289	34.1	115	16	56.7	67	307	16.7	-16	47.3	261	34.7	-22	43.7		
14	318	35.0	115	17	10.0	65	337	20.8	-16	47.6	291	39.6	-22	43.7		
16	347	35.9	115	17	22.9	63	7	24.9	-16	47.8	321	44.4	-22	43.7		
18	16	36.8	114	17	35.5	61	37	29.0	-16	48.0	351	49.3	-22	43.7		
20	45	37.7	114	17	47.7	59	67	33.1	-16	48.3	21	54.1	-22	43.7		
22	74	38.6	114	17	59.6	57	97	37.2	-16	48.5	51	59.0	-22	43.8		
Δ								21		-1		24		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 14.4	2 44.6	354 53.5	144 37.2	-17 46.1	50 26.6	-24 34.3
2	211 14.8	2 42.7	24 58.5	174 39.4	-17 47.7	80 30.3	-24 33.7
4	241 15.3	2 40.8	55 3.4	204 41.7	-17 49.3	110 33.9	-24 33.1
6	271 15.7	2 38.9	85 8.3	234 43.9	-17 50.9	140 37.6	-24 32.6
8	301 16.2	2 36.9	115 13.2	264 46.2	-17 52.5	170 41.3	-24 32.0
10	331 16.6	2 35.0	145 18.2	294 48.5	-17 54.1	200 44.9	-24 31.4
12	1 17.1	2 33.1	175 23.1	324 50.8	-17 55.7	230 48.6	-24 30.8
14	31 17.5	2 31.1	205 28.0	354 53.0	-17 57.3	260 52.2	-24 30.2
16	61 18.0	2 29.2	235 33.0	24 55.3	-17 58.9	290 55.9	-24 29.6
18	91 18.4	2 27.3	265 37.9	54 57.6	-18 .4	320 59.5	-24 29.1
20	121 18.9	2 25.4	295 42.8	84 60.0	-18 2.0	351 3.1	-24 28.5
22	151 19.3	2 23.4	325 47.7	115 2.3	-18 3.6	21 6.8	-24 27.9
Δ	2	-10		11	-8	18	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 30	18 18	0 42	2 31	8 58	1.4	1 27	2.8
55	5 34	18 15	0 36	2 7	9 27	1.6	0 59	2.6
50	5 37	18 12	0 32	1 52	9 48	1.7	0 38	2.5
45	5 40	18 9	0 29	1 40	10 5	1.7	0 22	2.4
40	5 42	18 7	0 27	1 32	10 19	1.8	0 9	2.4
35	5 43	18 6	0 25	1 25	10 31	1.8	...	.0
30	5 45	18 4	0 24	1 20	10 41	1.9	...	.0
20	5 48	18 2	0 22	1 13	10 58	1.9	...	.0
10	5 50	17 60	0 21	1 10	11 14	2.0	...	.0
0	5 52	17 58	0 21	1 9	11 28	2.0	23 52	2.0
10	5 53	17 56	0 21	1 10	11 43	2.1	23 37	2.0
20	5 55	17 55	0 22	1 13	11 59	2.1	23 21	2.0
30	5 57	17 53	0 24	1 20	12 17	2.2	23 2	1.9
35	5 58	17 52	0 25	1 24	12 27	2.2	22 51	1.9
40	5 59	17 51	0 27	1 30	12 39	2.3	22 39	1.9
45	6 1	17 50	0 29	1 38	12 53	2.3	22 24	1.8
50	6 2	17 48	0 32	1 49	13 11	2.4	22 6	1.8
55	6 4	17 47	0 36	2 3	13 33	2.5	21 43	1.7
60	6 7	17 44	0 41	2 23	14 4	2.6	21 11	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	103 39.5	114 18	11.1	55	127 41.3	-16 48.7	82 3.8	-22 43.8
2	132 40.4	114 18	22.1	54	157 45.4	-16 49.0	112 8.7	-22 43.8
4	161 41.2	114 18	32.9	52	187 49.5	-16 49.2	142 13.5	-22 43.8
6	190 42.1	114 18	43.2	50	217 53.6	-16 49.5	172 18.3	-22 43.8
8	219 42.9	114 18	53.1	48	247 57.7	-16 49.7	202 23.2	-22 43.8
10	248 43.8	114 19	2.7	46	278 1.8	-16 49.9	232 28.0	-22 43.8
12	277 44.6	114 19	11.9	44	308 5.9	-16 50.2	262 32.9	-22 43.8
14	306 45.4	114 19	20.7	42	338 10.0	-16 50.4	292 37.7	-22 43.8
16	335 46.3	114 19	29.1	40	8 14.1	-16 50.6	322 42.5	-22 43.8
18	4 47.1	114 19	37.1	38	38 18.2	-16 50.9	352 47.4	-22 43.9
20	33 47.9	114 19	44.7	36	68 22.3	-16 51.1	22 52.2	-22 43.9
22	62 48.7	114 19	52.0	34	98 26.4	-16 51.4	52 57.1	-22 43.9
Δ					21	-1	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	4 57.6	.9	15.9	T _m 17 40	2.0	55.5	15.1		
12	5 8.3	T _m 11 h 54.9 min	Starost 6.2 d	Faza ●					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 20	.1	150	-5.7	♄	15 27	.0	133	-1.4
	20 36	.1	56	-2.0	♅	18 29	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 19.8	2 21.5	355 52.7	145 4.6	-18 5.2	51 10.4	-24 27.3
2	211 20.2	2 19.6	25 57.6	175 6.9	-18 6.7	81 14.0	-24 26.7
4	241 20.6	2 17.6	56 2.5	205 9.3	-18 8.3	111 17.6	-24 26.1
6	271 21.1	2 15.7	86 7.4	235 11.6	-18 9.9	141 21.2	-24 25.5
8	301 21.5	2 13.8	116 12.4	265 14.0	-18 11.4	171 24.8	-24 24.9
10	331 22.0	2 11.8	146 17.3	295 16.4	-18 13.0	201 28.4	-24 24.3
12	1 22.4	2 9.9	176 22.2	325 18.8	-18 14.5	231 32.0	-24 23.7
14	31 22.9	2 8.0	206 27.2	355 21.1	-18 16.1	261 35.6	-24 23.1
16	61 23.3	2 6.0	236 32.1	25 23.5	-18 17.6	291 39.2	-24 22.6
18	91 23.8	2 4.1	266 37.0	55 25.9	-18 19.1	321 42.8	-24 22.0
20	121 24.2	2 2.2	296 41.9	85 28.4	-18 20.7	351 46.4	-24 21.4
22	151 24.7	2 .2	326 46.9	115 30.8	-18 22.2	21 50.0	-24 20.8
Δ	2	-10		12	-8	18	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 32	18 15	0 42	2 30	9 32	1.8	2 34	2.4
55	5 36	18 12	0 36	2 7	10 5	1.9	2 2	2.3
50	5 39	18 9	0 32	1 51	10 28	1.9	1 38	2.2
45	5 41	18 7	0 29	1 40	10 47	1.9	1 20	2.2
40	5 43	18 6	0 27	1 31	11 2	2.0	1 6	2.2
35	5 44	18 4	0 25	1 25	11 15	2.0	0 53	2.2
30	5 46	18 3	0 24	1 20	11 26	2.0	0 42	2.1
20	5 48	18 1	0 22	1 13	11 45	2.0	0 23	2.1
10	5 50	17 59	0 21	1 10	12 2	2.0	0 7	2.1
0	5 51	17 58	0 21	1 9	12 17	2.0	...	.0
10	5 53	17 56	0 21	1 10	12 33	2.0	...	.0
20	5 54	17 55	0 22	1 13	12 50	2.1	...	.0
30	5 56	17 53	0 24	1 20	13 9	2.1	23 48	2.0
35	5 57	17 53	0 25	1 24	13 20	2.1	23 37	2.0
40	5 58	17 52	0 27	1 30	13 33	2.1	23 24	2.0
45	5 59	17 51	0 29	1 38	13 49	2.1	23 8	2.0
50	6 0	17 50	0 32	1 49	14 8	2.1	22 49	2.0
55	6 2	17 48	0 36	2 3	14 32	2.1	22 24	2.0
60	6 4	17 47	0 41	2 23	15 6	2.1	21 50	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	91 49.6	114 19	58.8	32	128 30.5	-16 51.6	83 1.9	-22 43.9
2	120 50.4	114 20	5.3	30	158 34.6	-16 51.8	113 6.7	-22 43.9
4	149 51.3	114 20	11.3	28	188 38.7	-16 52.1	143 11.6	-22 43.9
6	178 52.1	114 20	17.0	26	218 42.8	-16 52.3	173 16.4	-22 43.9
8	207 53.0	114 20	22.2	24	248 46.9	-16 52.5	203 21.2	-22 43.9
10	236 53.9	114 20	27.1	22	278 51.0	-16 52.8	233 26.1	-22 43.9
12	265 54.8	115 20	31.6	20	308 55.1	-16 53.0	263 30.9	-22 43.9
14	294 55.7	115 20	35.7	18	338 59.2	-16 53.3	293 35.7	-22 44.0
16	323 56.6	115 20	39.3	16	9 3.3	-16 53.5	323 40.5	-22 44.0
18	352 57.6	115 20	42.6	14	39 7.3	-16 53.7	353 45.4	-22 44.0
20	21 58.6	115 20	45.5	12	69 11.4	-16 54.0	23 50.2	-22 44.0
22	50 59.6	115 20	48.0	10	99 15.5	-16 54.2	53 55.0	-22 44.0
Δ					20	-1	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	5 19.0	.9	15.9	T _m 18 29	2.0	54.9	15.0		
12	5 29.7	T _m 11 h 54.5 min	Starost 7.2 d	Faza ●					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 19	.1	149	-5.7	♄	15 24	.0	133	-1.4
	20 33	.1	55	-2.0	♅	18 25	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	181 25.1	1 58.3	356 51.8	145 33.2	-18 23.7	51 53.5	-24 20.1	
2	211 25.6	1 56.4	26 56.7	175 35.6	-18 25.2	81 57.1	-24 19.5	
4	241 26.0	1 54.4	57 1.7	205 38.1	-18 26.8	112 .6	-24 18.9	
6	271 26.5	1 52.5	87 6.6	235 40.5	-18 28.3	142 4.2	-24 18.3	
8	301 26.9	1 50.6	117 11.5	265 43.0	-18 29.8	172 7.7	-24 17.7	
10	331 27.3	1 48.6	147 16.4	295 45.5	-18 31.3	202 11.3	-24 17.1	
12	1 27.8	1 46.7	177 21.4	325 48.0	-18 32.8	232 14.8	-24 16.5	
14	31 28.2	1 44.8	207 26.3	355 50.5	-18 34.3	262 18.4	-24 15.9	
16	61 28.7	1 42.8	237 31.2	25 52.9	-18 35.8	292 21.9	-24 15.3	
18	91 29.1	1 40.9	267 36.2	55 55.5	-18 37.3	322 25.4	-24 14.7	
20	121 29.6	1 39.0	297 41.1	85 58.0	-18 38.8	352 28.9	-24 14.1	
22	151 30.0	1 37.0	327 46.0	116 .5	-18 40.2	22 32.5	-24 13.5	
Δ	2	-10		12	-7	18	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 35	18 12	0 42	2 29	10 15	2.2	3 31	1.9
55	5 38	18 9	0 36	2 6	10 50	2.2	2 57	1.9
50	5 40	18 7	0 32	1 51	11 14	2.2	2 32	2.0
45	5 42	18 6	0 29	1 40	11 33	2.1	2 13	2.0
40	5 44	18 4	0 27	1 31	11 49	2.1	1 58	2.0
35	5 45	18 3	0 25	1 25	12 2	2.1	1 45	2.0
30	5 46	18 2	0 24	1 20	12 13	2.1	1 33	2.0
20	5 48	18 0	0 22	1 13	13 39	2.1	1 14	2.0
10	5 50	17 59	0 21	1 10	12 50	2.0	0 57	2.0
0	5 51	17 57	0 21	1 9	13 6	2.0	0 41	2.0
10	5 52	17 56	0 21	1 10	13 22	2.0	0 25	2.0
20	5 53	17 55	0 22	1 13	13 39	2.0	0 8	2.0
30	5 55	17 54	0 24	1 20	13 59	1.9	...	.0
35	5 55	17 53	0 25	1 24	14 10	1.9	...	.0
40	5 56	17 53	0 27	1 30	14 23	1.9	...	.0
45	5 57	17 52	0 29	1 38	14 39	1.9	23 57	2.2
50	5 58	17 51	0 32	1 49	14 58	1.8	23 38	2.3
55	5 59	17 50	0 36	2 3	15 23	1.8	23 13	2.3
60	6 1	17 49	0 41	2 24	15 58	1.7	22 39	2.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	80 .6	115 20	50.1 8	129 19.6	-16 54.5	83 59.9	-22 44.0	
2	109 1.7	116 20	51.8 6	159 23.7	-16 54.7	114 4.7	-22 44.0	
4	138 2.8	116 20	53.1 5	189 27.8	-16 54.9	144 9.5	-22 44.0	
6	167 4.0	116 20	54.0 3	219 31.9	-16 55.2	174 14.3	-22 44.0	
8	196 5.1	116 20	54.5 1	249 36.0	-16 55.4	204 19.1	-22 44.1	
10	225 6.4	116 20	54.6 -1	279 40.0	-16 55.7	234 24.0	-22 44.1	
12	254 7.7	117 20	54.3 -3	309 44.1	-16 55.9	264 28.8	-22 44.1	
14	283 9.0	117 20	53.6 -5	339 48.2	-16 56.1	294 33.6	-22 44.1	
16	312 10.4	117 20	52.6 -7	9 52.3	-16 56.4	324 38.4	-22 44.1	
18	341 11.8	117 20	51.1 -9	39 56.4	-16 56.6	354 43.3	-22 44.1	
20	10 13.3	118 20	49.3 -11	70 .5	-16 56.9	24 48.1	-22 44.1	
22	39 14.8	118 20	47.0 -13	100 4.5	-16 57.1	54 52.9	-22 44.1	
Δ				20	-1	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	5 40.5	.9	15.9	T _m	19 18	2.0	54.5 14.8		
12	5 51.2	T _{m☉}	11 h 54.1 min	Starost	8.2 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 17	.1	149	-5.8	♄	15 21	.0	132	-1.4
♂	20 30	.1	55	-2.0	♅	18 21	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	181 30.5	1 35.1	357 50.9	146 3.0	-18 41.7	52 36.0	-24 12.8	
2	211 30.9	1 33.1	27 55.9	176 5.6	-18 43.2	82 39.5	-24 12.2	
4	241 31.4	1 31.2	58 .8	206 8.1	-18 44.7	112 43.0	-24 11.6	
6	271 31.8	1 29.3	88 5.7	236 10.7	-18 46.1	142 46.5	-24 11.0	
8	301 32.3	1 27.3	118 10.7	266 13.3	-18 47.6	172 50.0	-24 10.4	
10	331 32.7	1 25.4	148 15.6	296 15.8	-18 49.0	202 53.5	-24 9.7	
12	1 33.2	1 23.4	178 20.5	326 18.4	-18 50.5	232 57.0	-24 9.1	
14	31 33.6	1 21.5	208 25.4	356 21.0	-18 51.9	263 .4	-24 8.5	
16	61 34.0	1 19.6	238 30.4	26 23.6	-18 53.4	293 3.9	-24 7.9	
18	91 34.5	1 17.6	268 35.3	56 26.2	-18 54.8	323 7.4	-24 7.2	
20	121 34.9	1 15.7	298 40.2	86 28.9	-18 56.3	353 10.9	-24 6.6	
22	151 35.4	1 13.8	328 45.2	116 31.5	-18 57.7	23 14.3	-24 6.0	
Δ	2	-10		13	-7	17	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 37	18 9	0 42	2 28	11 9	2.6	4 17	1.5
55	5 40	18 7	0 36	2 6	11 42	2.5	3 44	1.6
50	5 42	18 5	0 32	1 51	12 6	2.4	3 19	1.7
45	5 43	18 4	0 29	1 39	12 25	2.3	3 1	1.7
40	5 45	18 2	0 27	1 31	12 40	2.2	2 46	1.8
35	5 46	18 1	0 25	1 25	12 52	2.2	2 33	1.8
30	5 47	18 1	0 24	1 20	13 3	2.2	2 21	1.9
20	5 48	17 59	0 22	1 13	13 22	2.1	2 2	1.9
10	5 49	17 58	0 21	1 10	13 39	2.0	1 45	2.0
0	5 51	17 57	0 21	1 9	13 54	2.0	1 29	2.0
10	5 52	17 56	0 21	1 10	14 10	1.9	1 14	2.0
20	5 53	17 55	0 22	1 13	14 26	1.9	0 57	2.1
30	5 53	17 55	0 24	1 20	14 45	1.8	0 37	2.1
35	5 54	17 54	0 25	1 24	14 56	1.7	0 26	2.1
40	5 55	17 54	0 27	1 31	15 9	1.7	0 13	2.2
45	5 55	17 53	0 29	1 39	15 24	1.6	...	.0
50	5 56	17 53	0 32	1 49	15 42	1.6	...	.0
55	5 57	17 52	0 36	2 4	16 5	1.4	...	.0
60	5 58	17 51	0 42	2 24	16 38	1.3	23 38	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	68 16.4	118 20	44.4 -15	130 8.6	-16 57.3	84 57.7	-22 44.1	
2	97 18.1	119 20	41.4 -17	160 12.7	-16 57.6	115 2.5	-22 44.1	
4	126 19.8	119 20	38.0 -19	190 16.8	-16 57.8	145 7.3	-22 44.2	
6	155 21.6	119 20	34.2 -21	220 20.8	-16 58.1	175 12.2	-22 44.2	
8	184 23.5	120 20	30.1 -23	250 24.9	-16 58.3	205 17.0	-22 44.2	
10	213 25.5	120 20	25.5 -25	280 29.0	-16 58.5	235 21.8	-22 44.2	
12	242 27.5	120 20	20.6 -26	310 33.1	-16 58.8	265 26.6	-22 44.2	
14	271 29.6	121 20	15.4 -28	340 37.1	-16 59.0	295 31.4	-22 44.2	
16	300 31.7	121 20	9.7 -30	10 41.2	-16 59.3	325 36.2	-22 44.2	
18	329 34.0	122 20	3.7 -32	40 45.3	-16 59.5	355 41.0	-22 44.2	
20	358 36.3	122 19	57.3 -34	70 49.4	-16 59.7	25 45.8	-22 44.2	
22	27 38.7	122 19	50.5 -36	100 53.4	-16 60.0	55 50.7	-22 44.2	
Δ				20	-1	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min s	s	'	h min	min	'	'		
00	6 1.9	.9	15.9	T _m	20 6	2.0	54.2 14.8		
12	6 12.6	T _{m☉}	11 h 53.8 min	Starost	9.2 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	20 27	.1	148	-5.8	♄	15 17	.0	132	-1.4
♂	20 27	.1	55	-2.0	♅	18 17	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	181 35.8	1 11.8	358 50.1	146 34.2	-18 59.1	53 17.8	-24 5.4	
2	211 36.3	1 9.9	28 55.0	176 36.8	-19 .5	83 21.2	-24 4.7	
4	241 36.7	1 7.9	58 59.9	206 39.5	-19 2.0	113 24.7	-24 4.1	
6	271 37.2	1 6.0	89 4.9	236 42.1	-19 3.4	143 28.1	-24 3.5	
8	301 37.6	1 4.0	119 9.8	266 44.8	-19 4.8	173 31.6	-24 2.8	
10	331 38.1	1 2.1	149 14.7	296 47.5	-19 6.2	203 35.0	-24 2.2	
12	1 38.5	1 .2	179 19.7	326 50.2	-19 7.6	233 38.4	-24 1.6	
14	31 38.9	0 58.2	209 24.6	356 52.9	-19 9.0	263 41.9	-24 .9	
16	61 39.4	0 56.3	239 29.5	26 55.6	-19 10.4	293 45.3	-24 .3	
18	91 39.8	0 54.3	269 34.4	56 58.4	-19 11.8	323 48.7	-23 59.6	
20	121 40.3	0 52.4	299 39.4	87 1.1	-19 13.2	353 52.1	-23 59.0	
22	151 40.7	0 50.5	329 44.3	117 3.9	-19 14.5	23 55.6	-23 58.4	
Δ	2	-10		14	-7	17	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 39	18 6	0 42	2 27	12 12	2.9	4 52	1.1
55	5 41	18 4	0 36	2 5	12 42	2.7	4 22	1.3
50	5 43	18 3	0 32	1 50	13 3	2.5	3 60	1.4
45	5 44	18 2	0 29	1 39	13 20	2.4	3 43	1.5
40	5 45	18 1	0 27	1 31	13 33	2.3	3 29	1.6
35	5 46	17 60	0 25	1 25	13 45	2.3	3 17	1.7
30	5 47	17 59	0 24	1 20	13 55	2.2	3 6	1.7
20	5 48	17 58	0 22	1 13	14 12	2.1	2 48	1.8
10	5 49	17 57	0 21	1 10	14 27	2.0	2 32	1.9
0	5 50	17 57	0 21	1 9	14 42	1.9	2 17	2.0
10	5 51	17 56	0 21	1 10	14 56	1.9	2 2	2.0
20	5 52	17 56	0 22	1 13	15 11	1.8	1 46	2.1
30	5 52	17 55	0 24	1 20	15 28	1.7	1 28	2.2
35	5 53	17 55	0 25	1 24	15 38	1.6	1 17	2.2
40	5 53	17 55	0 27	1 31	15 49	1.5	1 5	2.3
45	5 53	17 54	0 29	1 39	16 3	1.4	0 51	2.4
50	5 54	17 54	0 32	1 49	16 19	1.3	0 33	2.5
55	5 54	17 54	0 36	2 4	16 40	1.2	0 10	2.6
60	5 54	17 54	0 42	2 25	17 8	1.0	...	2.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	56 41.2	123 19	43.4	-37	130 57.5	-17 .2	85 55.5	-22 44.3
2	85 43.8	123 19	35.9	-39	161 1.6	-17 .5	116 .3	-22 44.3
4	114 46.5	124 19	28.0	-41	191 5.7	-17 .7	146 5.1	-22 44.3
6	143 49.2	124 19	19.8	-43	221 9.7	-17 1.0	176 9.9	-22 44.3
8	172 52.1	125 19	11.3	-45	251 13.8	-17 1.2	206 14.7	-22 44.3
10	201 55.0	125 19	2.4	-46	281 17.9	-17 1.4	236 19.5	-22 44.3
12	230 58.1	126 18	53.1	-48	311 21.9	-17 1.7	266 24.3	-22 44.3
14	260 1.2	126 18	43.5	-50	341 26.0	-17 1.9	296 29.1	-22 44.3
16	289 4.4	127 18	33.6	-51	11 30.1	-17 2.2	326 33.9	-22 44.3
18	318 7.7	127 18	23.3	-53	41 34.1	-17 2.4	356 38.7	-22 44.3
20	347 11.2	128 18	12.7	-55	71 38.2	-17 2.7	26 43.5	-22 44.3
22	16 14.7	128 18	1.7	-56	101 42.2	-17 2.9	56 48.3	-22 44.4
Δ					20	-1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	6 23.3	.9	15.9	T _m 20 53	1.9	54.2	14.8
12	6 34.0			T _{m☉} 11 h 53.4 min	Starost 10.2 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 12	.1	148	-5.9	♄	15 14	.0	132	-1.4
♂	20 24	.1	54	-1.9	♂	18 13	.0	87	.7

21. SEPTEMBAR

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	181 41.2	0 48.5	359 49.2	147 6.6	-19 15.9	53 59.0	-23 57.7	
2	211 41.6	0 46.6	29 54.1	177 9.4	-19 17.3	84 2.4	-23 57.1	
4	241 42.1	0 44.6	59 59.1	207 12.2	-19 18.6	114 5.8	-23 56.4	
6	271 42.5	0 42.7	90 4.0	237 15.0	-19 20.0	144 9.2	-23 55.8	
8	301 43.0	0 40.7	120 8.9	267 17.8	-19 21.4	174 12.5	-23 55.1	
10	331 43.4	0 38.8	150 13.9	297 20.6	-19 22.7	204 15.9	-23 54.5	
12	1 43.8	0 36.9	180 18.8	327 23.4	-19 24.1	234 19.3	-23 53.8	
14	31 44.3	0 34.9	210 23.7	357 26.2	-19 25.4	264 22.7	-23 53.2	
16	61 44.7	0 33.0	240 28.6	27 29.0	-19 26.8	294 26.1	-23 52.5	
18	91 45.2	0 31.0	270 33.6	57 31.9	-19 28.1	324 29.4	-23 51.9	
20	121 45.6	0 29.1	300 38.5	87 34.8	-19 29.4	354 32.8	-23 51.2	
22	151 46.1	0 27.1	330 43.4	117 37.6	-19 30.7	24 36.2	-23 50.6	
Δ	2	-10		14	-7	17	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 42	18 3	0 42	2 27	13 22	3.1	5 19	.9
55	5 43	18 2	0 36	2 5	13 46	2.8	4 53	1.1
50	5 45	18 1	0 32	1 50	14 4	2.6	4 34	1.2
45	5 46	17 60	0 29	1 39	14 18	2.5	4 19	1.4
40	5 46	17 59	0 27	1 31	14 29	2.4	4 7	1.5
35	5 47	17 59	0 25	1 25	14 39	2.3	3 57	1.5
30	5 48	17 58	0 24	1 20	14 48	2.2	3 47	1.6
20	5 49	17 57	0 22	1 13	15 3	2.1	3 31	1.7
10	5 49	17 57	0 21	1 10	15 16	2.0	3 17	1.8
0	5 50	17 56	0 21	1 9	15 28	1.9	3 4	1.9
10	5 50	17 56	0 21	1 10	15 40	1.8	2 51	2.0
20	5 51	17 56	0 22	1 13	15 53	1.7	2 37	2.1
30	5 51	17 56	0 24	1 20	16 8	1.5	2 20	2.2
35	5 51	17 56	0 25	1 25	16 16	1.5	2 11	2.3
40	5 51	17 56	0 27	1 31	16 26	1.4	2 0	2.4
45	5 51	17 56	0 29	1 39	16 37	1.3	1 47	2.5
50	5 51	17 56	0 32	1 50	16 51	1.2	1 32	2.6
55	5 51	17 56	0 36	2 4	17 8	1.0	1 12	2.8
60	5 51	17 56	0 42	2 25	17 31	.7	0 45	3.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	45 18.3	128 17	50.4	-58	131 46.3	-17 3.1	86 53.1	-22 44.4
2	74 22.0	129 17	38.8	-60	161 50.4	-17 3.4	116 57.9	-22 44.4
4	103 25.8	129 17	26.9	-61	191 54.4	-17 3.6	147 2.7	-22 44.4
6	132 29.7	130 17	14.7	-63	221 58.5	-17 3.9	177 7.5	-22 44.4
8	161 33.6	130 17	2.1	-64	252 2.6	-17 4.1	207 12.3	-22 44.4
10	190 37.7	131 16	49.2	-66	282 6.6	-17 4.4	237 17.1	-22 44.4
12	219 41.9	131 16	36.0	-67	312 10.7	-17 4.6	267 21.9	-22 44.4
14	248 46.2	132 16	22.5	-69	342 14.7	-17 4.8	297 26.7	-22 44.4
16	277 50.5	132 16	8.7	-70	12 18.8	-17 5.1	327 31.5	-22 44.4
18	306 55.0	133 15	54.7	-72	42 22.8	-17 5.3	357 36.3	-22 44.5
20	335 59.5	133 15	40.3	-73	72 26.9	-17 5.6	27 41.1	-22 44.5
22	5 4.2	134 15	25.6	-75	102 31.0	-17 5.8	57 45.9	-22 44.5
Δ					20	-1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	s	h min	min	'	'
00	6 44.7	.9	16.0	T _m 21 39	1.9	54.2	14.8
12	6 55.4			T _{m☉} 11 h 53.1 min	Starost 11.2 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 10	.1	147	-5.9	♄	15 11	.0	132	-1.4
♂	20 22	.1	54	-1.9	♂	18 10	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	181 46.5	0 25.2	0 48.4	147 40.5	-19 32.1	54 39.5	-23 49.9	
2	211 46.9	0 23.3	30 53.3	177 43.4	-19 33.4	84 42.9	-23 49.3	
4	241 47.4	0 21.3	60 58.2	207 46.3	-19 34.7	114 46.2	-23 48.6	
6	271 47.8	0 19.4	91 3.1	237 49.2	-19 36.0	144 49.6	-23 47.9	
8	301 48.3	0 17.4	121 8.1	267 52.1	-19 37.3	174 52.9	-23 47.3	
10	331 48.7	0 15.5	151 13.0	297 55.0	-19 38.6	204 56.2	-23 46.6	
12	1 49.2	0 13.5	181 17.9	327 58.0	-19 39.9	234 59.6	-23 46.0	
14	31 49.6	0 11.6	211 22.9	358 .9	-19 41.2	265 2.9	-23 45.3	
16	61 50.0	0 9.6	241 27.8	28 3.9	-19 42.5	295 6.2	-23 44.6	
18	91 50.5	0 7.7	271 32.7	58 6.9	-19 43.8	325 9.6	-23 44.0	
20	121 50.9	0 5.8	301 37.6	88 9.9	-19 45.0	355 12.9	-23 43.3	
22	151 51.4	0 3.8	331 42.6	118 12.9	-19 46.3	25 16.2	-23 42.6	
Δ	2	-10		15	-6	17	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 44	18 0	0 42	2 26	14 35	3.1	5 39	.7
55	5 45	17 59	0 36	2 4	14 53	2.9	5 19	.9
50	5 46	17 58	0 32	1 50	15 7	2.7	5 4	1.1
45	5 47	17 58	0 29	1 39	15 18	2.6	4 52	1.2
40	5 47	17 57	0 27	1 31	15 27	2.5	4 42	1.3
35	5 48	17 57	0 25	1 25	15 35	2.4	4 33	1.4
30	5 48	17 57	0 24	1 20	15 42	2.3	4 26	1.5
20	5 49	17 56	0 22	1 13	15 54	2.1	4 13	1.6
10	5 49	17 56	0 21	1 10	16 4	2.0	4 1	1.8
0	5 49	17 56	0 21	1 9	16 13	1.9	3 50	1.9
10	5 50	17 56	0 21	1 10	16 23	1.7	3 39	2.0
20	5 50	17 56	0 22	1 13	16 33	1.6	3 27	2.1
30	5 50	17 56	0 24	1 20	16 45	1.5	3 14	2.3
35	5 50	17 56	0 25	1 25	16 52	1.4	3 6	2.3
40	5 50	17 57	0 27	1 31	16 59	1.3	2 57	2.4
45	5 49	17 57	0 29	1 39	17 8	1.2	2 47	2.5
50	5 49	17 57	0 32	1 50	17 19	1.0	2 34	2.7
55	5 49	17 58	0 36	2 5	17 32	.9	2 18	2.9
60	5 48	17 58	0 42	2 26	17 49	.6	1 56	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	34 8.9	134 15	10.6	-76	132 35.0	-17 6.1	87 50.7	-22 44.5
2	63 13.7	134 14	55.4	-78	162 39.1	-17 6.3	117 55.4	-22 44.5
4	92 18.6	135 14	39.9	-79	192 43.1	-17 6.6	148 .2	-22 44.5
6	121 23.6	135 14	24.1	-80	222 47.2	-17 6.8	178 5.0	-22 44.5
8	150 28.6	136 14	8.0	-82	252 51.2	-17 7.0	208 9.8	-22 44.5
10	179 33.8	136 13	51.7	-83	282 55.3	-17 7.3	238 14.6	-22 44.5
12	208 39.0	137 13	35.1	-84	312 59.3	-17 7.5	268 19.4	-22 44.5
14	237 44.3	137 13	18.3	-85	343 3.4	-17 7.8	298 24.2	-22 44.5
16	266 49.7	137 13	1.2	-87	13 7.4	-17 8.0	328 29.0	-22 44.6
18	295 55.1	138 12	43.9	-88	43 11.5	-17 8.3	358 33.7	-22 44.6
20	325 .7	138 12	26.3	-89	73 15.5	-17 8.5	28 38.5	-22 44.6
22	354 6.2	138 12	8.5	-90	103 19.6	-17 8.8	58 43.3	-22 44.6
Δ					20	-1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	7 6.0	.9	16.0	T _m	22 24	1.9	54.4 14.8
12	7 16.6			T _{m☉}	11 h 52.7 min	Starost	12.2 d Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 8	.1	147	-5.9	♃	15 8	.0	132	-1.4
♂	20 19	.1	54	-1.9	♄	18 6	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	181 51.8	0 1.9	1 47.5	148 15.9	-19 47.6	55 19.5	-23 42.0	
2	211 52.2	0 .1	31 52.4	178 18.9	-19 48.8	85 22.8	-23 41.3	
4	241 52.7	0 2.0	61 57.4	208 21.9	-19 50.1	115 26.1	-23 40.6	
6	271 53.1	0 4.0	92 2.3	238 24.9	-19 51.3	145 29.4	-23 39.9	
8	301 53.6	0 5.9	122 7.2	268 28.0	-19 52.6	175 32.7	-23 39.3	
10	331 54.0	0 7.9	152 12.1	298 31.0	-19 53.8	205 36.0	-23 38.6	
12	1 54.5	0 9.8	182 17.1	328 34.1	-19 55.1	235 39.3	-23 37.9	
14	31 54.9	0 11.8	212 22.0	358 37.2	-19 56.3	265 42.5	-23 37.2	
16	61 55.3	0 13.7	242 26.9	28 40.3	-19 57.5	295 45.8	-23 36.6	
18	91 55.8	0 15.6	272 31.9	58 43.4	-19 58.7	325 49.1	-23 35.9	
20	121 56.2	0 17.6	302 36.8	88 46.5	-19 60.0	355 52.4	-23 35.2	
22	151 56.6	0 19.5	332 41.7	118 49.6	-20 1.2	25 55.6	-23 34.5	
Δ	2	-10		15	-6	16	3	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 46	17 57	0 41	2 25	15 50	3.2	5 55	.6
55	5 47	17 57	0 36	2 4	16 3	3.0	5 41	.8
50	5 48	17 56	0 32	1 49	16 12	2.8	5 30	1.0
45	5 48	17 56	0 29	1 39	16 20	2.6	5 21	1.1
40	5 48	17 56	0 27	1 31	16 26	2.5	5 14	1.2
35	5 49	17 56	0 25	1 24	16 31	2.4	5 7	1.3
30	5 49	17 56	0 24	1 20	16 36	2.3	5 2	1.4
20	5 49	17 55	0 22	1 13	16 44	2.1	4 52	1.6
10	5 49	17 55	0 21	1 10	16 51	2.0	4 43	1.7
0	5 49	17 56	0 21	1 9	16 58	1.8	4 35	1.9
10	5 49	17 56	0 21	1 10	17 5	1.7	4 27	2.0
20	5 49	17 56	0 22	1 13	17 12	1.6	4 18	2.1
30	5 48	17 57	0 24	1 20	17 20	1.4	4 8	2.3
35	5 48	17 57	0 25	1 25	17 25	1.3	4 2	2.4
40	5 48	17 58	0 27	1 31	17 30	1.2	3 55	2.5
45	5 47	17 58	0 29	1 39	17 36	1.1	3 48	2.6
50	5 47	17 59	0 32	1 50	17 43	1.0	3 38	2.7
55	5 46	17 60	0 36	2 5	17 52	.8	3 26	2.9
60	5 45	18 1	0 42	2 27	18 4	.5	3 11	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	23 11.9	139 11	50.4	-91	133 23.6	-17 9.0	88 48.1	-22 44.6
2	52 17.6	139 11	32.2	-92	163 27.7	-17 9.2	118 52.9	-22 44.6
4	81 23.4	139 11	13.7	-94	193 31.7	-17 9.5	148 57.7	-22 44.6
6	110 29.2	139 10	54.9	-95	223 35.8	-17 9.7	179 2.4	-22 44.6
8	139 35.1	140 10	36.0	-96	253 39.8	-17 10.0	209 7.2	-22 44.6
10	168 41.0	140 10	16.9	-97	283 43.8	-17 10.2	239 12.0	-22 44.6
12	197 47.0	140 9	57.5	-98	313 47.9	-17 10.5	269 16.8	-22 44.6
14	226 53.0	140 9	38.0	-99	343 51.9	-17 10.7	299 21.6	-22 44.7
16	255 59.1	140 9	18.3	-100	13 56.0	-17 11.0	329 26.3	-22 44.7
18	285 5.2	141 8	58.4	-100	44 .0	-17 11.2	359 31.1	-22 44.7
20	314 11.3	141 8	38.3	-101	74 4.1	-17 11.5	29 35.9	-22 44.7
22	343 17.5	141 8	18.0	-102	104 8.1	-17 11.7	59 40.7	-22 44.7
Δ					20	-1	24	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	7 27.2	.9	16.0	T _m	23 9	1.8	54.7 14.9
12	7 37.8			T _{m☉}	11 h 52.4 min	Starost	13.2 d Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 5	.1	146	-6.0	♃	15 4	.0	132	-1.4
♂	20 16	.1	54	-1.9	♄	18 2	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 57.1 - 0	21.5	2 46.6	148 52.7 -20	2.4	55 58.9 -23	33.8
2	211 57.5 - 0	23.4	32 51.6	178 55.9 -20	3.6	86 2.1 -23	33.2
4	241 58.0 - 0	25.4	62 56.5	208 59.0 -20	4.8	116 5.4 -23	32.5
6	271 58.4 - 0	27.3	93 1.4	239 2.2 -20	6.0	146 8.6 -23	31.8
8	301 58.8 - 0	29.3	123 6.3	269 5.4 -20	7.2	176 11.9 -23	31.1
10	331 59.3 - 0	31.2	153 11.3	299 8.6 -20	8.3	206 15.1 -23	30.4
12	1 59.7 - 0	33.2	183 16.2	329 11.8 -20	9.5	236 18.4 -23	29.7
14	32 .2 - 0	35.1	213 21.1	359 15.0 -20	10.7	266 21.6 -23	29.0
16	62 .6 - 0	37.1	243 26.1	29 18.2 -20	11.9	296 24.8 -23	28.3
18	92 1.0 - 0	39.0	273 31.0	59 21.4 -20	13.0	326 28.1 -23	27.7
20	122 1.5 - 0	40.9	303 35.9	89 24.7 -20	14.2	356 31.3 -23	27.0
22	152 1.9 - 0	42.9	333 40.8	119 28.0 -20	15.3	26 34.5 -23	26.3
Δ	2	-10		16	-6	16	3

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 49	17 54	0 41	2 24	17 7	3.3	6 9	.5
55	5 49	17 54	0 36	2 4	17 14	3.0	6 1	.8
50	5 49	17 54	0 32	1 49	17 19	2.8	5 54	.9
45	5 49	17 54	0 29	1 39	17 22	2.7	5 48	1.1
40	5 49	17 54	0 27	1 31	17 26	2.5	5 44	1.2
35	5 49	17 54	0 25	1 24	17 29	2.4	5 40	1.3
30	5 49	17 54	0 24	1 20	17 31	2.3	5 36	1.4
20	5 49	17 55	0 22	1 13	17 35	2.1	5 30	1.6
10	5 49	17 55	0 21	1 10	17 39	2.0	5 25	1.7
0	5 49	17 55	0 21	1 9	17 43	1.9	5 20	1.8
10	5 48	17 56	0 21	1 10	17 46	1.7	5 14	2.0
20	5 48	17 56	0 22	1 13	17 50	1.6	5 9	2.1
30	5 47	17 57	0 24	1 20	17 54	1.4	5 3	2.3
35	5 47	17 58	0 25	1 25	17 56	1.3	4 59	2.4
40	5 46	17 58	0 27	1 31	17 59	1.2	4 55	2.5
45	5 46	17 59	0 29	1 39	18 2	1.1	4 50	2.6
50	5 45	18 0	0 32	1 50	18 6	.9	4 44	2.8
55	5 44	18 1	0 36	2 6	18 11	.7	4 37	3.0
60	5 42	18 3	0 42	2 28	18 17	.5	4 27	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	12 23.7 141	7 57.5 -103	134 12.1 -17	11.9	89 45.4 -22	44.7		
2	41 29.9 141	7 36.9 -104	164 16.2 -17	12.2	119 50.2 -22	44.7		
4	70 36.1 141	7 16.2 -105	194 20.2 -17	12.4	149 55.0 -22	44.7		
6	99 42.3 141	6 55.2 -105	224 24.2 -17	12.7	179 59.7 -22	44.7		
8	128 48.6 141	6 34.1 -106	254 28.3 -17	12.9	210 4.5 -22	44.7		
10	157 54.8 141	6 12.9 -107	284 32.3 -17	13.2	240 9.3 -22	44.7		
12	187 1.1 141	5 51.6 -107	314 36.4 -17	13.4	270 14.1 -22	44.8		
14	216 7.4 141	5 30.1 -108	344 40.4 -17	13.7	300 18.8 -22	44.8		
16	245 13.6 141	5 8.5 -109	14 44.4 -17	13.9	330 23.6 -22	44.8		
18	274 19.8 141	4 46.7 -109	44 48.5 -17	14.2	0 28.4 -22	44.8		
20	303 26.0 141	4 24.9 -110	74 52.5 -17	14.4	30 33.1 -22	44.8		
22	332 32.2 141	4 2.9 -110	104 56.5 -17	14.7	60 37.9 -22	44.8		
Δ			20	-1	24	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	7 48.4	.9	16.0	T _m	23 53	1.9	55.1 15.0
12	7 58.8			T _{m☉}	11 h 52.0 min	Starost	14.2 d Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 3	.1	146	-6.0	♃	15 1	.0	131	-1.4
♂	20 14	.1	53	-1.9	♄	17 58	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 2.3 - 0	44.8	3 45.8	149 31.2 -20	16.5	56 37.7 -23	25.6
2	212 2.8 - 0	46.8	33 50.7	179 34.5 -20	17.6	86 40.9 -23	24.9
4	242 3.2 - 0	48.7	63 55.6	209 37.8 -20	18.8	116 44.1 -23	24.2
6	272 3.6 - 0	50.7	94 .6	239 41.1 -20	19.9	146 47.3 -23	23.5
8	302 4.1 - 0	52.6	124 5.5	269 44.4 -20	21.0	176 50.5 -23	22.8
10	332 4.5 - 0	54.6	154 10.4	299 47.7 -20	22.1	206 53.7 -23	22.1
12	2 4.9 - 0	56.5	184 15.3	329 51.1 -20	23.2	236 56.9 -23	21.4
14	32 5.4 - 0	58.5	214 20.3	359 54.4 -20	24.4	267 .1 -23	20.7
16	62 5.8 - 1	.4	244 25.2	29 57.8 -20	25.5	297 3.3 -23	20.0
18	92 6.2 - 1	2.4	274 30.1	60 1.2 -20	26.6	327 6.5 -23	19.3
20	122 6.7 - 1	4.3	304 35.1	90 4.6 -20	27.7	357 9.7 -23	18.6
22	152 7.1 - 1	6.2	334 40.0	120 8.0 -20	28.7	27 12.8 -23	17.9
Δ	2	-10		17	-6	16	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 51	17 51	0 41	2 24	18 26	.7	6 22	1.8
55	5 51	17 51	0 36	2 3	18 26	.9	6 19	1.8
50	5 51	17 52	0 32	1 49	18 26	1.0	6 16	1.8
45	5 50	17 52	0 29	1 38	18 26	1.2	6 14	1.8
40	5 50	17 52	0 27	1 30	18 26	1.3	6 13	1.8
35	5 50	17 53	0 25	1 24	18 27	1.4	6 11	1.8
30	5 50	17 53	0 24	1 20	18 27	1.5	6 10	1.8
20	5 49	17 54	0 22	1 13	18 27	1.6	6 8	1.8
10	5 49	17 54	0 21	1 10	18 27	1.8	6 6	1.9
0	5 48	17 55	0 21	1 9	18 27	1.9	6 4	1.9
10	5 48	17 56	0 21	1 10	18 27	2.0	6 2	1.9
20	5 47	17 57	0 22	1 13	18 27	2.2	6 0	1.9
30	5 46	17 58	0 24	1 20	18 28	2.3	5 58	1.9
35	5 45	17 59	0 25	1 25	18 28	2.4	5 56	1.9
40	5 45	17 59	0 27	1 31	18 28	2.5	5 55	1.9
45	5 44	18 0	0 29	1 40	18 28	2.6	5 53	2.0
50	5 43	18 2	0 32	1 51	18 28	2.8	5 51	2.0
55	5 41	18 3	0 36	2 6	18 29	3.0	5 48	2.0
60	5 39	18 5	0 42	2 29	18 29	3.2	5 45	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	1 38.4 141	3 40.8 -111	135 .6 -17	14.9	90 42.7 -22	44.8		
2	30 44.5 140	3 18.7 -111	165 4.6 -17	15.1	120 47.4 -22	44.8		
4	59 50.6 140	2 56.4 -112	195 8.6 -17	15.4	150 52.2 -22	44.8		
6	88 56.7 140	2 34.1 -112	225 12.6 -17	15.6	180 57.0 -22	44.8		
8	118 2.7 140	2 11.7 -112	255 16.7 -17	15.9	211 1.7 -22	44.8		
10	147 8.6 139	1 49.2 -113	285 20.7 -17	16.1	241 6.5 -22	44.8		
12	176 14.5 139	1 26.7 -113	315 24.7 -17	16.4	271 11.2 -22	44.9		
14	205 20.4 139	1 4.0 -113	345 28.8 -17	16.6	301 16.0 -22	44.9		
16	234 26.1 139	0 41.4 -114	15 32.8 -17	16.9	331 20.8 -22	44.9		
18	263 31.8 138	0 18.7 -73	45 36.8 -17	17.1	1 25.5 -22	44.9		
20	292 37.5 138	0 4.1 114	75 40.8 -17	17.4	31 30.3 -22	44.9		
22	321 43.0 137	0 26.8 114	105 44.9 -17	17.6	61 35.0 -22	44.9		
Δ			20	-1	24	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	8 9.3	.9	16.0	T _m	...	1.0	55.5 15.1
12	8 19.7			T _{m☉}	11 h 51.7 min	Starost	15.2 d Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 0	.1	146	-6.0	♃	14 58	.0	131	-1.4
♂	20 11	.1	53	-1.8	♄	17 54	.0	87	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	7.5	-1	8.2	4	44.9	150	11.4	-20	29.8	57	16.0	-23	17.1
2	212	8.0	-1	10.1	34	49.8	180	14.8	-20	30.9	87	19.2	-23	16.4
4	242	8.4	-1	12.1	64	54.8	210	18.2	-20	32.0	117	22.3	-23	15.7
6	272	8.8	-1	14.0	94	59.7	240	21.7	-20	33.0	147	25.5	-23	15.0
8	302	9.3	-1	16.0	125	4.6	270	25.1	-20	34.1	177	28.6	-23	14.3
10	332	9.7	-1	17.9	155	9.6	300	28.6	-20	35.2	207	31.8	-23	13.6
12	2	10.1	-1	19.9	185	14.5	330	32.1	-20	36.2	237	34.9	-23	12.9
14	32	10.6	-1	21.8	215	19.4	0	35.6	-20	37.3	267	38.1	-23	12.2
16	62	11.0	-1	23.8	245	24.3	30	39.1	-20	38.3	297	41.2	-23	11.4
18	92	11.4	-1	25.7	275	29.3	60	42.6	-20	39.3	327	44.4	-23	10.7
20	122	11.8	-1	27.7	305	34.2	90	46.1	-20	40.4	357	47.5	-23	10.0
22	152	12.3	-1	29.6	335	39.1	120	49.7	-20	41.4	27	50.6	-23	9.3
Δ		2		-10				17		-5		16		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 53	17 48	0 41	2 23	18 41	.6	7 4	3.4
55	5 53	17 49	0 36	2 3	18 47	.8	7 1	3.1
50	5 52	17 50	0 32	1 49	18 51	1.0	6 59	2.9
45	5 52	17 50	0 29	1 38	18 54	1.2	6 57	2.7
40	5 51	17 51	0 27	1 30	18 57	1.3	6 56	2.6
35	5 51	17 51	0 25	1 24	18 60	1.4	6 55	2.5
30	5 50	17 52	0 24	1 20	19 2	1.5	6 54	2.4
20	5 50	17 53	0 22	1 13	19 6	1.7	6 52	2.2
10	5 49	17 54	0 21	1 10	19 9	1.8	6 50	2.1
0	5 48	17 55	0 21	1 9	19 13	2.0	6 49	1.9
10	5 47	17 56	0 21	1 10	19 16	2.1	6 47	1.8
20	5 46	17 57	0 22	1 13	19 19	2.2	6 46	1.6
30	5 45	17 58	0 24	1 20	19 23	2.4	6 44	1.5
35	5 44	17 59	0 25	1 25	19 26	2.5	6 43	1.4
40	5 43	18 0	0 27	1 31	19 28	2.6	6 41	1.2
45	5 42	18 2	0 29	1 40	19 31	2.8	6 40	1.1
50	5 40	18 3	0 32	1 51	19 35	2.9	6 38	1.0
55	5 39	18 5	0 36	2 7	19 40	3.1	6 36	.8
60	5 36	18 8	0 42	2 29	19 46	3.4	6 34	.5
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	350	48.5	137	0	49.6	114	135	48.9	-17	17.9	91	39.8	-22	44.9		
2	19	53.8	136	1	12.4	114	165	52.9	-17	18.1	121	44.6	-22	44.9		
4	48	59.1	136	1	35.3	114	195	56.9	-17	18.4	151	49.3	-22	44.9		
6	78	4.2	135	1	58.1	114	226	.9	-17	18.6	181	54.1	-22	44.9		
8	107	9.3	135	2	20.9	114	256	5.0	-17	18.9	211	58.8	-22	44.9		
10	136	14.2	134	2	43.7	114	286	9.0	-17	19.1	242	3.6	-22	44.9		
12	165	19.1	133	3	6.5	114	316	13.0	-17	19.4	272	8.3	-22	45.0		
14	194	23.8	133	3	29.3	114	346	17.0	-17	19.6	302	13.1	-22	45.0		
16	223	28.3	132	3	52.0	114	16	21.0	-17	19.9	332	17.8	-22	45.0		
18	252	32.8	131	4	14.7	113	46	25.1	-17	20.1	2	22.6	-22	45.0		
20	281	37.1	131	4	37.4	113	76	29.1	-17	20.4	32	27.3	-22	45.0		
22	310	41.2	130	5	.0	113	106	33.1	-17	20.6	62	32.1	-22	45.0		
Δ								20		-1		24		0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	8 30.2	.9	16.0	T _m	0 38	1.9	56.0	15.3
12	8 40.5			T _{m☉}	11 h 51.3 min	Starost	16.2 d	Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 58	.1	145	-6.1	♄	14 55	.0	131	-1.4
♂	20 9	.1	53	-1.8	♂	17 51	.0	87	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	12.7	-1	31.5	5	44.1	150	53.2	-20	42.4	57	53.7	-23	8.6
2	212	13.1	-1	33.5	35	49.0	180	56.8	-20	43.4	87	56.9	-23	7.8
4	242	13.6	-1	35.4	65	53.9	211	.4	-20	44.4	117	60.0	-23	7.1
6	272	14.0	-1	37.4	95	58.8	241	4.0	-20	45.4	148	3.1	-23	6.4
8	302	14.4	-1	39.3	126	3.8	271	7.6	-20	46.4	178	6.2	-23	5.7
10	332	14.8	-1	41.3	156	8.7	301	11.2	-20	47.4	208	9.3	-23	5.0
12	2	15.3	-1	43.2	186	13.6	331	14.8	-20	48.4	238	12.4	-23	4.2
14	32	15.7	-1	45.2	216	18.6	1	18.5	-20	49.4	268	15.5	-23	3.5
16	62	16.1	-1	47.1	246	23.5	31	22.1	-20	50.3	298	18.6	-23	2.8
18	92	16.5	-1	49.1	276	28.4	61	25.8	-20	51.3	328	21.7	-23	2.0
20	122	17.0	-1	51.0	306	33.3	91	29.5	-20	52.3	358	24.8	-23	1.3
22	152	17.4	-1	52.9	336	38.3	121	33.2	-20	53.2	28	27.9	-23	.6
Δ		2		-10				18		-5		16		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 56	17 45	0 41	2 23	18 55	.7	8 25	3.4
55	5 55	17 46	0 36	2 3	19 6	.9	8 16	3.2
50	5 54	17 47	0 32	1 49	19 15	1.1	8 9	3.0
45	5 53	17 48	0 29	1 38	19 22	1.3	8 3	2.8
40	5 52	17 49	0 27	1 30	19 28	1.4	7 59	2.7
35	5 52	17 50	0 25	1 24	19 33	1.5	7 55	2.5
30	5 51	17 51	0 24	1 19	19 38	1.6	7 51	2.4
20	5 50	17 52	0 22	1 13	19 46	1.8	7 45	2.3
10	5 49	17 53	0 21	1 10	19 53	1.9	7 40	2.1
0	5 48	17 54	0 21	1 9	19 59	2.0	7 35	2.0
10	5 47	17 56	0 21	1 10	20 6	2.2	7 30	1.9
20	5 45	17 57	0 22	1 13	20 13	2.3	7 25	1.7
30	5 43	17 59	0 24	1 20	20 21	2.5	7 19	1.5
35	5 42	18 0	0 25	1 25	20 26	2.6	7 15	1.4
40	5 41	18 1	0 27	1 32	20 32	2.7	7 11	1.3
45	5 40	18 3	0 29	1 40	20 38	2.8	7 7	1.2
50	5 38	18 5	0 32	1 51	20 45	3.0	7 1	1.1
55	5 36	18 7	0 36	2 7	20 55	3.2	6 55	.9
60	5 33	18 10	0 42	2 30	21 7	3.5	6 46	.6
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	339	45.2	129	5	22.5	112	136	37.1	-17	20.8	92	36.8	-22	45.0		
2	8	49.0	128	5	45.0	112	166	41.1	-17	21.1	122	41.6	-22	45.0		
4	37	52.7	128	6	7.4	112	196	45.1	-17	21.3	152	46.3	-22	45.0		
6	66	56.2	127	6	29.7	111	226	49.2	-17	21.6	182	51.1	-22	45.0		
8	95	59.6	126	6	51.9	111	256	53.2	-17	21.8	212	55.8	-22	45.0		
10	125	2.8	125	7	14.0	110	286	57.2	-17	22.1	243	.6	-22	45.0		
12	154	5.8	124	7	36.0	109	317	1.2	-17	22.3	273	5.3	-22	45.1		
14	183	8.6	123	7	57.9	109	347	5.2	-17	22.6	303	10.0	-22	45.1		
16	212	11.2	122	8	19.7	108	17	9.2	-17	22.8	333	14.8	-22	45.1		
18	241	13.6	121	8	41.3	107	47	13.2	-17	23.1	3	19.5	-22	45.1		
20	270	15.8	120	9	2.8	107	77	17.2	-17	23.3	33	24.3	-22	45.1		
22	299	17.8	119	9	24.1	106	107	21.2	-17	23.6	63	29.0	-22	45.1		
Δ								20		-1		24		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	182	17.8	-1	54.9	6	43.2	151	36.9	-20	54.2	58	31.0	-22	59.8
2	212	18.2	-1	56.8	36	48.1	181	40.6	-20	55.1	88	34.1	-22	59.1
4	242	18.7	-1	58.8	66	53.0	211	44.3	-20	56.0	118	37.1	-22	58.4
6	272	19.1	-2	7	96	58.0	241	48.1	-20	57.0	148	40.2	-22	57.6
8	302	19.5	-2	2.7	127	2.9	271	51.8	-20	57.9	178	43.3	-22	56.9
10	332	19.9	-2	4.6	157	7.8	301	55.6	-20	58.8	208	46.3	-22	56.2
12	2	20.3	-2	6.6	187	12.8	331	59.4	-20	59.7	238	49.4	-22	55.4
14	32	20.8	-2	8.5	217	17.7	2	3.2	-21	6	268	52.5	-22	54.7
16	62	21.2	-2	10.4	247	22.6	32	7.0	-21	1.5	298	55.5	-22	53.9
18	92	21.6	-2	12.4	277	27.5	62	10.8	-21	2.4	328	58.6	-22	53.2
20	122	22.0	-2	14.3	307	32.5	92	14.6	-21	3.3	359	1.6	-22	52.4
22	152	22.4	-2	16.3	337	37.4	122	18.5	-21	4.2	29	4.7	-22	51.7
Δ	2	-10					19	-5			15	4		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	5 58	17 42	0 41	2 22	19 11	.9	9 47	3.5
55	5 56	17 44	0 36	2 2	19 29	1.1	9 31	3.2
50	5 55	17 45	0 32	1 48	19 42	1.3	9 20	3.0
45	5 54	17 46	0 29	1 38	19 53	1.5	9 10	2.8
40	5 53	17 48	0 27	1 30	20 2	1.6	9 2	2.7
35	5 52	17 48	0 25	1 24	20 10	1.7	8 56	2.6
30	5 52	17 49	0 24	1 19	20 16	1.8	8 50	2.5
20	5 50	17 51	0 22	1 13	20 28	1.9	8 40	2.4
10	5 49	17 52	0 21	1 10	20 39	2.0	8 31	2.2
0	5 47	17 54	0 21	1 9	20 48	2.2	8 23	2.1
10	5 46	17 56	0 21	1 10	20 58	2.3	8 14	2.0
20	5 44	17 57	0 22	1 14	21 9	2.4	8 6	1.8
30	5 42	17 60	0 24	1 20	21 21	2.5	7 56	1.7
35	5 41	18 1	0 25	1 25	21 28	2.6	7 50	1.6
40	5 40	18 2	0 27	1 32	21 36	2.7	7 43	1.5
45	5 38	18 4	0 29	1 40	21 46	2.8	7 36	1.4
50	5 36	18 6	0 32	1 52	21 57	3.0	7 27	1.2
55	5 33	18 9	0 37	2 8	22 11	3.2	7 16	1.0
60	5 30	18 13	0 42	2 31	22 31	3.5	7 1	.8
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	328	19.6	118	9	45.3	105	137	25.3	-17	23.8	93	33.8	-22	45.1
2	357	21.2	117	10	6.3	104	167	29.3	-17	24.1	123	38.5	-22	45.1
4	26	22.6	116	10	27.1	103	197	33.3	-17	24.3	153	43.2	-22	45.1
6	55	23.7	115	10	47.8	102	227	37.3	-17	24.6	183	48.0	-22	45.1
8	84	24.6	113	11	8.3	101	257	41.3	-17	24.8	213	52.7	-22	45.1
10	113	25.3	112	11	28.5	100	287	45.3	-17	25.1	243	57.4	-22	45.1
12	142	25.8	111	11	48.6	99	317	49.3	-17	25.3	274	2.2	-22	45.1
14	171	26.0	110	12	8.4	98	347	53.3	-17	25.6	304	6.9	-22	45.2
16	200	26.0	109	12	28.0	97	17	57.3	-17	25.8	334	11.7	-22	45.2
18	229	25.7	107	12	47.4	96	48	1.3	-17	26.1	4	16.4	-22	45.2
20	258	25.2	106	13	6.5	94	78	5.3	-17	26.3	34	21.1	-22	45.2
22	287	24.4	105	13	25.4	93	108	9.3	-17	26.6	64	25.9	-22	45.2
Δ							20	-1			24	0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	9 11.2	.8	16.0	T _m	2 11	2.1	57.0	15.5	
12	9 21.3			T _{m☉}	11 h 50.6 min	Starost	18.2 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	13 52	.1	145	-6.1	♄	14 48	.0	131	-1.4
♂	20 4	.1	52	-1.8	♄	17 43	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	182	22.9	-2	18.2	7	42.3	152	22.4	-21	5.1	59	7.7	-22	51.0
2	212	23.3	-2	20.2	37	47.3	182	26.2	-21	6.0	89	10.8	-22	50.2
4	242	23.7	-2	22.1	67	52.2	212	30.1	-21	6.8	119	13.8	-22	49.5
6	272	24.1	-2	24.1	97	57.1	242	34.0	-21	7.7	149	16.8	-22	48.7
8	302	24.5	-2	26.0	128	2.0	272	37.9	-21	8.5	179	19.9	-22	48.0
10	332	24.9	-2	27.9	158	7.0	302	41.9	-21	9.4	209	22.9	-22	47.2
12	2	25.4	-2	29.9	188	11.9	332	45.8	-21	10.2	239	25.9	-22	46.5
14	32	25.8	-2	31.8	218	16.8	2	49.8	-21	11.1	269	28.9	-22	45.7
16	62	26.2	-2	33.8	248	21.8	32	53.7	-21	11.9	299	31.9	-22	44.9
18	92	26.6	-2	35.7	278	26.7	62	57.7	-21	12.7	329	34.9	-22	44.2
20	122	27.0	-2	37.6	308	31.6	92	1.7	-21	13.5	359	38.0	-22	43.4
22	152	27.4	-2	39.6	338	36.5	122	5.7	-21	14.3	29	41.0	-22	42.7
Δ	2	-10					20	-4			15	4		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 0	17 39	0 41	2 22	19 33	1.2	11 10	3.4
55	5 58	17 41	0 36	2 2	19 56	1.4	10 48	3.1
50	5 57	17 43	0 32	1 48	20 14	1.6	10 31	3.0
45	5 55	17 45	0 29	1 38	20 28	1.7	10 18	2.8
40	5 54	17 46	0 27	1 30	20 40	1.8	10 7	2.7
35	5 53	17 47	0 25	1 24	20 50	1.9	9 58	2.6
30	5 52	17 48	0 24	1 19	20 59	2.0	9 50	2.6
20	5 50	17 50	0 22	1 13	21 14	2.1	9 36	2.4
10	5 49	17 52	0 21	1 10	21 28	2.2	9 24	2.3
0	5 47	17 54	0 21	1 9	21 40	2.3	9 13	2.2
10	5 45	17 55	0 21	1 10	21 53	2.4	9 2	2.1
20	5 43	17 58	0 22	1 14	22 6	2.5	8 50	2.0
30	5 41	18 0	0 24	1 20	22 22	2.6	8 36	1.9
35	5 40	18 2	0 25	1 25	22 31	2.6	8 28	1.8
40	5 38	18 3	0 27	1 32	22 42	2.7	8 19	1.7
45	5 36	18 5	0 29	1 40	22 54	2.8	8 8	1.6
50	5 34	18 8	0 33	1 52	23 9	2.3	7 56	1.5
55	5 31	18 11	0 37	2 8	23 28	2.3	7 40	1.3
60	5 27	18 15	0 42	2 32	23 54	2.3	7 19	1.0
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	316	23.4	104	13	44.1	92	138	13.3	-17	26.8	94	30.6	-22	45.2
2	345	22.1	102	14	2.4	90	168	17.3	-17	27.1	124	35.3	-22	45.2
4	14	20.6	101	14	20.5	89	198	21.3	-17	27.3	154	40.0	-22	45.2
6	43	18.8	100	14	38.3	87	228	25.3	-17	27.6	184	44.8	-22	45.2
8	72	16.7	98	14	55.8	86	258	29.3	-17	27.8	214	49.5	-22	45.2
10	101	14.4	97	15	13.0	84	288	33.3	-17	28.1	244	54.2	-22	45.2
12	130	11.8	96	15	29.9	83	318	37.3	-17	28.3	274	59.0	-22	45.2
14	159	9.0	94	15	46.4	81	348	41.3	-17	28.6	305	3.7	-22	45.2
16	188	5.9	93	16	2.7	79	18	45.3	-17	28.8	335	8.4	-22	45.3
18	217	2.5	92	16	18.6	78	48	49.3	-17	29.1	5	13.1	-22	45.3
20	245	58.9	90	16	34.1	76	78	53.3	-17	29.3	35	17.9	-22	45.3
22	274	54.9	89	16	49.3	74	108	57.3	-17	29.6	65	22.6	-22	45.3
Δ							20	-1			24	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	9 31.4	.8	16.0	T _m	3 1	2.2	57.5	15.7
12	9 41.4			T _{m☉}	11 h 50.3 min</			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 27.8	- 2 41.5	8 41.5	153 9.7	-21 15.1	59 44.0	-22 41.9
2	212 28.2	- 2 43.5	38 46.4	183 13.8	-21 15.9	89 47.0	-22 41.2
4	242 28.7	- 2 45.4	68 51.3	213 17.8	-21 16.7	119 50.0	-22 40.4
6	272 29.1	- 2 47.4	98 56.3	243 21.9	-21 17.5	149 53.0	-22 39.6
8	302 29.5	- 2 49.3	129 1.2	273 26.0	-21 18.3	179 55.9	-22 38.9
10	332 29.9	- 2 51.2	159 6.1	303 30.1	-21 19.1	209 58.9	-22 38.1
12	2 30.3	- 2 53.2	189 11.0	333 34.2	-21 19.8	240 1.9	-22 37.3
14	32 30.7	- 2 55.1	219 16.0	3 38.3	-21 20.6	270 4.9	-22 36.6
16	62 31.1	- 2 57.1	249 20.9	33 42.4	-21 21.3	300 7.9	-22 35.8
18	92 31.5	- 2 59.0	279 25.8	63 46.6	-21 22.1	330 10.8	-22 35.0
20	122 31.9	- 3 .9	309 30.8	93 50.7	-21 22.8	0 13.8	-22 34.3
22	152 32.3	- 3 2.9	339 35.7	123 54.9	-21 23.6	30 16.8	-22 33.5
Δ	2	-10		21	-4	15	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 3	17 36	0 41	2 21	20 2	1.7	12 32	3.2
55	6 0	17 39	0 36	2 2	20 31	1.9	12 3	3.0
50	5 58	17 41	0 32	1 48	20 53	2.0	11 42	2.8
45	5 57	17 43	0 29	1 38	21 10	2.1	11 26	2.7
40	5 55	17 44	0 27	1 30	21 24	2.1	11 13	2.7
35	5 54	17 46	0 25	1 24	21 36	2.2	11 1	2.6
30	5 53	17 47	0 24	1 19	21 46	2.2	10 52	2.6
20	5 51	17 49	0 22	1 13	22 4	2.3	10 35	2.5
10	5 49	17 51	0 21	1 10	22 20	2.3	10 20	2.4
0	5 47	17 53	0 21	1 9	22 35	2.4	10 6	2.3
10	5 45	17 55	0 21	1 10	22 50	2.4	9 52	2.3
20	5 42	17 58	0 22	1 14	23 5	2.4	9 37	2.2
30	5 40	18 1	0 24	1 20	23 24	2.4	9 21	2.1
35	5 38	18 2	0 25	1 25	23 34	2.4	9 11	2.0
40	5 36	18 4	0 27	1 32	23 47	2.4	8 60	2.0
45	5 34	18 7	0 30	1 41	...	.0	8 47	1.9
50	5 32	18 9	0 33	1 52	...	.0	8 31	1.8
55	5 28	18 13	0 37	2 9	...	.0	8 11	1.6
60	5 24	18 17	0 42	2 34	...	.0	7 43	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	°	'	'	'
0	303 50.8	88 17 4.1	72	139 1.3	-17 29.8	95 27.3	-22 45.3	
2	332 46.3	86 17 18.6	70	169 5.3	-17 30.1	125 32.0	-22 45.3	
4	1 41.6	85 17 32.6	68	199 9.3	-17 30.3	155 36.8	-22 45.3	
6	30 36.6	84 17 46.3	66	229 13.3	-17 30.6	185 41.5	-22 45.3	
8	59 31.4	83 17 59.6	64	259 17.2	-17 30.8	215 46.2	-22 45.3	
10	88 25.9	81 18 12.5	62	289 21.2	-17 31.1	245 50.9	-22 45.3	
12	117 20.2	80 18 25.0	60	319 25.2	-17 31.3	275 55.6	-22 45.3	
14	146 14.2	79 18 37.0	58	349 29.2	-17 31.6	306 .4	-22 45.3	
16	175 7.9	78 18 48.6	56	19 33.2	-17 31.8	336 5.1	-22 45.3	
18	204 1.4	76 18 59.8	54	49 37.2	-17 32.1	6 9.8	-22 45.3	
20	232 54.7	75 19 10.5	51	79 41.2	-17 32.3	36 14.5	-22 45.4	
22	261 47.7	74 19 20.8	49	109 45.2	-17 32.6	66 19.2	-22 45.4	
Δ				20	-1	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	9 51.4	.8	16.0	T _m	3 53	2.3	57.9 15.8		
12	10 1.2	T _{m☉}	11 h 50.0 min	Starost	20.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	13 45	.1	144	-6.2	♄	14 42	.0	130	-1.4
	19 59	.1	51	-1.7	♅	17 35	.0	87	.7

1. OKTOBAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 32.8	- 3 4.8	9 40.6	153 59.1	-21 24.3	60 19.7	-22 32.7
2	212 33.2	- 3 6.8	39 45.5	184 3.3	-21 25.0	90 22.7	-22 32.0
4	242 33.6	- 3 8.7	69 50.5	214 7.5	-21 25.7	120 25.7	-22 31.2
6	272 34.0	- 3 10.6	99 55.4	244 11.7	-21 26.4	150 28.6	-22 30.4
8	302 34.4	- 3 12.6	130 .3	274 16.0	-21 27.1	180 31.6	-22 29.6
10	332 34.8	- 3 14.5	160 5.2	304 20.2	-21 27.8	210 34.5	-22 28.9
12	2 35.2	- 3 16.4	190 10.2	334 24.5	-21 28.5	240 37.4	-22 28.1
14	32 35.6	- 3 18.4	220 15.1	4 28.8	-21 29.2	270 40.4	-22 27.3
16	62 36.0	- 3 20.3	250 20.0	34 33.1	-21 29.8	300 43.3	-22 26.5
18	92 36.4	- 3 22.3	280 25.0	64 37.4	-21 30.5	330 46.3	-22 25.8
20	122 36.8	- 3 24.2	310 29.9	94 41.7	-21 31.2	0 49.2	-22 25.0
22	152 37.2	- 3 26.1	340 34.8	124 46.1	-21 31.8	30 52.1	-22 24.2
Δ	2	-10		21	-3	15	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 5	17 33	0 41	2 21	20 42	2.3	13 48	2.7
55	6 2	17 36	0 36	2 2	21 16	2.4	13 14	2.6
50	5 60	17 39	0 32	1 48	21 40	2.4	12 50	2.6
45	5 58	17 41	0 29	1 38	21 59	2.4	12 32	2.6
40	5 56	17 43	0 27	1 30	22 15	2.4	12 17	2.5
35	5 55	17 44	0 25	1 24	22 28	2.4	12 4	2.5
30	5 53	17 46	0 24	1 19	22 39	2.4	11 53	2.5
20	5 51	17 48	0 22	1 13	22 59	2.4	11 34	2.5
10	5 49	17 51	0 21	1 10	23 16	2.4	11 17	2.4
0	5 46	17 53	0 21	1 9	23 32	2.4	11 2	2.4
10	5 44	17 55	0 21	1 10	23 48	2.4	10 46	2.4
20	5 42	17 58	0 22	1 14	...	.0	10 30	2.4
30	5 39	18 1	0 24	1 21	...	.0	10 11	2.3
35	5 37	18 3	0 25	1 26	...	.0	9 59	2.3
40	5 35	18 5	0 27	1 32	...	.0	9 47	2.3
45	5 32	18 8	0 30	1 41	0 1	2.7	9 32	2.2
50	5 29	18 11	0 33	1 53	0 19	2.7	9 13	2.2
55	5 26	18 15	0 37	2 9	0 42	2.8	8 50	2.1
60	5 21	18 20	0 43	2 35	1 14	3.0	8 17	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	°	'	'	'
0	290 40.5	73 19 30.6	47	139 49.2	-17 32.8	96 23.9	-22 45.4	
2	319 33.0	72 19 40.0	44	169 53.1	-17 33.1	126 28.6	-22 45.4	
4	348 25.4	71 19 48.9	42	199 57.1	-17 33.4	156 33.4	-22 45.4	
6	17 17.5	69 19 57.3	40	230 1.1	-17 33.6	186 38.1	-22 45.4	
8	46 9.4	68 20 5.2	37	260 5.1	-17 33.9	216 42.8	-22 45.4	
10	75 1.1	67 20 12.6	35	290 9.1	-17 34.1	246 47.5	-22 45.4	
12	103 52.6	66 20 19.6	32	320 13.1	-17 34.4	276 52.2	-22 45.4	
14	132 43.9	66 20 26.0	30	350 17.0	-17 34.6	306 56.9	-22 45.4	
16	161 35.0	65 20 31.9	27	20 21.0	-17 34.9	337 1.6	-22 45.4	
18	190 25.9	64 20 37.3	24	50 25.0	-17 35.1	7 6.3	-22 45.4	
20	219 16.7	63 20 42.2	22	80 29.0	-17 35.4	37 11.0	-22 45.4	
22	248 7.3	62 20 46.5	19	110 33.0	-17 35.6	67 15.7	-22 45.4	
Δ				20	-1	24	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	10 11.0	.8	16.0	T _m	4 48	2.4	58.4 15.9		
12	10 20.7	T _{m☉}	11 h 49.7 min	Starost	21.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	13 42	.1	144	-6.2	♄	14 39	.0	130	-1.4
	19 57	.1	51	-1.7	♅	17 32	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 37.6 - 3 28.1		10 39.7	154 50.4 -21 32.5		60 55.0 -22 23.4	
2	212 38.0 - 3 30.0		40 44.7	184 54.8 -21 33.1		90 58.0 -22 22.6	
4	242 38.4 - 3 31.9		70 49.6	214 59.2 -21 33.7		121 .9 -22 21.8	
6	272 38.8 - 3 33.9		100 54.5	245 3.6 -21 34.4		151 3.8 -22 21.0	
8	302 39.2 - 3 35.8		130 59.5	275 8.0 -21 35.0		181 6.7 -22 20.3	
10	332 39.6 - 3 37.7		161 4.4	305 12.4 -21 35.6		211 9.6 -22 19.5	
12	2 40.0 - 3 39.7		191 9.3	335 16.9 -21 36.2		241 12.5 -22 18.7	
14	32 40.4 - 3 41.6		221 14.2	5 21.3 -21 36.8		271 15.4 -22 17.9	
16	62 40.8 - 3 43.6		251 19.2	35 25.8 -21 37.4		301 18.3 -22 17.1	
18	92 41.2 - 3 45.5		281 24.1	65 30.3 -21 38.0		331 21.2 -22 16.3	
20	122 41.6 - 3 47.4		311 29.0	95 34.8 -21 38.5		1 24.1 -22 15.5	
22	152 42.0 - 3 49.4		341 34.0	125 39.3 -21 39.1		31 27.0 -22 14.7	
Δ	2	-10		22	-3	15	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 8	17 30	0 41	2 21	21 38	3.0	14 52	2.1
55	6 4	17 34	0 36	2 1	22 13	2.9	14 17	2.2
50	6 1	17 37	0 32	1 48	22 38	2.8	13 53	2.2
45	5 59	17 39	0 29	1 38	22 57	2.7	13 33	2.3
40	5 57	17 41	0 27	1 30	23 13	2.5	13 18	2.3
35	5 55	17 43	0 25	1 24	23 26	2.5	13 4	2.3
30	5 54	17 44	0 24	1 19	23 37	2.5	12 53	2.4
20	5 51	17 47	0 22	1 13	23 57	2.5	12 33	2.4
10	5 49	17 50	0 21	1 10	...	.0	12 16	2.4
0	5 46	17 53	0 21	1 9	...	.0	11 60	2.4
10	5 44	17 55	0 21	1 10	...	.0	11 43	2.5
20	5 41	17 58	0 22	1 14	0 5	2.4	11 26	2.5
30	5 37	18 2	0 24	1 21	0 25	2.4	11 6	2.5
35	5 35	18 4	0 25	1 26	0 36	2.4	10 54	2.5
40	5 33	18 6	0 27	1 32	0 50	2.4	10 41	2.6
45	5 30	18 9	0 30	1 41	1 5	2.4	10 25	2.6
50	5 27	18 12	0 33	1 53	1 25	2.4	10 6	2.6
55	5 23	18 17	0 37	2 10	1 50	2.4	9 40	2.6
60	5 18	18 22	0 43	2 36	2 25	2.4	9 5	2.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	276 57.7	62	20 50.4	16	140 37.0	-17 35.9	97 20.5	-22 45.5
2	305 48.0	61	20 53.6	14	170 40.9	-17 36.1	127 25.2	-22 45.5
4	334 38.2	60	20 56.4	11	200 44.9	-17 36.4	157 29.9	-22 45.5
6	3 28.2	60	20 58.6	8	230 48.9	-17 36.6	187 34.6	-22 45.5
8	32 18.1	59	21 .3	6	260 52.9	-17 36.9	217 39.3	-22 45.5
10	61 7.9	59	21 1.4	3	290 56.8	-17 37.1	247 44.0	-22 45.5
12	89 57.7	58	21 2.0	0	321 .8	-17 37.4	277 48.7	-22 45.5
14	118 47.3	58	21 2.0	-3	351 4.8	-17 37.6	307 53.4	-22 45.5
16	147 36.8	57	21 1.5	-5	21 8.8	-17 37.9	337 58.1	-22 45.5
18	176 26.3	57	21 .4	-8	51 12.7	-17 38.1	8 2.8	-22 45.5
20	205 15.7	57	20 58.7	-11	81 16.7	-17 38.4	38 7.5	-22 45.5
22	234 5.1	57	20 56.5	-14	111 20.7	-17 38.6	68 12.2	-22 45.5
Δ					20	-1	24	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	10 30.4	.8	16.0	T _m	5 46	2.4	58.8	16.0	
12	10 39.9	T _{m☉}	11 h 49.3 min	Starost	22.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	13 39	.1	144	-6.3	♃	14 36	.0	130	-1.4
♂	19 54	.1	50	-1.7	♄	17 28	.0	87	.7

3. OKTOBAR

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 42.3 - 3 51.3		11 38.9	155 43.9 -21 39.7		61 29.9 -22 13.9	
2	212 42.7 - 3 53.2		41 43.8	185 48.4 -21 40.2		91 32.8 -22 13.1	
4	242 43.1 - 3 55.2		71 48.7	215 53.0 -21 40.8		121 35.7 -22 12.3	
6	272 43.5 - 3 57.1		101 53.7	245 57.5 -21 41.3		151 38.6 -22 11.5	
8	302 43.9 - 3 59.0		131 58.6	276 2.1 -21 41.8		181 41.4 -22 10.7	
10	332 44.3 - 4 .9		162 3.5	306 6.7 -21 42.4		211 44.3 -22 9.9	
12	2 44.7 - 4 2.9		192 8.5	336 11.3 -21 42.9		241 47.2 -22 9.1	
14	32 45.1 - 4 4.8		222 13.4	6 16.0 -21 43.4		271 50.0 -22 8.3	
16	62 45.5 - 4 6.7		252 18.3	36 20.6 -21 43.9		301 52.9 -22 7.5	
18	92 45.9 - 4 8.7		282 23.2	66 25.3 -21 44.4		331 55.8 -22 6.7	
20	122 46.2 - 4 10.6		312 28.2	96 30.0 -21 44.9		1 58.6 -22 5.9	
22	152 46.6 - 4 12.5		342 33.1	126 34.7 -21 45.4		32 1.5 -22 5.1	
Δ	2	-10		23	-3	14	4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 10	17 27	0 41	2 20	22 50	2.5	15 42	1.5
55	6 6	17 31	0 36	2 1	23 22	2.4	15 10	1.7
50	6 3	17 34	0 32	1 48	23 45	2.4	14 47	1.9
45	6 0	17 37	0 29	1 38	...	.0	14 28	2.0
40	5 58	17 39	0 27	1 30	...	.0	14 13	2.1
35	5 56	17 41	0 25	1 24	...	.0	14 1	2.1
30	5 54	17 43	0 24	1 19	...	.0	13 50	2.2
20	5 51	17 46	0 22	1 13	...	.0	13 31	2.3
10	5 48	17 49	0 21	1 10	0 14	2.5	13 14	2.4
0	5 46	17 52	0 21	1 9	0 30	2.5	12 58	2.4
10	5 43	17 55	0 21	1 10	0 46	2.4	12 43	2.5
20	5 40	17 59	0 22	1 14	1 3	2.3	12 26	2.6
30	5 36	18 2	0 24	1 21	1 23	2.3	12 7	2.7
35	5 34	18 5	0 25	1 26	1 35	2.2	11 55	2.7
40	5 31	18 7	0 27	1 33	1 48	2.2	11 42	2.8
45	5 29	18 10	0 30	1 42	2 4	2.1	11 27	2.9
50	5 25	18 14	0 33	1 54	2 23	2.1	11 8	3.0
55	5 21	18 19	0 37	2 11	2 48	2.0	10 43	3.1
60	5 15	18 25	0 43	2 38	3 23	1.8	10 9	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	262 54.4	56	20 53.8	-17	141 24.7	-17 38.9	98 16.9	-22 45.5
2	291 43.7	56	20 50.5	-19	171 28.6	-17 39.2	128 21.6	-22 45.5
4	320 32.9	56	20 46.6	-22	201 32.6	-17 39.4	158 26.3	-22 45.5
6	349 22.2	56	20 42.2	-25	231 36.6	-17 39.7	188 31.0	-22 45.6
8	18 11.5	56	20 37.2	-28	261 40.5	-17 39.9	218 35.7	-22 45.6
10	47 .7	56	20 31.7	-30	291 44.5	-17 40.2	248 40.4	-22 45.6
12	75 50.0	57	20 25.6	-33	321 48.5	-17 40.4	278 45.1	-22 45.6
14	104 39.4	57	20 18.9	-36	351 52.4	-17 40.7	308 49.7	-22 45.6
16	133 28.7	57	20 11.7	-39	21 56.4	-17 40.9	338 54.4	-22 45.6
18	162 18.1	57	20 4.0	-41	52 .4	-17 41.2	8 59.1	-22 45.6
20	191 7.6	58	19 55.7	-44	82 4.4	-17 41.4	39 3.8	-22 45.6
22	219 57.2	58	19 46.9	-47	112 8.3	-17 41.7	69 8.5	-22 45.6
Δ					20	-1	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	10 49.4	.8	16.0	T _m	6 44	2.5	59.2	16.1	
12	10 58.7	T _{m☉}	11 h 49.0 min	Starost	23.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	13 35	.1	144	-6.3	♃	14 32	.0	130	-1.4
♂	19 52	.1	50	-1.7	♄	17 24	.0	87	.7

UT	SUNCE			PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉	δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	182	47.0	- 4 14.5	12	38.0		156	39.4	-21 45.9	62	4.3	-22 4.3
2	212	47.4	- 4 16.4	42	43.0		186	44.1	-21 46.3	92	7.2	-22 3.5
4	242	47.8	- 4 18.3	72	47.9		216	48.8	-21 46.8	122	10.0	-22 2.7
6	272	48.2	- 4 20.2	102	52.8		246	53.6	-21 47.2	152	12.9	-22 1.9
8	302	48.6	- 4 22.2	132	57.7		276	58.4	-21 47.7	182	15.7	-22 1.0
10	332	48.9	- 4 24.1	163	2.7		307	3.1	-21 48.1	212	18.5	-22 .2
12	2 49.3	- 4 26.0		193	7.6		337	7.9	-21 48.5	242	21.4	-21 59.4
14	32 49.7	- 4 28.0		223	12.5		7	12.7	-21 49.0	272	24.2	-21 58.6
16	62 50.1	- 4 29.9		253	17.5		37	17.6	-21 49.4	302	27.0	-21 57.8
18	92 50.5	- 4 31.8		283	22.4		67	22.4	-21 49.8	332	29.9	-21 57.0
20	122 50.8	- 4 33.7		313	27.3		97	27.3	-21 50.2	2	32.7	-21 56.1
22	152 51.2	- 4 35.7		343	32.2		127	32.1	-21 50.6	32	35.5	-21 55.3
Δ	2	-10					24	-2		14	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 12	17 24	0 41	2 20	23 49	3.4	16 19	1.1
55	6 8	17 29	0 36	2 1	.. .	.0	15 52	1.4
50	6 4	17 32	0 32	1 48	.. .	.0	15 32	1.6
45	6 1	17 35	0 29	1 37	0 2	3.0	15 16	1.7
40	5 59	17 38	0 27	1 30	0 17	2.9	15 3	1.8
35	5 57	17 40	0 25	1 24	0 29	2.8	14 52	1.9
30	5 55	17 42	0 24	1 19	0 40	2.7	14 42	2.0
20	5 52	17 46	0 22	1 13	0 58	2.6	14 25	2.1
10	5 48	17 49	0 21	1 10	1 14	2.5	14 11	2.3
0	5 45	17 52	0 21	1 9	1 29	2.4	13 57	2.4
10	5 42	17 55	0 21	1 10	1 44	2.3	13 43	2.5
20	5 39	17 59	0 22	1 14	1 60	2.2	13 28	2.6
30	5 35	18 3	0 24	1 21	2 18	2.1	13 11	2.7
35	5 33	18 5	0 25	1 26	2 29	2.0	13 1	2.8
40	5 30	18 8	0 27	1 33	2 41	1.9	12 49	2.9
45	5 27	18 12	0 30	1 42	2 55	1.8	12 35	3.0
50	5 23	18 16	0 33	1 54	3 13	1.7	12 19	3.2
55	5 18	18 21	0 37	2 12	3 35	1.5	11 57	3.4
60	5 12	18 27	0 43	2 39	4 5	1.3	11 28	3.7

UT	MESEC				JUPITER		SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄			
h	°	'	''	''	°	'	''	''			
0	248	46.8	58	19 37.5	-49	142	12.3	-17 41.9	99	13.2	-22 45.6
2	277	36.5	59	19 27.7	-52	172	16.2	-17 42.2	129	17.9	-22 45.6
4	306	26.3	59	19 17.3	-55	202	20.2	-17 42.4	159	22.6	-22 45.6
6	335	16.2	60	19 6.3	-57	232	24.2	-17 42.7	189	27.3	-22 45.6
8	4 6.2	61	18 54.9	-60	262	28.1	-17 42.9	219	32.0	-22 45.6	
10	32 56.3	61	18 42.9	-62	292	32.1	-17 43.2	249	36.6	-22 45.6	
12	61 46.5	62	18 30.5	-65	322	36.1	-17 43.4	279	41.3	-22 45.6	
14	90 36.9	63	18 17.5	-67	352	40.0	-17 43.7	309	46.0	-22 45.7	
16	119 27.4	63	18 4.1	-70	22	44.0	-17 44.0	339	50.7	-22 45.7	
18	148 18.1	64	17 50.1	-72	52	47.9	-17 44.2	9	55.4	-22 45.7	
20	177 8.9	65	17 35.7	-74	82	51.9	-17 44.5	40	.1	-22 45.7	
22	205 59.8	66	17 20.8	-77	112	55.9	-17 44.7	70	4.7	-22 45.7	
Δ					20	-1		23	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	11 8.1	.8	16.0	T _m	7 43	2.4	59.5 16.2
12	11 17.2	T _m ☉	11 h 48.7 min	Starost	24.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 31	.1	144	-6.4	♄	14 29	.0	130	-1.4
♂	19 50	.1	49	-1.6	♂	17 20	.0	87	.7

5. OKTOBAR

PETAK

UT	SUNCE			PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉	δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	''	°	'	''	°	'	''	°	'	''
0	182	51.6	- 4 37.6	13	37.2		157	37.0	-21 51.0	62	38.3	-21 54.5
2	212	52.0	- 4 39.5	43	42.1		187	41.9	-21 51.3	92	41.1	-21 53.7
4	242	52.4	- 4 41.4	73	47.0		217	46.9	-21 51.7	122	44.0	-21 52.9
6	272	52.7	- 4 43.4	103	51.9		247	51.8	-21 52.1	152	46.8	-21 52.0
8	302	53.1	- 4 45.3	133	56.9		277	56.7	-21 52.4	182	49.6	-21 51.2
10	332	53.5	- 4 47.2	164	1.8		308	1.7	-21 52.8	212	52.4	-21 50.4
12	2 53.9	- 4 49.1		194	6.7		338	6.7	-21 53.1	242	55.2	-21 49.6
14	32 54.2	- 4 51.1		224	11.7		8	11.7	-21 53.4	272	58.0	-21 48.7
16	62 54.6	- 4 53.0		254	16.6		38	16.7	-21 53.7	303	.8	-21 47.9
18	92 55.0	- 4 54.9		284	21.5		68	21.7	-21 54.1	333	3.6	-21 47.1
20	122 55.3	- 4 56.8		314	26.4		98	26.8	-21 54.4	3	6.3	-21 46.2
22	152 55.7	- 4 58.7		344	31.4		128	31.8	-21 54.7	33	9.1	-21 45.4
Δ	2	-10					25	-2		14	4	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 15	17 21	0 41	2 20	.. .	.0	16 45	.8
55	6 10	17 26	0 36	2 1	0 40	3.5	16 25	1.1
50	6 6	17 30	0 32	1 47	0 59	3.2	16 9	1.3
45	6 3	17 33	0 29	1 37	1 14	3.1	15 57	1.5
40	6 0	17 36	0 27	1 30	1 26	3.0	15 47	1.6
35	5 58	17 39	0 25	1 24	1 36	2.9	15 38	1.7
30	5 56	17 41	0 24	1 19	1 45	2.8	15 30	1.8
20	5 52	17 45	0 22	1 13	2 1	2.6	15 17	2.0
10	5 48	17 48	0 21	1 10	2 14	2.5	15 5	2.2
0	5 45	17 52	0 21	1 9	2 27	2.3	14 54	2.3
10	5 42	17 55	0 21	1 10	2 40	2.2	14 43	2.4
20	5 38	17 59	0 22	1 14	2 53	2.1	14 30	2.6
30	5 34	18 4	0 24	1 21	3 8	1.9	14 17	2.8
35	5 31	18 6	0 26	1 26	3 17	1.8	14 8	2.9
40	5 28	18 9	0 27	1 33	3 28	1.7	13 59	3.0
45	5 25	18 13	0 30	1 42	3 39	1.6	13 48	3.1
50	5 21	18 17	0 33	1 55	3 54	1.4	13 35	3.3
55	5 16	18 22	0 37	2 12	4 12	1.2	13 18	3.5
60	5 9	18 29	0 43	2 41	4 36	.9	12 56	3.8

UT	MESEC				JUPITER		SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄			
h	°	'	''	''	°	'	''	''			
0	234	50.9	66	17 5.5	-79	142	59.8	-17 45.0	100	9.4	-22 45.7
2	263	42.2	67	16 49.7	-81	173	3.8	-17 45.2	130	14.1	-22 45.7
4	292	33.7	68	16 33.5	-83	203	7.7	-17 45.5	160	18.8	-22 45.7
6	321	25.3	69	16 16.8	-86	233	11.7	-17 45.7	190	23.5	-22 45.7
8	350	17.1	70	15 59.7	-88	263	15.7	-17 46.0	220	28.1	-22 45.7
10	19 9.1	71	15 42.2	-90	293	19.6	-17 46.2	250	32.8	-22 45.7	
12	48 1.2	72	15 24.2	-92	323	23.6	-17 46.5	280	37.5	-22 45.7	
14	76 53.6	73	15 5.9	-94	353	27.5	-17 46.7	310	42.2	-22 45.7	
16	105 46.1	74	14 47.2	-96	23	31.5	-17 47.0	340	46.9	-22 45.7	
18	134 38.8	75	14 28.1	-97	53	35.4	-17 47.3	10	51.5	-22 45.7	
20	163 31.8	76	14 8.6	-99	83	39.4	-17 47.5	40	56.2	-22 45.7	
22	192 24.9	77	13 48.8	-101	113	43.3	-17 47.8	71	.9	-22 45.7	
Δ					20	-1		23	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	11 26.4	.7	16.0	T _m	8 40	2.3	59.8 16.3
12	11 35.4	T _m ☉	11 h 48.4 min	Starost	25.2 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 27	.1	144	-6.4	♄	14 26	.0	129	-1.4
♂	19 48	.1	49	-1.6	♂	17 17	.0	87	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	182	56.1	-5	7	158	36.9	-21	55.0	63	11.9	-21	44.6
2	212	56.5	-5	2.6	188	42.0	-21	55.2	93	14.7	-21	43.7
4	242	56.8	-5	4.5	218	47.1	-21	55.5	123	17.5	-21	42.9
6	272	57.2	-5	6.4	248	52.2	-21	55.8	153	20.2	-21	42.1
8	302	57.6	-5	8.3	278	57.3	-21	56.0	183	23.0	-21	41.2
10	332	57.9	-5	10.3	309	2.5	-21	56.3	213	25.8	-21	40.4
12	2	58.3	-5	12.2	339	7.6	-21	56.5	243	28.5	-21	39.6
14	32	58.7	-5	14.1	369	12.8	-21	56.8	273	31.3	-21	38.7
16	62	59.0	-5	16.0	399	18.0	-21	57.0	303	34.1	-21	37.9
18	92	59.4	-5	17.9	429	23.2	-21	57.2	333	36.8	-21	37.0
20	122	59.8	-5	19.8	459	28.4	-21	57.4	3	39.6	-21	36.2
22	153	60.1	-5	21.8	489	33.7	-21	57.6	33	42.3	-21	35.4
Δ		2		-10		26		-1		14		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 17	17 18	0 41	2 19	1 45	3.8	17 5	.7
55	6 12	17 24	0 36	2 1	2 3	3.5	16 51	.9
50	6 7	17 28	0 32	1 47	2 17	3.3	16 41	1.2
45	6 4	17 32	0 29	1 37	2 28	3.1	16 33	1.3
40	6 1	17 35	0 27	1 30	2 37	3.0	16 26	1.5
35	5 58	17 37	0 25	1 24	2 44	2.8	16 20	1.6
30	5 56	17 40	0 24	1 19	2 51	2.7	16 14	1.7
20	5 52	17 44	0 22	1 13	3 3	2.6	16 5	1.9
10	5 48	17 48	0 21	1 10	3 13	2.4	15 57	2.1
0	5 45	17 51	0 21	1 9	3 23	2.2	15 49	2.2
10	5 41	17 55	0 21	1 10	3 33	2.1	15 41	2.4
20	5 37	17 59	0 22	1 14	3 43	1.9	15 32	2.5
30	5 33	18 4	0 24	1 21	3 54	1.8	15 23	2.7
35	5 30	18 7	0 26	1 26	4 1	1.7	15 17	2.8
40	5 27	18 10	0 27	1 33	4 9	1.5	15 11	3.0
45	5 23	18 14	0 30	1 43	4 18	1.4	15 3	3.1
50	5 19	18 19	0 33	1 55	4 28	1.2	14 54	3.3
55	5 13	18 24	0 37	2 13	4 41	1.0	14 42	3.5
60	5 6	18 32	0 43	2 42	4 59	.7	14 27	3.8
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	221	18.2	78	13	28.6	-103	143	47.3	-17	48.0	101	5.6	-22	45.8
2	250	11.7	78	13	8.0	-104	173	51.2	-17	48.3	131	10.2	-22	45.8
4	279	5.4	79	12	47.2	-106	203	55.2	-17	48.5	161	14.9	-22	45.8
6	307	59.3	80	12	26.0	-107	233	59.1	-17	48.8	191	19.6	-22	45.8
8	336	53.4	81	12	4.5	-109	264	3.1	-17	49.0	221	24.2	-22	45.8
10	5	47.7	82	11	42.7	-110	294	7.0	-17	49.3	251	28.9	-22	45.8
12	34	42.1	83	11	20.6	-112	324	11.0	-17	49.5	281	33.6	-22	45.8
14	63	36.8	84	10	58.3	-113	354	14.9	-17	49.8	311	38.3	-22	45.8
16	92	31.7	85	10	35.7	-114	384	18.9	-17	50.0	341	42.9	-22	45.8
18	121	26.7	86	10	12.8	-116	414	22.8	-17	50.3	371	47.6	-22	45.8
20	150	22.0	87	9	49.7	-117	444	26.8	-17	50.6	401	52.3	-22	45.8
22	179	17.4	88	9	26.3	-118	474	30.7	-17	50.8	431	56.9	-22	45.8
Δ							20		-1		23			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	11 44.4	.7	16.0	T _m	9 36	2.2	59.8	16.3	
12	11 53.1	T _{m☉}	11 h 48.1 min	Starost	26.2 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	13 23	.1	144	-6.4	♄	14 23	.0	129	-1.3
♂	19 45	.1	49	-1.6	♅	17 13	.0	86	.7

7. OKTOBAR

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	183	.5	-5	23.7	159	38.9	-21	57.8	63	45.1	-21	34.5
2	213	.8	-5	25.6	189	44.2	-21	58.0	93	47.8	-21	33.7
4	243	1.2	-5	27.5	219	49.5	-21	58.2	123	50.6	-21	32.8
6	273	1.6	-5	29.4	249	54.8	-21	58.3	153	53.3	-21	32.0
8	303	1.9	-5	31.3	280	.1	-21	58.5	183	56.1	-21	31.1
10	333	2.3	-5	33.2	310	5.4	-21	58.6	213	58.8	-21	30.3
12	3	2.6	-5	35.1	340	10.8	-21	58.8	244	1.5	-21	29.4
14	33	3.0	-5	37.0	370	16.2	-21	58.9	274	4.3	-21	28.6
16	63	3.4	-5	39.0	400	21.5	-21	59.0	304	7.0	-21	27.7
18	93	3.7	-5	40.9	430	26.9	-21	59.2	334	9.7	-21	26.9
20	123	4.1	-5	42.8	460	32.4	-21	59.3	364	12.4	-21	26.0
22	153	4.4	-5	44.7	490	37.8	-21	59.4	394	15.2	-21	25.1
Δ		2		-10		27		-1		14		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 19	17 15	0 41	2 19	3 17	3.8	17 21	.6
55	6 14	17 21	0 36	2 1	3 27	3.5	17 14	.9
50	6 9	17 26	0 32	1 47	3 36	3.3	17 9	1.1
45	6 5	17 30	0 29	1 37	3 42	3.1	17 5	1.2
40	6 2	17 33	0 27	1 30	3 48	2.9	17 1	1.4
35	5 59	17 36	0 25	1 24	3 53	2.8	16 58	1.5
30	5 57	17 38	0 24	1 19	3 57	2.7	16 55	1.6
20	5 52	17 43	0 22	1 13	4 4	2.5	16 50	1.8
10	5 48	17 47	0 21	1 10	4 11	2.3	16 46	2.0
0	5 45	17 51	0 21	1 9	4 17	2.2	16 42	2.1
10	5 41	17 55	0 21	1 10	4 23	2.0	16 38	2.3
20	5 36	17 60	0 22	1 14	4 29	1.8	16 33	2.5
30	5 31	18 5	0 24	1 21	4 37	1.7	16 28	2.7
35	5 28	18 8	0 26	1 27	4 41	1.5	16 25	2.8
40	5 25	18 11	0 27	1 34	4 46	1.4	16 22	2.9
45	5 21	18 15	0 30	1 43	4 51	1.3	16 18	3.1
50	5 16	18 20	0 33	1 56	4 58	1.1	16 13	3.3
55	5 11	18 26	0 37	2 14	5 6	.9	16 7	3.5
60	5 3	18 34	0 44	2 44	5 16	.6	15 59	3.8
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	208	13.0	89	9	2.8	-119	144	34.7	-17	51.1	102	1.6	-22	45.8
2	237	8.8	90	8	39.0	-120	174	38.6	-17	51.3	132	6.3	-22	45.8
4	266	4.8	91	8	15.1	-121	204	42.6	-17	51.6	162	10.9	-22	45.8
6	295	.9	92	7	50.9	-122	234	46.5	-17	51.8	192	15.6	-22	45.8
8	323	57.3	92	7	26.6	-122	264	50.5	-17	52.1	222	20.2	-22	45.8
10	352	53.8	93	7	2.1	-123	294	54.4	-17	52.3	252	24.9	-22	45.8
12	21	50.4	94	6	37.5	-124	324	58.3	-17	52.6	282	29.6	-22	45.8
14	50	47.2	95	6	12.7	-125	355	2.3	-17	52.8	312	34.2	-22	45.9
16	79	44.2	96	5	47.8	-125	385	6.2	-17	53.1	342	38.9	-22	45.9
18	108	41.4	96	5	22.8	-126	415	10.2	-17	53.3	372	43.6	-22	45.9
20	137	38.7	97	4	57.6	-126	445	14.1	-17	53.6	402	48.2	-22	45.9
22	166	36.1	98	4	32.4	-126	475	18.0	-17	53.9	432	52.9	-22	45.9
Δ							20		-1		23			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	12 1.9	.7	16.0	T _m	10 29	2.2	59.7	16.3	
12	12 10.5	T _{m☉}	11 h 47.8 min	Starost	27.2 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	13 19	.1	144	-6.5	♄	14 20	.0	129	-1.3
♂	19 43	.1	48	-1.6	♅	17 9	.0	86	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	4.8	-5	46.6	16	34.6	160	43.2	-21	59.5	64	17.9	-21	24.3
2	213	5.1	-5	48.5	46	39.5	190	48.7	-21	59.5	94	20.6	-21	23.4
4	243	5.5	-5	50.4	76	44.4	220	54.2	-21	59.6	124	23.3	-21	22.6
6	273	5.8	-5	52.3	106	49.4	250	59.6	-21	59.7	154	26.0	-21	21.7
8	303	6.2	-5	54.2	136	54.3	281	5.1	-21	59.7	184	28.7	-21	20.8
10	333	6.5	-5	56.1	166	59.2	311	10.7	-21	59.8	214	31.4	-21	20.0
12	3	6.9	-5	58.1	197	4.1	341	16.2	-21	59.8	244	34.1	-21	19.1
14	33	7.2	-6	.0	227	9.1	11	21.8	-21	59.8	274	36.8	-21	18.3
16	63	7.6	-6	1.9	257	14.0	41	27.3	-21	59.9	304	39.5	-21	17.4
18	93	7.9	-6	3.8	287	18.9	71	32.9	-21	59.9	334	42.2	-21	16.5
20	123	8.3	-6	5.7	317	23.9	101	38.5	-21	59.9	4	44.9	-21	15.7
22	153	8.6	-6	7.6	347	28.8	131	44.1	-21	59.9	34	47.6	-21	14.8
Δ		2		-10				28		0		13		4

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 22	17 12	0 42	2 19	4 48	2.4	17 35	3.5
55	6 16	17 19	0 36	2 1	4 51	2.3	17 35	3.2
50	6 11	17 24	0 32	1 47	4 54	2.3	17 35	3.0
45	6 6	17 28	0 29	1 37	4 57	2.3	17 35	2.9
40	6 3	17 31	0 27	1 30	4 59	2.2	17 34	2.7
35	6 0	17 35	0 25	1 24	5 0	2.2	17 34	2.6
30	5 57	17 37	0 24	1 19	5 2	2.2	17 34	2.5
20	5 53	17 42	0 22	1 13	5 5	2.2	17 34	2.4
10	5 48	17 47	0 21	1 10	5 7	2.1	17 34	2.2
0	5 44	17 51	0 21	1 9	5 9	2.1	17 33	2.1
10	5 40	17 55	0 21	1 10	5 11	2.1	17 33	2.0
20	5 35	17 60	0 22	1 14	5 14	2.1	17 33	1.8
30	5 30	18 5	0 24	1 21	5 16	2.0	17 32	1.7
35	5 27	18 9	0 26	1 27	5 18	2.0	17 32	1.6
40	5 23	18 12	0 28	1 34	5 20	2.0	17 32	1.5
45	5 19	18 17	0 30	1 43	5 22	2.0	17 31	1.3
50	5 14	18 22	0 33	1 56	5 24	2.0	17 31	1.2
55	5 8	18 28	0 38	2 15	5 27	1.9	17 30	1.0
60	4 60	18 37	0 44	2 46	5 31	1.9	17 30	.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	195	33.7	99	4	7.1	-127	145	22.0	-17	54.1	102	57.5	-22	45.9		
2	224	31.4	99	3	41.8	-127	175	25.9	-17	54.4	133	2.2	-22	45.9		
4	253	29.3	100	3	16.3	-127	205	29.9	-17	54.6	163	6.8	-22	45.9		
6	282	27.3	101	2	50.9	-128	235	33.8	-17	54.9	193	11.5	-22	45.9		
8	311	25.4	101	2	25.4	-128	265	37.7	-17	55.1	223	16.2	-22	45.9		
10	340	23.6	102	1	59.8	-128	295	41.7	-17	55.4	253	20.8	-22	45.9		
12	9	22.0	102	1	34.3	-128	325	45.6	-17	55.6	283	25.5	-22	45.9		
14	38	20.5	103	1	8.7	-128	355	49.5	-17	55.9	313	30.1	-22	45.9		
16	67	19.0	103	0	43.2	-128	25	53.5	-17	56.1	343	34.8	-22	45.9		
18	96	17.7	104	0	17.6	-49	55	57.4	-17	56.4	13	39.4	-22	45.9		
20	125	16.5	104	0	7.9	127	86	1.3	-17	56.7	43	44.1	-22	45.9		
22	154	15.4	105	0	33.3	127	116	5.3	-17	56.9	73	48.7	-22	45.9		
Δ							20		-1		23			0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	12 19.1	.7	16.0	T _m	11 21	2.1	59.4	16.2
12	12 27.4			T _{m☉}	11 h 47.5 min	Starost	28.2 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 15	.1	144	-6.5	♃	14 17	.0	129	-1.3
♂	19 41	.1	48	-1.6	♄	17 6	.0	86	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	9.0	-6	9.5	17	33.7	161	49.7	-21	59.9	64	50.3	-21	13.9
2	213	9.3	-6	11.4	47	38.6	191	55.4	-21	59.8	94	52.9	-21	13.0
4	243	9.6	-6	13.3	77	43.6	222	1.0	-21	59.8	124	55.6	-21	12.2
6	273	10.0	-6	15.2	107	48.5	252	6.7	-21	59.8	154	58.3	-21	11.3
8	303	10.3	-6	17.1	137	53.4	282	12.4	-21	59.7	185	1.0	-21	10.4
10	333	10.7	-6	19.0	167	58.4	312	18.1	-21	59.7	215	3.7	-21	9.6
12	3	11.0	-6	20.9	198	3.3	342	23.8	-21	59.6	245	6.3	-21	8.7
14	33	11.3	-6	22.8	228	8.2	12	29.6	-21	59.5	275	9.0	-21	7.8
16	63	11.7	-6	24.7	258	13.1	42	35.3	-21	59.4	305	11.7	-21	6.9
18	93	12.0	-6	26.6	288	18.1	72	41.1	-21	59.3	335	14.3	-21	6.0
20	123	12.4	-6	28.5	318	23.0	102	46.9	-21	59.2	5	17.0	-21	5.2
22	153	12.7	-6	30.4	348	27.9	132	52.7	-21	59.1	35	19.6	-21	4.3
Δ		2		-9				29		0		13		4

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 24	17 9	0 42	2 19	5 45	.6	18 58	3.6
55	6 17	17 16	0 36	2 1	5 47	.8	18 52	3.3
50	6 12	17 22	0 32	1 47	5 49	1.0	18 47	3.1
45	6 8	17 26	0 29	1 37	5 51	1.2	18 44	2.9
40	6 4	17 30	0 27	1 30	5 52	1.4	18 40	2.8
35	6 1	17 33	0 25	1 24	5 54	1.5	18 38	2.7
30	5 58	17 36	0 24	1 19	5 55	1.6	18 35	2.6
20	5 53	17 41	0 22	1 13	5 56	1.8	18 31	2.4
10	5 48	17 46	0 21	1 10	5 58	1.9	18 27	2.2
0	5 44	17 51	0 21	1 9	5 60	2.1	18 24	2.1
10	5 40	17 55	0 21	1 10	6 1	2.2	18 20	1.9
20	5 35	18 0	0 22	1 14	6 3	2.4	18 16	1.8
30	5 29	18 6	0 24	1 22	6 5	2.6	18 12	1.6
35	5 26	18 9	0 26	1 27	6 7	2.7	18 10	1.5
40	5 22	18 13	0 28	1 34	6 8	2.8	18 7	1.4
45	5 17	18 18	0 30	1 44	6 10	3.0	18 4	1.2
50	5 12	18 23	0 33	1 57	6 12	3.1	17 60	1.1
55	5 5	18 30	0 38	2 16	6 14	3.4	17 55	.9
60	4 57	18 39	0 44	2 48	6 17	3.7	17 49	.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	183	14.4	105	0	58.7	127	146	9.2	-17	57.2	103	53.4	-22	45.9		
2	212	13.4	106	1	24.1	126	176	13.1	-17	57.4	133	58.0	-22	45.9		
4	241	12.6	106	1	49.4	126	206	17.1	-17	57.7	164	2.7	-22	45.9		
6	270	11.8	106	2	14.6	126	236	21.0	-17	57.9	194	7.3	-22	45.9		
8	299	11.1	107	2	39.7	125	266	24.9	-17	58.2	224	12.0	-22	46.0		
10	328	10.5	107	3	4.7	125	296	28.9	-17	58.4	254	16.6	-22	46.0		
12	357	9.9	107	3	29.6	124	326	32.8	-17	58.7	284	21.3	-22	46.0		
14	26	9.4	108	3	54.4	123	356	36.7	-17	58.9	314	25.9	-22	46.0		
16	55	8.9	108	4	19.1	123	26	40.7	-17	59.2	344	30.5	-22	46.0		
18	84	8.5	108	4	43.6	122	56	44.6	-17	59.5	14	35.2	-22	46.0		
20	113	8.2	108	5	8.0	121	86	48.5	-17	59.7	44	39.8	-22	46.0		
22	142	7.9	109	5	32.2	120	116	52.4	-17	60.0	74	44.5	-22	46.0		
Δ							20		-1		23			0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	°	'							
0	183	13.0	- 6	32.3	18	32.9	162	58.5	-21	59.0	65	22.3	-21	3.4
2	213	13.4	- 6	34.2	48	37.8	193	4.3	-21	58.9	95	24.9	-21	2.5
4	243	13.7	- 6	36.1	78	42.7	223	10.2	-21	58.7	125	27.6	-21	1.6
6	273	14.0	- 6	37.9	108	47.6	253	16.0	-21	58.6	155	30.2	-21	.8
8	303	14.4	- 6	39.8	138	52.6	283	21.9	-21	58.4	185	32.9	-20	59.9
10	333	14.7	- 6	41.7	168	57.5	313	27.8	-21	58.3	215	35.5	-20	59.0
12	3	15.0	- 6	43.6	199	2.4	343	33.7	-21	58.1	245	38.2	-20	58.1
14	33	15.3	- 6	45.5	229	7.4	373	39.6	-21	57.9	275	40.8	-20	57.2
16	63	15.7	- 6	47.4	259	12.3	403	45.6	-21	57.7	305	43.4	-20	56.3
18	93	16.0	- 6	49.3	289	17.2	433	51.5	-21	57.5	335	46.1	-20	55.4
20	123	16.3	- 6	51.2	319	22.1	463	57.5	-21	57.3	365	48.8	-20	54.5
22	153	16.7	- 6	53.1	349	27.1	493	3.5	-21	57.1	395	51.3	-20	53.6
Δ		2		-9				30		1		13		4

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 27	17 6	0 42	2 19	5 59	.6	20 25	3.5
55	6 19	17 14	0 36	2 0	6 8	.9	20 12	3.2
50	6 14	17 19	0 32	1 47	6 15	1.1	20 2	3.0
45	6 9	17 24	0 29	1 37	6 20	1.3	19 54	2.8
40	6 5	17 28	0 27	1 30	6 25	1.4	19 47	2.7
35	6 2	17 32	0 25	1 24	6 29	1.5	19 42	2.6
30	5 59	17 35	0 24	1 19	6 32	1.6	19 37	2.5
20	5 53	17 41	0 22	1 13	6 39	1.8	19 28	2.3
10	5 48	17 46	0 21	1 10	6 44	1.9	19 21	2.2
0	5 44	17 50	0 21	1 9	6 50	2.1	19 13	2.1
10	5 39	17 55	0 21	1 11	6 55	2.2	19 6	1.9
20	5 34	18 0	0 22	1 14	7 1	2.4	18 59	1.8
30	5 28	18 7	0 24	1 22	7 8	2.5	18 50	1.6
35	5 24	18 10	0 26	1 27	7 11	2.6	18 45	1.5
40	5 20	18 14	0 28	1 34	7 16	2.8	18 40	1.4
45	5 16	18 19	0 30	1 44	7 21	2.9	18 33	1.3
50	5 10	18 25	0 33	1 57	7 27	3.1	18 26	1.2
55	5 3	18 32	0 38	2 17	7 35	3.3	18 16	1.0
60	4 54	18 42	0 44	2 50	7 45	3.6	18 4	.7

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	171	7.6	109	5	56.2	119	146	56.4	-18	.2	104	49.1	-22	46.0
2	200	7.4	109	6	20.1	118	177	.3	-18	.5	134	53.8	-22	46.0
4	229	7.2	109	6	43.8	118	207	4.2	-18	.7	164	58.4	-22	46.0
6	258	7.0	109	7	7.3	117	237	8.1	-18	1.0	195	3.0	-22	46.0
8	287	6.9	109	7	30.6	116	267	12.1	-18	1.2	225	7.7	-22	46.0
10	316	6.8	110	7	53.7	114	297	16.0	-18	1.5	255	12.3	-22	46.0
12	345	6.7	110	8	16.6	113	327	19.9	-18	1.8	285	17.0	-22	46.0
14	14	6.6	110	8	39.3	112	357	23.8	-18	2.0	315	21.6	-22	46.0
16	43	6.5	110	9	1.7	111	27	27.8	-18	2.3	345	26.2	-22	46.0
18	72	6.5	110	9	23.9	110	57	31.7	-18	2.5	15	30.9	-22	46.0
20	101	6.4	110	9	45.8	108	87	35.6	-18	2.8	45	35.5	-22	46.0
22	130	6.4	110	10	7.5	107	117	39.5	-18	3.0	75	40.1	-22	46.0
Δ								20		-1		23		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	12 52.1	.7	16.0	T _m	13 2	2.0	58.3	15.9
12	13 .0	T _{m☉}	11 h 47.0 min	Starost	.8 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°	'	☾	h min	'	°	'
♂	13 6	.1	144	-6.5	♂	14 10	.0	128	-1.3
♂	19 37	.1	47	-1.5	♂	16 58	.0	86	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	°	'							
0	183	17.0	- 6	55.0	19	32.0	164	9.5	-21	56.8	65	54.0	-20	52.7
2	213	17.3	- 6	56.9	49	36.9	194	15.5	-21	56.6	95	56.6	-20	51.8
4	243	17.6	- 6	58.7	79	41.9	224	21.5	-21	56.3	125	59.2	-20	51.0
6	273	17.9	- 7	.6	109	46.8	254	27.6	-21	56.1	156	1.8	-20	50.1
8	303	18.3	- 7	2.5	139	51.7	284	33.6	-21	55.8	186	4.4	-20	49.2
10	333	18.6	- 7	4.4	169	56.6	314	39.7	-21	55.5	216	7.0	-20	48.3
12	3	18.9	- 7	6.3	200	1.6	344	45.8	-21	55.2	246	9.7	-20	47.4
14	33	19.2	- 7	8.2	230	6.5	374	51.9	-21	54.9	276	12.3	-20	46.5
16	63	19.5	- 7	10.0	260	11.4	404	58.0	-21	54.6	306	14.9	-20	45.6
18	93	19.9	- 7	11.9	290	16.4	434	4.2	-21	54.3	336	17.5	-20	44.7
20	123	20.2	- 7	13.8	320	21.3	464	10.3	-21	54.0	366	20.1	-20	43.7
22	153	20.5	- 7	15.7	350	26.2	494	16.5	-21	53.7	396	22.7	-20	42.8
Δ		2		-9				30		1		13		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 29	17 3	0 42	2 19	6 14	.8	21 49	3.3
55	6 21	17 11	0 36	2 0	6 29	1.0	21 29	3.0
50	6 15	17 17	0 32	1 47	6 41	1.2	21 14	2.9
45	6 10	17 22	0 29	1 37	6 50	1.4	21 2	2.7
40	6 6	17 27	0 27	1 30	6 58	1.5	20 53	2.6
35	6 2	17 31	0 25	1 24	7 5	1.6	20 44	2.5
30	5 59	17 34	0 24	1 19	7 11	1.7	20 37	2.4
20	5 53	17 40	0 22	1 13	7 22	1.8	20 24	2.3
10	5 48	17 45	0 21	1 10	7 31	2.0	20 13	2.2
0	5 43	17 50	0 21	1 9	7 39	2.1	20 3	2.1
10	5 38	17 55	0 21	1 11	7 48	2.2	19 53	2.0
20	5 33	18 1	0 22	1 15	7 58	2.3	19 42	1.9
30	5 27	18 7	0 24	1 22	8 8	2.5	19 30	1.7
35	5 23	18 11	0 26	1 27	8 15	2.6	19 22	1.6
40	5 19	18 15	0 28	1 35	8 22	2.7	19 14	1.5
45	5 14	18 21	0 30	1 44	8 30	2.8	19 5	1.4
50	5 8	18 27	0 33	1 58	8 40	2.9	18 53	1.3
55	5 0	18 34	0 38	2 18	8 53	3.1	18 39	1.1
60	4 51	18 44	0 44	2 52	9 10	3.4	18 20	.9

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	159	6.3	110	10	29.0	106	147	43.4	-18	3.3	105	44.8	-22	46.0
2	188	6.3	110	10	50.1	104	177	47.4	-18	3.5	135	49.4	-22	46.0
4	217	6.3	110	11	11.0	103	207	51.3	-18	3.8	165	54.0	-22	46.0
6	246	6.2	110	11	31.7	102	237	55.2	-18	4.0	195	58.7	-22	46.0
8	275	6.2	110	11	52.0	100	267	59.1	-18	4.3	226	3.3	-22	46.1
10	304	6.1	110	12	12.0	99	298	3.0	-18	4.6	256	7.9	-22	46.1
12	333	6.0	110	12	31.7	97	328	7.0	-18	4.8	286	12.6	-22	46.1
14	2	6.0	110	12	51.2	96	358	10.9	-18	5.1	316	17.2	-22	46.1
16	31	5.9	109	13	10.3	94	28	14.8	-18	5.3	346	21.8	-22	46.1
18	60	5.8	109	13	29.1	92	58	18.7	-18	5.6	16	26.4	-22	46.1
20	89	5.7	109	13	47.6	91	88	22.6	-18	5.8	46	31.1	-22	46.1
22	118	5.5	109	14	5.7	89	118	26.5	-18	6.1	76	35.7	-22	46.1
Δ								20		-1		23		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	13 7.9	.6	16.0	T _m	13 51	2.1	57.6	15.7
12	13 15.6	T _{m☉}	11 h 46.7 min	Starost	1.8 d	Faza	●	

PLANETE							
Pl.	T _m	π	360-α	Vel.			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	20.8	-7	17.6	20	31.1	165	22.7	-21	53.3	66	25.3	-20	41.9	
2	213	21.1	-7	19.5	50	36.1	195	28.9	-21	53.0	96	27.9	-20	41.0	
4	243	21.4	-7	21.3	80	41.0	225	35.1	-21	52.6	126	30.5	-20	40.1	
6	273	21.8	-7	23.2	110	45.9	255	41.3	-21	52.2	156	33.0	-20	39.2	
8	303	22.1	-7	25.1	140	50.8	285	47.6	-21	51.8	186	35.6	-20	38.3	
10	333	22.4	-7	27.0	170	55.8	315	53.8	-21	51.4	216	38.2	-20	37.4	
12	3	22.7	-7	28.8	201	.7	346	.1	-21	51.0	246	40.8	-20	36.5	
14	33	23.0	-7	30.7	231	5.6	16	6.4	-21	50.6	276	43.4	-20	35.6	
16	63	23.3	-7	32.6	261	10.6	46	12.7	-21	50.2	306	46.0	-20	34.7	
18	93	23.6	-7	34.5	291	15.5	76	19.0	-21	49.8	336	48.5	-20	33.7	
20	123	23.9	-7	36.3	321	20.4	106	25.3	-21	49.3	6	51.1	-20	32.8	
22	153	24.2	-7	38.2	351	25.3	136	31.7	-21	48.9	36	53.7	-20	31.9	
Δ		2		-9				31		2			13		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 32	17 0	0 42	2 19	6 33	1.0	23 8	3.0
55	6 23	17 9	0 36	2 0	6 54	1.2	22 42	2.8
50	6 17	17 15	0 32	1 47	7 10	1.4	22 23	2.7
45	6 12	17 21	0 29	1 37	7 23	1.5	22 8	2.6
40	6 7	17 25	0 27	1 30	7 34	1.6	21 55	2.5
35	6 3	17 29	0 25	1 24	7 43	1.7	21 45	2.4
30	5 60	17 33	0 24	1 19	7 51	1.8	21 36	2.3
20	5 54	17 39	0 22	1 13	8 5	1.9	21 20	2.2
10	5 48	17 44	0 21	1 10	8 18	2.0	21 6	2.2
0	5 43	17 50	0 21	1 9	8 29	2.1	20 53	2.1
10	5 38	17 55	0 21	1 11	8 41	2.2	20 40	2.0
20	5 32	18 1	0 22	1 15	8 53	2.3	20 26	1.9
30	5 26	18 8	0 24	1 22	9 8	2.4	20 11	1.8
35	5 22	18 12	0 26	1 28	9 16	2.5	20 2	1.8
40	5 17	18 16	0 28	1 35	9 26	2.5	19 51	1.7
45	5 12	18 22	0 30	1 45	9 37	2.6	19 39	1.6
50	5 6	18 28	0 34	1 59	9 51	2.8	19 24	1.5
55	4 58	18 36	0 38	2 19	10 8	2.9	19 6	1.3
60	4 48	18 47	0 45	2 55	10 32	3.2	18 41	1.1
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	147	5.4	109	14	23.6	87	148	30.4	-18	6.3	106	40.3	-22	46.1
2	176	5.2	109	14	41.0	86	178	34.4	-18	6.6	136	44.9	-22	46.1
4	205	5.0	109	14	58.2	84	208	38.3	-18	6.8	166	49.6	-22	46.1
6	234	4.8	109	15	15.0	82	238	42.2	-18	7.1	196	54.2	-22	46.1
8	263	4.6	109	15	31.4	80	268	46.1	-18	7.4	226	58.8	-22	46.1
10	292	4.4	109	15	47.5	79	298	50.0	-18	7.6	257	3.4	-22	46.1
12	321	4.2	109	16	3.2	77	328	53.9	-18	7.9	287	8.1	-22	46.1
14	350	3.9	109	16	18.6	75	358	57.8	-18	8.1	317	12.7	-22	46.1
16	19	3.6	109	16	33.6	73	29	1.7	-18	8.4	347	17.3	-22	46.1
18	48	3.3	108	16	48.2	71	59	5.7	-18	8.6	17	21.9	-22	46.1
20	77	3.0	108	17	2.5	69	89	9.6	-18	8.9	47	26.5	-22	46.1
22	106	2.7	108	17	16.4	67	119	13.5	-18	9.1	77	31.2	-22	46.1
Δ							20		-1		23			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	13 23.3	.6	16.0	T _m	14 41	2.1	56.9	15.5	
12	13 30.7	T _{m☉}	11 h 46.5 min	Starost	2.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	12 56	.1	145	-6.6	♃	14 4	.0	128	-1.3
	19 33	.1	46	-1.5	♄	16 51	.0	86	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	24.5	-7	40.1	21	30.3	166	38.0	-21	48.4	66	56.2	-20	31.0	
2	213	24.8	-7	42.0	51	35.2	196	44.4	-21	47.9	96	58.8	-20	30.1	
4	243	25.1	-7	43.8	81	40.1	226	50.8	-21	47.4	127	1.4	-20	29.1	
6	273	25.4	-7	45.7	111	45.1	256	57.2	-21	47.0	157	3.9	-20	28.2	
8	303	25.7	-7	47.6	141	50.0	287	3.6	-21	46.4	187	6.5	-20	27.3	
10	333	26.0	-7	49.4	171	54.9	317	10.0	-21	45.9	217	9.0	-20	26.4	
12	3	26.3	-7	51.3	201	59.8	347	16.5	-21	45.4	247	11.6	-20	25.5	
14	33	26.6	-7	53.2	232	4.8	17	22.9	-21	44.9	277	14.2	-20	24.5	
16	63	26.9	-7	55.0	262	9.7	47	29.4	-21	44.3	307	16.7	-20	23.6	
18	93	27.2	-7	56.9	292	14.6	77	35.9	-21	43.8	337	19.3	-20	22.7	
20	123	27.5	-7	58.8	322	19.6	107	42.4	-21	43.2	7	21.8	-20	21.8	
22	153	27.8	-8	.6	352	24.5	137	48.9	-21	42.7	37	24.3	-20	20.8	
Δ		1		-9				32		3			13		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 34	16 57	0 42	2 19	6 56	1.3	. . .	.0
55	6 25	17 6	0 36	2 0	7 23	1.5	23 50	2.5
50	6 18	17 13	0 32	1 47	7 43	1.6	23 27	2.4
45	6 13	17 19	0 29	1 37	7 59	1.7	23 9	2.3
40	6 8	17 24	0 27	1 30	8 12	1.8	22 55	2.3
35	6 4	17 28	0 25	1 24	8 24	1.8	22 43	2.3
30	6 0	17 32	0 24	1 19	8 33	1.9	22 32	2.2
20	5 54	17 38	0 22	1 13	8 50	1.9	22 14	2.2
10	5 48	17 44	0 21	1 10	9 5	2.0	21 58	2.1
0	5 43	17 50	0 21	1 9	9 19	2.1	21 43	2.1
10	5 37	17 55	0 21	1 11	9 33	2.1	21 28	2.0
20	5 31	18 1	0 22	1 15	9 48	2.2	21 12	2.0
30	5 24	18 9	0 24	1 22	10 5	2.3	20 54	1.9
35	5 20	18 13	0 26	1 28	10 15	2.3	20 44	1.9
40	5 16	18 18	0 28	1 35	10 27	2.4	20 32	1.8
45	5 10	18 23	0 30	1 45	10 41	2.5	20 17	1.8
50	5 4	18 30	0 34	1 59	10 57	2.5	20 0	1.7
55	4 56	18 38	0 38	2 20	11 19	2.7	19 38	1.6
60	4 45	18 49	0 45	2 58	11 48	2.8	19 7	1.5
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	135	2.4	108	17	29.8	66	149	17.4	-18	9.4	107	35.8	-22	46.1
2	164	2.0	108	17	43.0	64	179	21.3	-18	9.7	137	40.4	-22	46.1
4	193	1.7	108	17	55.7	62	209	25.2	-18	9.9	167	45.0	-22	46.1
6	222	1.3	108	18	8.0	60	239	29.1	-18	10.2	197	49.6	-22	46.1
8	251	1.0	108	18	19.9	58	269	33.0	-18	10.4	227	54.2	-22	46.1
10	280	.6	108	18	31.5	56	299	36.9	-18	10.7	257	58.9	-22	46.1
12	309	.2	108	18	42.6	54	329	40.8	-18	10.9	288	3.5	-22	46.1
14	337	59.9	108	18	53.4	52	359	44.7	-18	11.2	318	8.1	-22	46.1
16	6	59.5	108	19	3.7	50	29	48.6	-18	11.4	348	12.7	-22	46.1
18	35	59.1	108	19	13.7	48	59	52.5	-18	11.7	18	17.3	-22	46.1
20	64	58.8	108	19	23.2	46	89	56.4	-18	11.9	48	21.9	-22	46.2
22	93	58.4	108	19	32.3	44	120	.3	-18	12.2	78	26.5	-22	46.2
Δ							20		-1		23			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	13 38.1	.6	16.1	T _m	15 31	2.1	56.1	15.3
12	13 45.3	T _{m☉}	11 h 46.2 min	Starost	3.8 d</			

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	28.1	-8	2.5	22	29.4	167	55.5	-21	42.1	67	26.9	-20	19.9
2	213	28.4	-8	4.3	52	34.3	198	2.0	-21	41.5	97	29.4	-20	19.0
4	243	28.7	-8	6.2	82	39.3	228	8.6	-21	40.9	127	32.0	-20	18.0
6	273	29.0	-8	8.1	112	44.2	258	15.1	-21	40.3	157	34.5	-20	17.1
8	303	29.3	-8	9.9	142	49.1	288	21.7	-21	39.7	187	37.0	-20	16.2
10	333	29.6	-8	11.8	172	54.1	318	28.3	-21	39.0	217	39.6	-20	15.2
12	3	29.9	-8	13.6	202	59.0	348	34.9	-21	38.4	247	42.1	-20	14.3
14	33	30.2	-8	15.5	233	3.9	18	41.6	-21	37.7	277	44.6	-20	13.4
16	63	30.4	-8	17.4	263	8.8	48	48.2	-21	37.1	307	47.1	-20	12.4
18	93	30.7	-8	19.2	293	13.8	78	54.9	-21	36.4	337	49.7	-20	11.5
20	123	31.0	-8	21.1	323	18.7	109	1.5	-21	35.7	7	52.2	-20	10.5
22	153	31.3	-8	22.9	353	23.6	139	8.2	-21	35.0	37	54.7	-20	9.6
Δ	1		-9				33		3		13		5	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 37	16 54	0 42	2 19	7 26	1.7	0 21	2.6
55	6 27	17 4	0 37	2 0	7 58	1.8	...	.0
50	6 20	17 11	0 33	1 47	8 22	1.8	...	.0
45	6 14	17 17	0 30	1 37	8 40	1.9	...	.0
40	6 9	17 22	0 27	1 30	8 55	1.9	23 50	2.1
35	6 5	17 27	0 25	1 24	9 7	1.9	23 37	2.1
30	6 1	17 31	0 24	1 20	9 18	2.0	23 25	2.1
20	5 54	17 37	0 22	1 13	9 37	2.0	23 6	2.1
10	5 48	17 43	0 21	1 10	9 54	2.0	22 49	2.1
0	5 43	17 49	0 21	1 9	10 9	2.1	22 33	2.1
10	5 37	17 55	0 21	1 11	10 24	2.1	22 17	2.0
20	5 31	18 2	0 22	1 15	10 41	2.1	21 60	2.0
30	5 23	18 9	0 24	1 22	11 0	2.2	21 40	2.0
35	5 19	18 14	0 26	1 28	11 11	2.2	21 29	2.0
40	5 14	18 19	0 28	1 36	11 24	2.2	21 16	2.0
45	5 8	18 24	0 30	1 46	11 40	2.2	21 0	2.0
50	5 2	18 31	0 34	1 60	11 58	2.3	20 41	2.0
55	4 53	18 40	0 38	2 22	12 22	2.3	20 17	1.9
60	4 42	18 52	0 45	3 1	12 56	2.4	19 42	1.9
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	122	58.1	108	19	41.1	42	150	4.2	-18	12.5	108	31.1	-22	46.2		
2	151	57.8	108	19	49.4	40	180	8.2	-18	12.7	138	35.8	-22	46.2		
4	180	57.5	109	19	57.3	37	210	12.1	-18	13.0	168	40.4	-22	46.2		
6	209	57.2	109	20	4.8	35	240	16.0	-18	13.2	198	45.0	-22	46.2		
8	238	56.9	109	20	11.9	33	270	19.9	-18	13.5	228	49.6	-22	46.2		
10	267	56.7	109	20	18.5	31	300	23.8	-18	13.7	258	54.2	-22	46.2		
12	296	56.5	109	20	24.8	29	330	27.7	-18	14.0	288	58.8	-22	46.2		
14	325	56.3	109	20	30.6	27	0	31.6	-18	14.2	319	3.4	-22	46.2		
16	354	56.1	109	20	36.1	25	30	35.5	-18	14.5	349	8.0	-22	46.2		
18	23	56.0	110	20	41.1	23	60	39.4	-18	14.8	19	12.6	-22	46.2		
20	52	55.9	110	20	45.7	21	90	43.3	-18	15.0	49	17.2	-22	46.2		
22	81	55.9	110	20	49.9	19	120	47.1	-18	15.3	79	21.8	-22	46.2		
Δ							19		-1		23		0			

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	13 52.5	.6	16.1	T _m	16 21	2.0	55.5	15.1	
12	13 59.4	T _{m☉}	11 h 46.0 min	Starost	4.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	12 45	.1	145	-6.7	♃	13 58	.0	128	-1.3
♂	19 29	.1	45	-1.4	♄	16 43	.0	86	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS						
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	183	31.6	-8	24.8	23	28.6	169	14.9	-21	34.3	67	57.2	-20	8.7		
2	213	31.9	-8	26.6	53	33.5	199	21.6	-21	33.6	97	59.7	-20	7.7		
4	243	32.1	-8	28.5	83	38.4	229	28.4	-21	32.9	128	2.2	-20	6.8		
6	273	32.4	-8	30.3	113	43.3	259	35.1	-21	32.2	158	4.8	-20	5.8		
8	303	32.7	-8	32.2	143	48.3	289	41.8	-21	31.4	188	7.3	-20	4.9		
10	333	33.0	-8	34.0	173	53.2	319	48.6	-21	30.7	218	9.8	-20	3.9		
12	3	33.3	-8	35.9	203	58.1	349	55.4	-21	29.9	248	12.3	-20	3.0		
14	33	33.5	-8	37.7	234	3.1	20	2.2	-21	29.1	278	14.8	-20	2.0		
16	63	33.8	-8	39.6	264	8.0	50	9.0	-21	28.4	308	17.3	-20	1.1		
18	93	34.1	-8	41.4	294	12.9	80	15.8	-21	27.6	338	19.8	-20	.1		
20	123	34.4	-8	43.3	324	17.8	110	22.6	-21	26.8	8	22.3	-19	59.2		
22	153	34.6	-8	45.1	354	22.8	140	29.5	-21	25.9	38	24.8	-19	58.2		
Δ	1		-9				34		4		13		5			

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 39	16 51	0 42	2 19	8 6	2.1	1 24	2.1
55	6 29	17 1	0 37	2 0	8 41	2.1	0 49	2.1
50	6 22	17 9	0 33	1 47	9 6	2.1	0 25	2.1
45	6 15	17 15	0 30	1 37	9 25	2.1	0 6	2.1
40	6 10	17 21	0 27	1 30	9 41	2.1	...	.0
35	6 6	17 25	0 25	1 24	9 54	2.1	...	.0
30	6 2	17 29	0 24	1 20	10 5	2.1	...	.0
20	5 55	17 37	0 22	1 13	10 25	2.1	23 56	2.0
10	5 48	17 43	0 21	1 10	10 42	2.0	23 38	2.0
0	5 42	17 49	0 21	1 9	10 59	2.0	23 22	2.0
10	5 36	17 55	0 21	1 11	11 15	2.0	23 6	2.0
20	5 30	18 2	0 22	1 15	11 32	2.0	22 49	2.1
30	5 22	18 10	0 24	1 23	11 52	2.0	22 29	2.1
35	5 18	18 14	0 26	1 28	12 4	2.0	22 17	2.1
40	5 13	18 20	0 28	1 36	12 17	2.0	22 4	2.1
45	5 7	18 26	0 30	1 46	12 33	2.0	21 48	2.2
50	4 60	18 33	0 34	2 1	12 52	1.9	21 28	2.2
55	4 51	18 42	0 39	2 23	13 18	1.9	21 3	2.2
60	4 39	18 54	0 45	3 4	13 53	1.9	20 28	2.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	110	55.9	110	20	53.6	17	150	51.0	-18	15.5	109	26.4	-22	46.2		
2	139	56.0	111	20	57.0	15	180	54.9	-18	15.8	139	31.0	-22	46.2		
4	168	56.1	111	21	.0	13	210	58.8	-18	16.0	169	35.6	-22	46.2		
6	197	56.3	111	21	2.5	11	241	2.7	-18	16.3	199	40.2	-22	46.2		
8	226	56.5	111	21	4.6	9	271	6.6	-18	16.5	229	44.8	-22	46.2		
10	255	56.8	112	21	6.3	7	301	10.5	-18	16.8	259	49.4	-22	46.2		
12	284	57.2	112	21	7.7	4	331	14.4	-18	17.0	289	54.0	-22	46.2		
14	313	57.6	112	21	8.6	2	1	18.3	-18	17.3	319	58.6	-22	46.2		
16	342	58.1	113	21	9.0	0	31	22.2	-18	17.6	350	3.2	-22	46.2		
18	11	58.6	113	21	9.1	-2	61	26.1	-18	17.8	20	7.8	-22	46.2		
20	40	59.3	114	21	8.8	-4	91	30.0	-18	18.1	50	12.4	-22	46.2		
22	70	.0	114	21	8.1	-6	121	33.9	-18	18.3	80	17.0	-22	46.2		
Δ							19		-1		23		0			

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	183	34.9	- 8	46.9	170	36.3	-21	25.1	68	27.3	-19	57.3				
2	213	35.2	- 8	48.8	200	43.2	-21	24.3	98	29.7	-19	56.3				
4	243	35.4	- 8	50.6	230	50.0	-21	23.5	128	32.2	-19	55.4				
6	273	35.7	- 8	52.5	114	42.5	260	56.9	-21	22.6	158	34.7	-19	54.4		
8	303	36.0	- 8	54.3	144	47.4	291	3.8	-21	21.7	188	37.2	-19	53.5		
10	333	36.2	- 8	56.1	174	52.3	321	10.8	-21	20.9	218	39.7	-19	52.5		
12	3	36.5	- 8	58.0	204	57.3	351	17.7	-21	20.0	248	42.2	-19	51.6		
14	33	36.8	- 8	59.8	235	2.2	21	24.6	-21	19.1	278	44.6	-19	50.6		
16	63	37.0	- 9	1.7	265	7.1	51	31.6	-21	18.2	308	47.1	-19	49.6		
18	93	37.3	- 9	3.5	295	12.0	81	38.5	-21	17.3	338	49.6	-19	48.7		
20	123	37.6	- 9	5.3	325	17.0	111	45.5	-21	16.4	8	52.1	-19	47.7		
22	153	37.8	- 9	7.2	355	21.9	141	52.5	-21	15.4	38	54.5	-19	46.7		
Δ		1		-9				35		4				12		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 41	16 49	0 42	2 19	8 56	2.5	2 15	1.6
55	6 31	16 59	0 37	2 1	9 31	2.4	1 40	1.7
50	6 23	17 7	0 33	1 47	9 56	2.3	1 15	1.8
45	6 17	17 14	0 30	1 38	10 15	2.2	0 56	1.8
40	6 11	17 19	0 27	1 30	10 30	2.2	0 40	1.9
35	6 7	17 24	0 25	1 24	10 43	2.2	0 27	1.9
30	6 2	17 28	0 24	1 20	10 55	2.1	0 16	1.9
20	5 55	17 36	0 22	1 14	11 15	2.1	...	.0
10	5 49	17 43	0 21	1 10	11 32	2.0	...	.0
0	5 42	17 49	0 21	1 10	11 48	2.0	...	.0
10	5 36	17 55	0 21	1 11	12 3	2.0	23 55	2.0
20	5 29	18 2	0 22	1 15	12 20	1.9	23 39	2.1
30	5 21	18 11	0 24	1 23	12 40	1.8	23 19	2.2
35	5 16	18 15	0 26	1 29	12 52	1.8	23 8	2.2
40	5 11	18 21	0 28	1 36	13 5	1.8	22 55	2.3
45	5 5	18 27	0 31	1 47	13 20	1.7	22 40	2.3
50	4 57	18 35	0 34	2 1	13 39	1.7	22 21	2.4
55	4 48	18 44	0 39	2 24	14 4	1.6	21 57	2.5
60	4 36	18 57	0 46	3 7	14 38	1.4	21 23	2.7
S								

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	99	.8	114	21	7.0	-8	151	37.8	-18	18.6	110	21.6	-22	46.2		
2	128	1.7	115	21	5.4	-10	181	41.7	-18	18.8	140	26.2	-22	46.2		
4	157	2.6	115	21	3.5	-12	211	45.6	-18	19.1	170	30.8	-22	46.2		
6	186	3.7	116	21	1.2	-14	241	49.4	-18	19.3	200	35.4	-22	46.2		
8	215	4.8	116	20	58.5	-16	271	53.3	-18	19.6	230	40.0	-22	46.2		
10	244	6.1	117	20	55.4	-17	301	57.2	-18	19.8	260	44.6	-22	46.2		
12	273	7.4	117	20	51.9	-19	332	1.1	-18	20.1	290	49.2	-22	46.2		
14	302	8.8	118	20	48.0	-21	2	5.0	-18	20.4	320	53.8	-22	46.2		
16	331	10.3	118	20	43.7	-23	32	8.9	-18	20.6	350	58.4	-22	46.2		
18	0	12.0	119	20	39.1	-25	62	12.8	-18	20.9	21	2.9	-22	46.2		
20	29	13.7	119	20	34.1	-27	92	16.7	-18	21.1	51	7.5	-22	46.2		
22	58	15.5	120	20	28.6	-29	122	20.6	-18	21.4	81	12.1	-22	46.2		
Δ								19		-1				23		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	14 19.6	.5	16.1	T _m	17 59	2.0	54.5	14.9
12	14 26.0	T _{m☉}	11 h 45.6 min	Starost	6.8 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	°	h min	'	°	°	°
♀	12 35	.1	146	-6.7	♃	13 52	.0	127	-1.3
♂	19 25	.1	44	-1.4	♄	16 36	.0	86	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	183	38.1	- 9	9.0	171	59.5	-21	14.5	68	57.0	-19	45.8				
2	213	38.3	- 9	10.8	202	6.5	-21	13.5	98	59.5	-19	44.8				
4	243	38.6	- 9	12.6	232	13.5	-21	12.6	129	1.9	-19	43.8				
6	273	38.9	- 9	14.5	115	41.6	262	20.6	-21	11.6	159	4.4	-19	42.9		
8	303	39.1	- 9	16.3	145	46.5	292	27.6	-21	10.6	189	6.8	-19	41.9		
10	333	39.4	- 9	18.1	175	51.5	322	34.7	-21	9.6	219	9.3	-19	40.9		
12	3	39.6	- 9	20.0	205	56.4	352	41.7	-21	8.6	249	11.8	-19	40.0		
14	33	39.9	- 9	21.8	236	1.3	22	48.8	-21	7.6	279	14.2	-19	39.0		
16	63	40.1	- 9	23.6	266	6.3	52	55.9	-21	6.6	309	16.7	-19	38.0		
18	93	40.4	- 9	25.4	296	11.2	83	3.0	-21	5.5	339	19.1	-19	37.1		
20	123	40.6	- 9	27.3	326	16.1	113	10.1	-21	4.5	9	21.6	-19	36.1		
22	153	40.9	- 9	29.1	356	21.0	143	17.2	-21	3.5	39	24.0	-19	35.1		
Δ		1		-9				35		5				12		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 44	16 46	0 42	2 19	9 57	2.8	2 54	1.2
55	6 33	16 57	0 37	2 1	10 28	2.6	2 22	1.4
50	6 25	17 5	0 33	1 47	10 51	2.5	1 58	1.5
45	6 18	17 12	0 30	1 38	11 9	2.4	1 40	1.6
40	6 12	17 18	0 27	1 30	11 23	2.3	1 25	1.7
35	6 7	17 23	0 26	1 24	11 36	2.2	1 13	1.7
30	6 3	17 27	0 24	1 20	11 46	2.2	1 2	1.8
20	5 55	17 35	0 22	1 14	12 5	2.1	0 43	1.9
10	5 49	17 42	0 21	1 10	12 21	2.0	0 26	1.9
0	5 42	17 49	0 21	1 10	12 35	1.9	0 11	2.0
10	5 35	17 55	0 21	1 11	12 50	1.9	...	.0
20	5 28	18 3	0 22	1 15	13 6	1.8	...	.0
30	5 20	18 11	0 25	1 23	13 24	1.7	...	.0
35	5 15	18 16	0 26	1 29	13 35	1.6	...	.0
40	5 10	18 22	0 28	1 37	13 47	1.6	23 50	2.3
45	5 3	18 28	0 31	1 47	14 1	1.5	23 36	2.4
50	4 55	18 36	0 34	2 2	14 19	1.4	23 19	2.5
55	4 46	18 46	0 39	2 26	14 41	1.3	22 57	2.7
60	4 33	18 59	0 46	3 11	15 12	1.0	22 27	2.9
S								

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	87	17.5	120	20	22.9	-31	152	24.4	-18	21.6	111	16.7	-22	46.2		
2	116	19.5	121	20	16.7	-33	182	28.3	-18	21.9	141	21.3	-22	46.2		
4	145	21.7	121	20	10.2	-35	212	32.2	-18	22.1	171	25.9	-22	46.2		
6	174	24.0	122	20	3.3	-36	242	36.1	-18	22.4	201	30.5	-22	46.2		
8	203	26.3	122	19	56.0	-38	272	40.0	-18	22.6	231	35.1	-22	46.2		
10	232	28.8	123	19	48.4	-40	302	43.9	-18	22.9	261	39.6	-22	46.2		
12	261	31.4	124	19	40.4	-42	332	47.8	-18	23.2	291	44.2	-22	46.2		
14	290	34.2	124	19	32.0	-44	2	51.6	-18	23.4	321	48.8	-22	46.2		
16	319	37.0	125	19	23.3	-45	32	55.5	-18	23.7	351	53.4	-22	46.2		
18	348	39.9	125	19	14.3	-47	62	59.4	-18	23.9	21	58.0	-22	46.3		
20	17	43.0	126	19	4.9	-49	93	3.3	-18	24.2	52	2.6	-22	46.3		
22	46	46.1	126	18	55.1	-50	123	7.2	-18	24.4	82	7.1	-22	46.3		
Δ								19		-1				23		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	14 32.3	.5	16.1	T _m	18 47	1.9	54.3	14.8
12	14 38.4	T _{m☉}	11 h 45.4 min	Starost	7.8 d	Faza	☉	

PLANETE							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 41.1 - 9 30.9		26 26.0	173 24.4 -21 2.4		69 26.5 -19 34.1	
2	213 41.4 - 9 32.7		56 30.9	203 31.5 -21 1.3		99 28.9 -19 33.2	
4	243 41.6 - 9 34.5		86 35.8	233 38.7 -21 1.2		129 31.3 -19 32.2	
6	273 41.9 - 9 36.4		116 40.8	263 45.8 -20 59.1		159 33.8 -19 31.2	
8	303 42.1 - 9 38.2		146 45.7	293 53.0 -20 58.0		189 36.2 -19 30.2	
10	333 42.4 - 9 40.0		176 50.6	324 .2 -20 56.9		219 38.7 -19 29.2	
12	3 42.6 - 9 41.8		206 55.5	354 7.4 -20 55.8		249 41.1 -19 28.3	
14	33 42.8 - 9 43.6		237 .5	24 14.6 -20 54.7		279 43.5 -19 27.3	
16	63 43.1 - 9 45.4		267 5.4	54 21.8 -20 53.5		309 45.9 -19 26.3	
18	93 43.3 - 9 47.2		297 10.3	84 29.0 -20 52.4		339 48.4 -19 25.3	
20	123 43.6 - 9 49.1		327 15.3	114 36.2 -20 51.2		9 50.8 -19 24.3	
22	153 43.8 - 9 50.9		357 20.2	144 43.5 -20 50.1		39 53.2 -19 23.3	
Δ	1	-9		36	6	12	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 46	16 43	0 43	2 19	11 4	3.0	3 23	.9
55	6 35	16 54	0 37	2 1	11 31	2.8	2 56	1.1
50	6 26	17 3	0 33	1 48	11 50	2.6	2 35	1.3
45	6 19	17 10	0 30	1 38	12 6	2.5	2 19	1.4
40	6 13	17 16	0 27	1 30	12 19	2.4	2 6	1.5
35	6 8	17 22	0 26	1 24	12 29	2.3	1 54	1.6
30	6 4	17 26	0 24	1 20	12 39	2.2	1 44	1.6
20	5 56	17 34	0 22	1 14	12 55	2.1	1 27	1.7
10	5 49	17 42	0 21	1 10	13 9	2.0	1 12	1.8
0	5 42	17 48	0 21	1 10	13 22	1.9	0 58	1.9
10	5 35	17 56	0 21	1 11	13 35	1.8	0 44	2.0
20	5 27	18 3	0 22	1 15	13 49	1.7	0 29	2.1
30	5 19	18 12	0 25	1 23	14 5	1.6	0 11	2.2
35	5 14	18 17	0 26	1 29	14 15	1.5	0 1	2.3
40	5 8	18 23	0 28	1 37	14 25	1.4	...	.0
45	5 1	18 30	0 31	1 48	14 38	1.3	...	.0
50	4 53	18 38	0 34	2 3	14 53	1.2	...	.0
55	4 43	18 48	0 39	2 27	15 11	1.0	...	.0
60	4 30	19 2	0 46	3 16	15 37	.8	23 38	3.1
S								

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	75 49.4 127	18 45.0	-52		153 11.0 -18 24.7			112 11.7 -22 46.3		
2	104 52.8 128	18 34.6	-54		183 14.9 -18 24.9			142 16.3 -22 46.3		
4	133 56.3 128	18 23.9	-55		213 18.8 -18 25.2			172 20.9 -22 46.3		
6	163 .0 129	18 12.8	-57		243 22.7 -18 25.4			202 25.5 -22 46.3		
8	192 3.7 129	18 1.3	-59		273 26.6 -18 25.7			232 30.0 -22 46.3		
10	221 7.5 130	17 49.6	-60		303 30.4 -18 26.0			262 34.6 -22 46.3		
12	250 11.5 130	17 37.5	-62		333 34.3 -18 26.2			292 39.2 -22 46.3		
14	279 15.6 131	17 25.2	-63		3 38.2 -18 26.5			322 43.8 -22 46.3		
16	308 19.7 131	17 12.5	-65		33 42.1 -18 26.7			352 48.3 -22 46.3		
18	337 24.0 132	16 59.4	-67		63 46.0 -18 27.0			22 52.9 -22 46.3		
20	6 28.4 132	16 46.1	-68		93 49.8 -18 27.2			52 57.5 -22 46.3		
22	35 32.9 133	16 32.5	-70		123 53.7 -18 27.5			83 2.1 -22 46.3		
Δ					19	-1		23	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	14 44.5	.5	16.1	T _m	19 33	1.9	54.2 14.8		
12	14 50.3	T _{m☉}	11 h 45.2 min	Starost	8.8 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	12 23	.1	147	-6.8	♃	13 45	.0	127	-1.3
♂	19 21	.1	43	-1.4	♄	16 29	.0	86	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 44.0 - 9 52.7		27 25.1	174 50.7 -20 48.9		69 55.7 -19 22.3	
2	213 44.3 - 9 54.5		57 30.0	204 58.0 -20 47.7		99 58.1 -19 21.4	
4	243 44.5 - 9 56.3		87 35.0	235 5.3 -20 46.5		130 .5 -19 20.4	
6	273 44.7 - 9 58.1		117 39.9	265 12.5 -20 45.3		160 2.9 -19 19.4	
8	303 45.0 - 9 59.9		147 44.8	295 19.8 -20 44.1		190 5.3 -19 18.4	
10	333 45.2 -10 1.7		177 49.7	325 27.1 -20 42.8		220 7.7 -19 17.4	
12	3 45.4 -10 3.5		207 54.7	355 34.4 -20 41.6		250 10.2 -19 16.4	
14	33 45.6 -10 5.3		237 59.6	25 41.8 -20 40.3		280 12.6 -19 15.4	
16	63 45.9 -10 7.1		268 4.5	55 49.1 -20 39.1		310 15.0 -19 14.4	
18	93 46.1 -10 8.9		298 9.5	85 56.4 -20 37.8		340 17.4 -19 13.4	
20	123 46.3 -10 10.7		328 14.4	116 3.8 -20 36.5		10 19.8 -19 12.4	
22	153 46.5 -10 12.5		358 19.3	146 11.1 -20 35.3		40 22.2 -19 11.4	
Δ	1	-9		37	6	12	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 49	16 40	0 43	2 19	12 16	3.1	3 46	.7
55	6 37	16 52	0 37	2 1	12 37	2.9	3 23	1.0
50	6 28	17 1	0 33	1 48	12 53	2.7	3 6	1.1
45	6 21	17 9	0 30	1 38	13 5	2.5	2 53	1.3
40	6 14	17 15	0 27	1 30	13 16	2.4	2 42	1.4
35	6 9	17 20	0 26	1 24	13 24	2.3	2 32	1.4
30	6 4	17 25	0 24	1 20	13 32	2.2	2 24	1.5
20	5 56	17 34	0 22	1 14	13 45	2.1	2 9	1.7
10	5 49	17 41	0 21	1 11	13 57	2.0	1 56	1.8
0	5 42	17 48	0 21	1 10	14 8	1.9	1 44	1.9
10	5 34	17 56	0 21	1 11	14 19	1.7	1 32	2.0
20	5 27	18 3	0 23	1 16	14 30	1.6	1 19	2.1
30	5 18	18 13	0 25	1 23	14 43	1.5	1 4	2.2
35	5 13	18 18	0 26	1 29	14 51	1.4	0 56	2.3
40	5 7	18 24	0 28	1 37	14 59	1.3	0 46	2.4
45	4 60	18 31	0 31	1 48	15 9	1.2	0 34	2.5
50	4 51	18 40	0 34	2 4	15 21	1.1	0 20	2.6
55	4 41	18 50	0 39	2 29	15 36	.9	0 2	2.8
60	4 27	19 4	0 47	3 21	15 56	.6	...	.0
S								

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	64 37.5 133	16 18.6	-71		153 57.6 -18 27.7			113 6.6 -22 46.3		
2	93 42.2 134	16 4.4	-73		184 1.5 -18 28.0			143 11.2 -22 46.3		
4	122 46.9 134	15 49.9	-74		214 5.3 -18 28.2			173 15.8 -22 46.3		
6	151 51.8 135	15 35.1	-75		244 9.2 -18 28.5			203 20.4 -22 46.3		
8	180 56.8 135	15 20.0	-77		274 13.1 -18 28.7			233 24.9 -22 46.3		
10	210 1.9 136	15 4.6	-78		304 17.0 -18 29.0			263 29.5 -22 46.3		
12	239 7.0 136	14 49.0	-80		334 20.8 -18 29.3			293 34.1 -22 46.3		
14	268 12.3 137	14 33.1	-81		4 24.7 -18 29.5			323 38.6 -22 46.3		
16	297 17.6 137	14 16.9	-82		34 28.6 -18 29.8			353 43.2 -22 46.3		
18	326 23.0 137	14 .5	-84		64 32.5 -18 30.0			23 47.8 -22 46.3		
20	355 28.5 138	13 43.8	-85		94 36.3 -18 30.3			53 52.3 -22 46.3		
22	24 34.0 138	13 26.8	-86		124 40.2 -18 30.5			83 56.9 -22 46.3		
Δ					19	-1		23	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	14 56.1	.5	16.1	T _m	20 19	1.8	54.4 14.8		
12	15 1.6	T _{m☉}	11 h 45.0 min	Starost	9.8 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	12 18	.1	147	-6.8	♃	13 42	.0	127	-1.3
♂	19 19	.1	43	-1.3	♄	16 25	.0	86	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	°	'							
0	183	46.8	-10	14.3	28	24.2	176	18.5	-20	34.0	70	24.6	-19	10.4
2	213	47.0	-10	16.1	58	29.2	206	25.8	-20	32.7	100	27.0	-19	9.4
4	243	47.2	-10	17.9	88	34.1	236	33.2	-20	31.3	130	29.4	-19	8.4
6	273	47.4	-10	19.7	118	39.0	266	40.6	-20	30.0	160	31.8	-19	7.4
8	303	47.6	-10	21.5	148	44.0	296	48.0	-20	28.7	190	34.2	-19	6.4
10	333	47.9	-10	23.3	178	48.9	326	55.4	-20	27.4	220	36.6	-19	5.4
12	3	48.1	-10	25.1	208	53.8	357	2.8	-20	26.0	250	39.0	-19	4.4
14	33	48.3	-10	26.8	238	58.7	27	10.2	-20	24.6	280	41.4	-19	3.4
16	63	48.5	-10	28.6	269	3.7	57	17.6	-20	23.3	310	43.7	-19	2.4
18	93	48.7	-10	30.4	299	8.6	87	25.0	-20	21.9	340	46.1	-19	1.4
20	123	48.9	-10	32.2	329	13.5	117	32.5	-20	20.5	10	48.5	-19	.4
22	153	49.1	-10	34.0	359	18.5	147	39.9	-20	19.1	40	50.9	-18	59.4
Δ		1		-9				37		7		12		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 51	16 37	0 43	2 19	13 31	3.2	4 3	.6
55	6 39	16 50	0 37	2 1	13 46	2.9	3 46	.8
50	6 30	16 59	0 33	1 48	13 57	2.8	3 33	1.0
45	6 22	17 7	0 30	1 38	14 6	2.6	3 23	1.1
40	6 16	17 13	0 27	1 30	14 14	2.5	3 14	1.3
35	6 10	17 19	0 26	1 24	14 20	2.4	3 7	1.4
30	6 5	17 24	0 24	1 20	14 26	2.3	3 0	1.4
20	5 56	17 33	0 22	1 14	14 36	2.1	2 49	1.6
10	5 49	17 41	0 21	1 11	14 45	2.0	2 39	1.7
0	5 41	17 48	0 21	1 10	14 53	1.8	2 29	1.9
10	5 34	17 56	0 21	1 11	15 1	1.7	2 20	2.0
20	5 26	18 4	0 23	1 16	15 9	1.6	2 10	2.1
30	5 17	18 13	0 25	1 24	15 19	1.4	1 58	2.3
35	5 11	18 19	0 26	1 30	15 24	1.3	1 51	2.4
40	5 5	18 25	0 28	1 38	15 31	1.2	1 44	2.5
45	4 58	18 32	0 31	1 49	15 38	1.1	1 35	2.6
50	4 49	18 41	0 34	2 5	15 47	1.0	1 24	2.7
55	4 38	18 52	0 40	2 30	15 58	.8	1 10	2.9
60	4 24	19 7	0 47	3 26	16 12	.5	0 52	3.2

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	'	°	'	'						
0	53	39.7	138	13	9.6	-87	154	44.1	-18	30.8	114	1.5	-22	46.3
2	82	45.4	139	12	52.1	-89	184	47.9	-18	31.0	144	6.0	-22	46.3
4	111	51.1	139	12	34.4	-90	214	51.8	-18	31.3	174	10.6	-22	46.3
6	140	57.0	139	12	16.5	-91	244	55.7	-18	31.5	204	15.2	-22	46.3
8	170	2.8	140	11	58.3	-92	274	59.5	-18	31.8	234	19.7	-22	46.3
10	199	8.8	140	11	39.9	-93	305	3.4	-18	32.0	264	24.3	-22	46.3
12	228	14.8	140	11	21.2	-94	335	7.3	-18	32.3	294	28.9	-22	46.3
14	257	20.8	140	11	2.3	-95	5	11.2	-18	32.6	324	33.4	-22	46.3
16	286	26.9	141	10	43.3	-96	35	15.0	-18	32.8	354	38.0	-22	46.3
18	315	33.0	141	10	24.0	-98	65	18.9	-18	33.1	24	42.6	-22	46.3
20	344	39.1	141	10	4.5	-99	95	22.8	-18	33.3	54	47.1	-22	46.3
22	13	45.3	141	9	44.7	-100	125	26.6	-18	33.6	84	51.7	-22	46.3
Δ								19		-1		23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	15	7.1	.4	16.1	T _m	21 3	1.9	54.6	14.9
12	15	12.3	T _{m☉}	11 h 44.8 min	Starost	10.8 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 12	.1	148	-6.8	♄	13 39	.0	126	-1.3
♂	19 17	.1	42	-1.3	♂	16 21	.0	86	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	°	'							
0	183	49.4	-10	35.8	29	23.4	177	47.4	-20	17.7	70	53.3	-18	58.4
2	213	49.6	-10	37.6	59	28.3	207	54.8	-20	16.3	100	55.7	-18	57.4
4	243	49.8	-10	39.3	89	33.2	238	2.3	-20	14.9	130	58.0	-18	56.3
6	273	50.0	-10	41.1	119	38.2	268	9.7	-20	13.4	161	.4	-18	55.3
8	303	50.2	-10	42.9	149	43.1	298	17.2	-20	12.0	191	2.8	-18	54.3
10	333	50.4	-10	44.7	179	48.0	328	24.7	-20	10.5	221	5.2	-18	53.3
12	3	50.6	-10	46.5	209	53.0	358	32.2	-20	9.1	251	7.5	-18	52.3
14	33	50.8	-10	48.2	239	57.9	28	39.7	-20	7.6	281	9.9	-18	51.3
16	63	51.0	-10	50.0	270	2.8	58	47.2	-20	6.1	311	12.3	-18	50.3
18	93	51.2	-10	51.8	300	7.7	88	54.7	-20	4.6	341	14.7	-18	49.2
20	123	51.4	-10	53.5	330	12.7	119	2.2	-20	3.1	11	17.0	-18	48.2
22	153	51.6	-10	55.3	0	17.6	149	9.7	-20	1.6	41	19.4	-18	47.2
Δ		1		-9				37		7		12		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 54	16 34	0 43	2 19	14 48	3.3	4 17	.5
55	6 41	16 47	0 37	2 1	14 57	3.0	4 6	.8
50	6 31	16 57	0 33	1 48	15 3	2.8	3 57	.9
45	6 23	17 5	0 30	1 38	15 9	2.7	3 50	1.1
40	6 17	17 12	0 27	1 30	15 13	2.5	3 45	1.2
35	6 11	17 18	0 26	1 24	15 17	2.4	3 40	1.3
30	6 6	17 23	0 24	1 20	15 21	2.3	3 35	1.4
20	5 57	17 32	0 22	1 14	15 27	2.1	3 27	1.6
10	5 49	17 40	0 21	1 11	15 32	2.0	3 20	1.7
0	5 41	17 48	0 21	1 10	15 37	1.9	3 14	1.8
10	5 34	17 56	0 21	1 12	15 42	1.7	3 7	2.0
20	5 25	18 4	0 23	1 16	15 47	1.6	3 0	2.1
30	5 16	18 14	0 25	1 24	15 53	1.4	2 52	2.3
35	5 10	18 20	0 26	1 30	15 56	1.3	2 48	2.4
40	5 4	18 26	0 28	1 38	16 0	1.2	2 43	2.5
45	4 56	18 34	0 31	1 49	16 5	1.1	2 36	2.6
50	4 47	18 43	0 35	2 6	16 10	.9	2 29	2.8
55	4 36	18 54	0 40	2 32	16 16	.7	2 20	3.0
60	4 21	19 10	0 47	3 33	16 25	.5	2 8	3.2

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	'	°	'	'						
0	42	51.5	141	9	24.8	-101	155	30.5	-18	33.8	114	56.2	-22	46.3
2	71	57.7	141	9	4.7	-101	185	34.4	-18	34.1	145	.8	-22	46.3
4	101	4.0	141	8	44.4	-102	215	38.2	-18	34.3	175	5.3	-22	46.3
6	130	10.2	141	8	24.0	-103	245	42.1	-18	34.6	205	9.9	-22	46.3
8	159	16.5	141	8	3.3	-104	275	45.9	-18	34.8	235	14.5	-22	46.3
10	188	22.8	141	7	42.5	-105	305	49.8	-18	35.1	265	19.0	-22	46.3
12	217	29.0	141	7	21.5	-106	335	53.7	-18	35.3	295	23.6	-22	46.3
14	246	35.3	141	7	.3	-107	5	57.5	-18	35.6	325	28.1	-22	46.3
16	275	41.6	141	6	39.0	-107	36	1.4	-18	35.8	355	32.7	-22	46.3
18	304	47.8	141	6	17.5	-108	66	5.3	-18	36.1	25	37.2	-22	46.3
20	333	54.0	141	5	55.9	-109	96	9.1	-18	36.4	55	41.8	-22	46.3
22	3	.2	141	5	34.1	-110	126	13.0	-18	36.6	85	46.3	-22	46.3
Δ								19		-1		23		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	15	17.4	.4	16.1	T _m	21 48	1.8	55.0	15.0
12	15	22.3	T _{m☉}	11 h 44.6 min	Starost	11.8 d	Faza	☉	

PLANETE							
Pl.	T _m	π					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 51.8 -10 57.1		30 22.5	179 17.2 -20 .1	71 21.7 -18 46.2		
2	213 52.0 -10 58.9		60 27.5	209 24.7 -19 58.6	101 24.1 -18 45.2		
4	243 52.2 -11 .6		90 32.4	239 32.3 -19 57.1	131 26.5 -18 44.1		
6	273 52.4 -11 2.4		120 37.3	269 39.8 -19 55.5	161 28.8 -18 43.1		
8	303 52.6 -11 4.2		150 42.2	299 47.3 -19 54.0	191 31.2 -18 42.1		
10	333 52.7 -11 5.9		180 47.2	329 54.9 -19 52.4	221 33.5 -18 41.1		
12	3 52.9 -11 7.7		210 52.1	0 2.4 -19 50.9	251 35.9 -18 40.0		
14	33 53.1 -11 9.4		240 57.0	30 10.0 -19 49.3	281 38.2 -18 39.0		
16	63 53.3 -11 11.2		271 2.0	60 17.5 -19 47.7	311 40.6 -18 38.0		
18	93 53.5 -11 13.0		301 6.9	90 25.1 -19 46.1	341 42.9 -18 36.9		
20	123 53.7 -11 14.7		331 11.8	120 32.6 -19 44.6	11 45.3 -18 35.9		
22	153 53.9 -11 16.5		1 16.7	150 40.2 -19 43.0	41 47.6 -18 34.9		
Δ	1	-9		38	8	12	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 56	16 31	0 43	2 19	16 6	1.8	4 29	.6
55	6 43	16 45	0 37	2 1	16 9	1.8	4 24	.8
50	6 33	16 55	0 33	1 48	16 11	1.8	4 20	1.0
45	6 25	17 4	0 30	1 38	16 13	1.8	4 16	1.1
40	6 18	17 11	0 28	1 30	16 14	1.8	4 14	1.3
35	6 12	17 17	0 26	1 25	16 15	1.8	4 11	1.4
30	6 6	17 22	0 24	1 20	16 16	1.8	4 9	1.4
20	5 57	17 32	0 22	1 14	16 18	1.9	4 5	1.6
10	5 49	17 40	0 21	1 11	16 20	1.9	4 2	1.7
0	5 41	17 48	0 21	1 10	16 21	1.9	3 58	1.9
10	5 33	17 56	0 21	1 12	16 23	1.9	3 55	2.0
20	5 25	18 5	0 23	1 16	16 25	1.9	3 52	2.1
30	5 15	18 15	0 25	1 24	16 27	1.9	3 47	2.3
35	5 9	18 21	0 26	1 30	16 28	2.0	3 45	2.4
40	5 2	18 27	0 28	1 38	16 29	2.0	3 43	2.5
45	4 55	18 35	0 31	1 50	16 30	2.0	3 39	2.6
50	4 45	18 45	0 35	2 6	16 32	2.0	3 36	2.8
55	4 34	18 57	0 40	2 34	16 34	2.0	3 31	2.9
60	4 18	19 12	0 48	3 42	16 37	2.1	3 25	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	32 6.3 141	5 12.2 -110			156 16.9 -18 36.9	115 50.9 -22 46.3		
2	61 12.5 140	4 50.2 -111			186 20.7 -18 37.1	145 55.5 -22 46.3		
4	90 18.5 140	4 28.0 -111			216 24.6 -18 37.4	176 .0 -22 46.3		
6	119 24.6 140	4 5.7 -112			246 28.4 -18 37.6	206 4.6 -22 46.3		
8	148 30.6 140	3 43.3 -113			276 32.3 -18 37.9	236 9.1 -22 46.3		
10	177 36.5 139	3 20.8 -113			306 36.2 -18 38.1	266 13.7 -22 46.3		
12	206 42.3 139	2 58.2 -114			336 40.0 -18 38.4	296 18.2 -22 46.3		
14	235 48.1 139	2 35.5 -114			6 43.9 -18 38.6	326 22.8 -22 46.3		
16	264 53.8 138	2 12.7 -114			36 47.7 -18 38.9	356 27.3 -22 46.3		
18	293 59.5 138	1 49.8 -115			66 51.6 -18 39.1	26 31.8 -22 46.3		
20	323 5.0 137	1 26.9 -115			96 55.4 -18 39.4	56 36.4 -22 46.3		
22	352 10.5 137	1 3.8 -115			126 59.3 -18 39.6	86 40.9 -22 46.3		
Δ					19	-1	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	15 27.1	.4	16.1	T _m	22 32	1.9	55.5 15.1		
12	15 31.7			T _{m☉}	11 h 44.5 min	Starost 12.8 d	Faza ☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	11 60	.1	149	-6.8	♃	13 33	.0	126	-1.3
♂	19 13	.1	41	-1.3	♄	16 14	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 54.0 -11 18.2		31 21.7	180 47.8 -19 41.3	71 50.0 -18 33.9		
2	213 54.2 -11 20.0		61 26.6	210 55.4 -19 39.7	101 52.3 -18 32.8		
4	243 54.4 -11 21.8		91 31.5	241 2.9 -19 38.1	131 54.7 -18 31.8		
6	273 54.6 -11 23.5		121 36.4	271 10.5 -19 36.5	161 57.0 -18 30.8		
8	303 54.8 -11 25.3		151 41.4	301 18.1 -19 34.8	191 59.3 -18 29.7		
10	333 54.9 -11 27.0		181 46.3	331 25.7 -19 33.2	222 1.7 -18 28.7		
12	3 55.1 -11 28.8		211 51.2	1 33.3 -19 31.5	252 4.0 -18 27.6		
14	33 55.3 -11 30.5		241 56.2	31 40.9 -19 29.8	282 6.3 -18 26.6		
16	63 55.5 -11 32.2		272 1.1	61 48.5 -19 28.2	312 8.7 -18 25.6		
18	93 55.6 -11 34.0		302 6.0	91 56.1 -19 26.5	342 11.0 -18 24.5		
20	123 55.8 -11 35.7		332 10.9	122 3.7 -19 24.8	12 13.3 -18 23.5		
22	153 56.0 -11 37.5		2 15.9	152 11.3 -19 23.1	42 15.7 -18 22.4		
Δ	1	-9		38	8	12	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	6 59	16 29	0 43	2 20	16 49	.5	4 44	3.4
55	6 45	16 43	0 37	2 1	16 52	.8	4 44	3.1
50	6 35	16 53	0 33	1 48	16 54	1.0	4 44	2.9
45	6 26	17 2	0 30	1 38	16 56	1.1	4 44	2.8
40	6 19	17 9	0 28	1 31	16 58	1.3	4 44	2.6
35	6 13	17 16	0 26	1 25	16 59	1.4	4 44	2.5
30	6 7	17 21	0 24	1 20	17 1	1.5	4 44	2.4
20	5 58	17 31	0 22	1 14	17 3	1.7	4 43	2.2
10	5 49	17 39	0 21	1 11	17 5	1.8	4 43	2.1
0	5 41	17 48	0 21	1 10	17 7	2.0	4 43	1.9
10	5 33	17 56	0 21	1 12	17 9	2.1	4 43	1.8
20	5 24	18 5	0 23	1 16	17 11	2.3	4 43	1.6
30	5 14	18 15	0 25	1 24	17 13	2.4	4 43	1.4
35	5 8	18 21	0 26	1 31	17 15	2.5	4 42	1.3
40	5 1	18 28	0 28	1 39	17 16	2.7	4 42	1.2
45	4 53	18 36	0 31	1 50	17 18	2.8	4 42	1.1
50	4 43	18 46	0 35	2 7	17 20	3.0	4 42	.9
55	4 31	18 59	0 40	2 36	17 23	3.2	4 42	.7
60	4 16	19 15	0 48	3 54	17 27	3.4	4 41	.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	21 15.9 136	0 40.8 -116			157 3.2 -18 39.9	116 45.5 -22 46.3		
2	50 21.1 136	0 17.6 -60			187 7.0 -18 40.1	146 50.0 -22 46.3		
4	79 26.3 135	0 5.6 116			217 10.9 -18 40.4	176 54.6 -22 46.3		
6	108 31.4 135	0 28.8 116			247 14.7 -18 40.6	206 59.1 -22 46.3		
8	137 36.3 134	0 52.1 117			277 18.6 -18 40.9	237 3.7 -22 46.3		
10	166 41.1 133	1 15.4 117			307 22.4 -18 41.2	267 8.2 -22 46.3		
12	195 45.8 133	1 38.7 117			337 26.3 -18 41.4	297 12.7 -22 46.3		
14	224 50.3 132	2 2.1 117			7 30.1 -18 41.7	327 17.3 -22 46.3		
16	253 54.7 131	2 25.4 117			37 34.0 -18 41.9	357 21.8 -22 46.3		
18	282 59.0 131	2 48.8 117			67 37.8 -18 42.2	27 26.4 -22 46.3		
20	312 3.1 130	3 12.1 117			97 41.7 -18 42.4	57 30.9 -22 46.3		
22	341 7.1 129	3 35.4 116			127 45.6 -18 42.7	87 35.4 -22 46.3		
Δ					19	-1	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	15 36.2	.3	16.1	T _m	23 18	2.0	56.1 15.3		
12	15 40.4			T _{m☉}	11 h 44.3 min	Starost 13.8 d	Faza ☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	11 54	.1	149	-6.8	♃	13 30	.0	126	-1.3
♂	19 11	.1	40	-1.3	♄	16 11	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 56.1	-11 39.2	32 20.8	182 18.9	-19 21.4	72 18.0	-18 21.4
2	213 56.3	-11 41.0	62 25.7	212 26.5	-19 19.7	102 20.3	-18 20.4
4	243 56.5	-11 42.7	92 30.7	242 34.1	-19 18.0	132 22.6	-18 19.3
6	273 56.6	-11 44.4	122 35.6	272 41.7	-19 16.2	162 25.0	-18 18.3
8	303 56.8	-11 46.2	152 40.5	302 49.3	-19 14.5	192 27.3	-18 17.2
10	333 57.0	-11 47.9	182 45.4	332 57.0	-19 12.8	222 29.6	-18 16.2
12	3 57.1	-11 49.6	212 50.4	3 4.6	-19 11.0	252 31.9	-18 15.1
14	33 57.3	-11 51.4	242 55.3	33 12.2	-19 9.3	282 34.2	-18 14.1
16	63 57.4	-11 53.1	273 .2	63 19.8	-19 7.5	312 36.6	-18 13.0
18	93 57.6	-11 54.8	303 5.2	93 27.4	-19 5.7	342 38.9	-18 12.0
20	123 57.8	-11 56.6	333 10.1	123 35.0	-19 4.0	12 41.2	-18 10.9
22	153 57.9	-11 58.3	3 15.0	153 42.7	-19 2.2	42 43.5	-18 9.9
Δ	1	-9		38	9	12	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 1	16 26	0 43	2 20	17 2	.6	6 6	3.5
55	6 47	16 40	0 37	2 1	17 11	.9	5 59	3.2
50	6 36	16 51	0 33	1 48	17 18	1.1	5 54	3.0
45	6 27	17 0	0 30	1 38	17 23	1.2	5 50	2.8
40	6 20	17 8	0 28	1 31	17 28	1.4	5 47	2.7
35	6 14	17 14	0 26	1 25	17 33	1.5	5 44	2.6
30	6 8	17 20	0 24	1 20	17 36	1.6	5 41	2.5
20	5 58	17 30	0 22	1 14	17 43	1.8	5 37	2.3
10	5 49	17 39	0 21	1 11	17 48	1.9	5 33	2.1
0	5 41	17 48	0 21	1 10	17 54	2.0	5 29	2.0
10	5 32	17 56	0 22	1 12	17 59	2.2	5 25	1.9
20	5 23	18 5	0 23	1 16	18 5	2.3	5 22	1.7
30	5 13	18 16	0 25	1 25	18 12	2.5	5 17	1.5
35	5 7	18 22	0 26	1 31	18 16	2.6	5 15	1.4
40	4 60	18 29	0 29	1 39	18 20	2.7	5 12	1.3
45	4 51	18 38	0 31	1 51	18 25	2.9	5 8	1.2
50	4 41	18 48	0 35	2 8	18 31	3.0	5 4	1.0
55	4 29	19 1	0 40	2 38	18 39	3.3	4 60	.8
60	4 13	19 17	0 49	4 22	18 49	3.5	4 53	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	10 10.9	128	3 58.7	116	157 49.4	-18 42.9	117 40.0	-22 46.3
2	39 14.5	127	4 22.0	116	187 53.3	-18 43.2	147 44.5	-22 46.3
4	68 17.9	126	4 45.2	116	217 57.1	-18 43.4	177 49.1	-22 46.3
6	97 21.2	125	5 8.4	116	248 1.0	-18 43.7	207 53.6	-22 46.3
8	126 24.3	125	5 31.5	115	278 4.8	-18 43.9	237 58.1	-22 46.2
10	155 27.2	124	5 54.6	115	308 8.7	-18 44.2	268 2.7	-22 46.2
12	184 29.9	123	6 17.5	115	338 12.5	-18 44.4	298 7.2	-22 46.2
14	213 32.5	122	6 40.4	114	8 16.4	-18 44.7	328 11.7	-22 46.2
16	242 34.8	121	7 3.3	114	38 20.2	-18 44.9	358 16.3	-22 46.2
18	271 36.9	119	7 26.0	113	68 24.1	-18 45.2	28 20.8	-22 46.2
20	300 38.8	118	7 48.6	112	98 27.9	-18 45.4	58 25.3	-22 46.2
22	329 40.4	117	8 11.0	112	128 31.8	-18 45.7	88 29.9	-22 46.2
Δ					19	-1	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	15 44.6	.3	16.1	T _m	1.0	56.7	15.5		
12	15 48.4	T _{m☉}	11 h 44.2 min	Starost	14.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	11 48	.1	150	-6.8	♃	13 27	.0	125	-1.3
♂	19 9	.1	40	-1.2	♄	16 7	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 58.1	-12 .0	33 19.9	183 50.3	-19 .4	72 45.8	-18 8.8
2	213 58.2	-12 1.8	63 24.9	213 57.9	-18 58.6	102 48.1	-18 7.8
4	243 58.4	-12 3.5	93 29.8	244 5.5	-18 56.8	132 50.4	-18 6.7
6	273 58.5	-12 5.2	123 34.7	274 13.1	-18 55.0	162 52.7	-18 5.7
8	303 58.7	-12 6.9	153 39.7	304 20.8	-18 53.2	192 55.0	-18 4.6
10	333 58.8	-12 8.6	183 44.6	334 28.4	-18 51.4	222 57.3	-18 3.5
12	3 59.0	-12 10.4	213 49.5	4 36.0	-18 49.5	252 59.6	-18 2.5
14	33 59.1	-12 12.1	243 54.4	34 43.6	-18 47.7	283 1.9	-18 1.4
16	63 59.2	-12 13.8	273 59.4	64 51.2	-18 45.9	313 4.2	-18 .4
18	93 59.4	-12 15.5	304 4.3	94 58.9	-18 44.0	343 6.5	-17 59.3
20	123 59.5	-12 17.2	334 9.2	125 6.5	-18 42.2	13 8.8	-17 58.2
22	153 59.7	-12 18.9	4 14.2	155 14.1	-18 40.3	43 11.1	-17 57.2
Δ	1	-9		38	9	12	5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 4	16 23	0 44	2 20	17 17	.8	7 30	3.6
55	6 49	16 38	0 38	2 2	17 32	1.1	7 16	3.3
50	6 38	16 50	0 33	1 48	17 44	1.3	7 6	3.1
45	6 29	16 59	0 30	1 38	17 53	1.4	6 58	2.9
40	6 21	17 7	0 28	1 31	18 1	1.5	6 51	2.8
35	6 14	17 13	0 26	1 25	18 8	1.7	6 46	2.6
30	6 9	17 19	0 24	1 20	18 14	1.7	6 41	2.6
20	5 58	17 30	0 22	1 14	18 25	1.9	6 32	2.4
10	5 49	17 39	0 21	1 11	18 34	2.0	6 24	2.2
0	5 41	17 47	0 21	1 10	18 43	2.2	6 17	2.1
10	5 32	17 56	0 22	1 12	18 52	2.3	6 10	2.0
20	5 23	18 6	0 23	1 16	19 1	2.4	6 2	1.8
30	5 12	18 17	0 25	1 25	19 12	2.6	5 54	1.7
35	5 5	18 23	0 26	1 31	19 19	2.7	5 49	1.6
40	4 58	18 31	0 29	1 40	19 26	2.8	5 43	1.4
45	4 50	18 39	0 31	1 52	19 34	2.9	5 37	1.3
50	4 40	18 50	0 35	2 9	19 44	3.1	5 29	1.2
55	4 27	19 3	0 41	2 40	19 57	3.3	5 19	1.0
60	4 10	19 20	0 49	:::	20 14	3.6	5 7	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	358 41.9	116	8 33.4	111	158 35.6	-18 45.9	118 34.4	-22 46.2
2	27 43.1	115	8 55.6	110	188 39.4	-18 46.2	148 38.9	-22 46.2
4	56 44.1	114	9 17.7	110	218 43.3	-18 46.4	178 43.5	-22 46.2
6	85 44.9	113	9 39.6	109	248 47.1	-18 46.7	208 48.0	-22 46.2
8	114 45.4	111	10 1.4	108	278 51.0	-18 46.9	238 52.5	-22 46.2
10	143 45.7	110	10 23.0	107	308 54.8	-18 47.2	268 57.1	-22 46.2
12	172 45.7	109	10 44.4	106	338 58.7	-18 47.4	299 1.6	-22 46.2
14	201 45.5	108	11 5.6	105	9 2.5	-18 47.7	329 6.1	-22 46.2
16	230 45.1	106	11 26.6	104	39 6.4	-18 47.9	359 10.6	-22 46.2
18	259 44.4	105	11 47.4	103	69 10.2	-18 48.2	29 15.2	-22 46.2
20	288 43.4	104	12 8.0	102	99 14.1	-18 48.4	59 19.7	-22 46.2
22	317 42.1	103	12 28.4	101	129 17.9	-18 48.7	89 24.2	-22 46.2
Δ					19	-1	23	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s	'	h min	min	'	'		
00	15 52.2	.3	16.1	T _m	0 5	2.1	57.3	15.6	
12	15 55.7	T _{m☉}	11 h 44.1 min	Starost	15.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	11 42	.1	150	-6.8	♃	13 24	.0	125	-1.3
♂	19 7	.1	39	-1.2	♄	16 3	.0	85	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	'	'							
0	183	59.8	-12	20.6	34	19.1	185	21.7	-18	38.5	73	13.4	-17	56.1
2	213	59.9	-12	22.4	64	24.0	215	29.3	-18	36.6	103	15.7	-17	55.0
4	244	.1	-12	24.1	94	28.9	245	36.9	-18	34.7	133	18.0	-17	54.0
6	274	.2	-12	25.8	124	33.9	275	44.6	-18	32.9	163	20.3	-17	52.9
8	304	.3	-12	27.5	154	38.8	305	52.2	-18	31.0	193	22.6	-17	51.8
10	334	.5	-12	29.2	184	43.7	335	59.8	-18	29.1	223	24.9	-17	50.8
12	4	.6	-12	30.9	214	48.6	6	7.4	-18	27.2	253	27.1	-17	49.7
14	34	.7	-12	32.6	244	53.6	36	15.0	-18	25.3	283	29.4	-17	48.6
16	64	.9	-12	34.3	274	58.5	66	22.6	-18	23.4	313	31.7	-17	47.6
18	94	1.0	-12	36.0	305	3.4	96	30.2	-18	21.5	343	34.0	-17	46.5
20	124	1.1	-12	37.7	335	8.4	126	37.8	-18	19.6	373	36.3	-17	45.4
22	154	1.2	-12	39.4	5	13.3	156	45.4	-18	17.6	403	38.5	-17	44.3
Δ		1		-9			38		9		11			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 7	16 20	0 44	2 20	17 36	1.1	8 55	3.5
55	6 51	16 36	0 38	2 2	17 58	1.4	8 35	3.3
50	6 39	16 48	0 33	1 48	18 14	1.5	8 20	3.1
45	6 30	16 57	0 30	1 38	18 28	1.7	8 8	2.9
40	6 22	17 5	0 28	1 31	18 38	1.8	7 58	2.8
35	6 15	17 12	0 26	1 25	18 48	1.9	7 49	2.7
30	6 9	17 18	0 24	1 20	18 56	1.9	7 42	2.6
20	5 59	17 29	0 22	1 14	19 10	2.1	7 29	2.5
10	5 49	17 38	0 21	1 11	19 23	2.2	7 18	2.3
0	5 41	17 47	0 21	1 10	19 35	2.3	7 7	2.2
10	5 32	17 56	0 22	1 12	19 47	2.4	6 57	2.1
20	5 22	18 6	0 23	1 17	19 60	2.5	6 46	2.0
30	5 11	18 18	0 25	1 25	20 14	2.6	6 33	1.8
35	5 4	18 24	0 27	1 31	20 23	2.7	6 26	1.7
40	4 57	18 32	0 29	1 40	20 33	2.8	6 18	1.6
45	4 48	18 41	0 32	1 52	20 44	2.9	6 8	1.5
50	4 38	18 51	0 35	2 10	20 58	3.0	5 57	1.4
55	4 24	19 5	0 41	2 42	21 16	3.2	5 42	1.2
60	4 7	19 23	0 49	:::	21 40	3.5	5 24	.9
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	'	'	'	'	'	'						
0	346	40.6	101	12	48.5	99	159	21.7	-18	48.9	119	28.7	-22	46.2
2	15	38.9	100	13	8.3	98	189	25.6	-18	49.2	149	33.3	-22	46.2
4	44	36.9	99	13	27.9	97	219	29.4	-18	49.4	179	37.8	-22	46.2
6	73	34.6	97	13	47.3	95	249	33.3	-18	49.7	209	42.3	-22	46.2
8	102	32.0	96	14	6.3	94	279	37.1	-18	49.9	239	46.8	-22	46.2
10	131	29.2	94	14	25.1	92	309	40.9	-18	50.2	269	51.4	-22	46.2
12	160	26.0	93	14	43.5	91	339	44.8	-18	50.4	299	55.9	-22	46.2
14	189	22.7	92	15	1.7	89	9	48.6	-18	50.7	330	.4	-22	46.2
16	218	19.0	90	15	19.5	88	39	52.5	-18	50.9	0	4.9	-22	46.2
18	247	15.1	89	15	37.0	86	69	56.3	-18	51.2	30	9.4	-22	46.2
20	276	10.9	88	15	54.2	84	100	.1	-18	51.5	60	14.0	-22	46.2
22	305	6.4	86	16	11.0	82	130	4.0	-18	51.7	90	18.5	-22	46.2
Δ							19		-1		23			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	15	59.2	.3	16.1	T _m	0 55	2.2	57.8	15.8
12	16	2.3	T _{m☉}	11 h 44.0 min	Starost	16.8 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 36	.1	151	-6.8	♃	13 21	.0	125	-1.3
	19 6	.1	39	-1.2	♄	15 60	.0	85	.8

27. OKTOBAR

SUBOTA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	'	'							
0	184	1.4	-12	41.1	35	18.2	186	53.0	-18	15.7	73	40.8	-17	43.3
2	214	1.5	-12	42.8	65	23.1	217	.5	-18	13.8	103	43.1	-17	42.2
4	244	1.6	-12	44.5	95	28.1	247	8.1	-18	11.9	133	45.4	-17	41.1
6	274	1.7	-12	46.2	125	33.0	277	15.7	-18	9.9	163	47.6	-17	40.0
8	304	1.8	-12	47.8	155	37.9	307	23.3	-18	8.0	193	49.9	-17	39.0
10	334	1.9	-12	49.5	185	42.9	337	30.9	-18	6.0	223	52.2	-17	37.9
12	4	2.1	-12	51.2	215	47.8	7	38.4	-18	4.1	253	54.5	-17	36.8
14	34	2.2	-12	52.9	245	52.7	37	46.0	-18	2.1	283	56.7	-17	35.7
16	64	2.3	-12	54.6	275	57.6	67	53.6	-18	.2	313	59.0	-17	34.6
18	94	2.4	-12	56.3	306	2.6	98	1.1	-17	58.2	344	1.3	-17	33.6
20	124	2.5	-12	58.0	336	7.5	128	8.7	-17	56.2	374	3.5	-17	32.5
22	154	2.6	-12	59.6	6	12.4	158	16.2	-17	54.3	404	5.8	-17	31.4
Δ		1		-8			38		10		11			5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 9	16 18	0 44	2 21	18 2	1.5	10 20	3.3
55	6 53	16 34	0 38	2 2	18 30	1.7	9 53	3.1
50	6 41	16 46	0 33	1 49	18 51	1.9	9 33	3.0
45	6 31	16 56	0 30	1 39	19 8	2.0	9 18	2.8
40	6 23	17 4	0 28	1 31	19 21	2.0	9 5	2.8
35	6 16	17 11	0 26	1 25	19 33	2.1	8 54	2.7
30	6 10	17 17	0 24	1 20	19 43	2.2	8 44	2.6
20	5 59	17 28	0 23	1 14	20 0	2.2	8 28	2.5
10	5 50	17 38	0 21	1 11	20 15	2.3	8 14	2.4
0	5 40	17 47	0 21	1 11	20 30	2.4	8 1	2.3
10	5 31	17 57	0 22	1 12	20 44	2.4	7 48	2.2
20	5 21	18 7	0 23	1 17	20 60	2.5	7 33	2.2
30	5 10	18 18	0 25	1 25	21 17	2.6	7 17	2.0
35	5 3	18 25	0 27	1 32	21 28	2.6	7 8	2.0
40	4 56	18 33	0 29	1 41	21 40	2.7	6 57	1.9
45	4 47	18 42	0 32	1 53	21 54	2.8	6 45	1.8
50	4 36	18 53	0 36	2 12	22 11	2.9	6 30	1.7
55	4 22	19 7	0 41	2 45	22 33	3.0	6 11	1.5
60	4 4	19 25	0 50	:::	23 4	2.4	5 45	1.3
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	'	'	'	'	'	'						
0	334	1.7	85	16	27.5	81	160	7.8	-18	52.0	120	23.0	-22	46.2
2	2	56.7	84	16	43.6	79	190	11.7	-18	52.2	150	27.5	-22	46.2
4	31	51.4	82	16	59.3	77	220	15.5	-18	52.5	180	32.0	-22	46.2
6	60	45.9	81	17	14.7	75	250	19.3	-18	52.7	210	36.6	-22	46.2
8	89	40.1	80	17	29.6	73	280	23.2	-18	53.0	240	41.1	-22	46.2
10	118	34.0	78	17	44.2	71	310	27.0	-18	53.2	270	45.6	-22	46.2
12	147	27.7	77	17	58.3	69	340	30.8	-18	53.5	300	50.1	-22	46.2
14	176	21.1	76	18	12.0	66	10	34.7	-18	53.7	330	54.6	-22	46.2
16	205	14.3	75	18	25.3	64	40	38.5	-18	53.9	0	59.1	-22	46.2
18	234	7.3	74	18	38.1	62	70	42.4	-18	54.2	31	3.6	-22	46.2
20	263	.0	72	18	50.5	60	100	46.2	-18	54.4	61	8.2	-22	46.1
22	291	52.5	71	19	2.5	57	130	50.0	-18	54.7	91	12.7	-22	46.1
Δ							19		-1		23			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	16	5.4	.2	16.1	T _m	1 48	2.3	58.3	15.9
12	16	8.2	T _{m☉}	11 h 43.9 min	Starost	17.8 d	Faza	☉	
PLANETE									

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	2.7	-13	1.3	36	17.4	188	23.8	-17	52.3	74	8.1	-17	30.3	
2	214	2.8	-13	3.0	66	22.3	218	31.3	-17	50.3	104	10.3	-17	29.2	
4	244	2.9	-13	4.7	96	27.2	248	38.8	-17	48.3	134	12.6	-17	28.1	
6	274	3.0	-13	6.3	126	32.1	278	46.4	-17	46.3	164	14.8	-17	27.0	
8	304	3.1	-13	8.0	156	37.1	308	53.9	-17	44.3	194	17.1	-17	26.0	
10	334	3.2	-13	9.7	186	42.0	339	1.4	-17	42.3	224	19.3	-17	24.9	
12	4	3.3	-13	11.4	216	46.9	9	8.9	-17	40.3	254	21.6	-17	23.8	
14	34	3.4	-13	13.0	246	51.9	39	16.5	-17	38.3	284	23.9	-17	22.7	
16	64	3.5	-13	14.7	276	56.8	69	24.0	-17	36.3	314	26.1	-17	21.6	
18	94	3.6	-13	16.4	307	1.7	99	31.5	-17	34.3	344	28.4	-17	20.5	
20	124	3.7	-13	18.0	337	6.6	129	39.0	-17	32.3	14	30.6	-17	19.4	
22	154	3.8	-13	19.7	7	11.6	159	46.4	-17	30.3	44	32.9	-17	18.3	
Δ		0		-8				38		10			11		5

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 12	16 15	0 44	2 21	18 39	2.1	11 40	2.9
55	6 55	16 31	0 38	2 2	19 12	2.2	11 8	2.8
50	6 43	16 44	0 34	1 49	19 36	2.3	10 44	2.7
45	6 33	16 54	0 30	1 39	19 55	2.3	10 26	2.7
40	6 24	17 3	0 28	1 31	20 10	2.3	10 11	2.6
35	6 17	17 10	0 26	1 25	20 23	2.4	9 58	2.6
30	6 11	17 16	0 25	1 21	20 35	2.4	9 47	2.6
20	5 60	17 28	0 23	1 14	20 54	2.4	9 28	2.5
10	5 50	17 38	0 22	1 11	21 11	2.4	9 12	2.5
0	5 40	17 47	0 21	1 11	21 27	2.4	8 57	2.4
10	5 31	17 57	0 22	1 12	21 43	2.5	8 41	2.4
20	5 21	18 7	0 23	1 17	22 0	2.5	8 25	2.3
30	5 9	18 19	0 25	1 26	22 20	2.5	8 6	2.3
35	5 2	18 26	0 27	1 32	22 31	2.5	7 56	2.2
40	4 54	18 34	0 29	1 41	22 45	2.5	7 43	2.2
45	4 45	18 43	0 32	1 54	23 0	2.5	7 28	2.1
50	4 34	18 55	0 36	2 13	23 20	2.5	7 10	2.1
55	4 20	19 9	0 41	2 47	23 45	2.5	6 47	2.0
60	4 1	19 28	0 50	:::	..	.0	6 16	1.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	320	44.7	70	19	13.9	55	160	53.9	-18	54.9	121	17.2	-22	46.1		
2	349	36.8	69	19	24.9	53	190	57.7	-18	55.2	151	21.7	-22	46.1		
4	18	28.6	68	19	35.5	50	221	1.5	-18	55.4	181	26.2	-22	46.1		
6	47	20.2	67	19	45.5	48	251	5.4	-18	55.7	211	30.7	-22	46.1		
8	76	11.6	66	19	55.1	45	281	9.2	-18	55.9	241	35.2	-22	46.1		
10	105	2.8	65	20	4.2	43	311	13.0	-18	56.2	271	39.7	-22	46.1		
12	133	53.9	64	20	12.7	40	341	16.9	-18	56.4	301	44.2	-22	46.1		
14	162	44.7	63	20	20.8	38	11	20.7	-18	56.7	331	48.7	-22	46.1		
16	191	35.4	63	20	28.3	35	41	24.5	-18	56.9	1	53.3	-22	46.1		
18	220	25.9	62	20	35.3	32	71	28.4	-18	57.2	31	57.8	-22	46.1		
20	249	16.3	61	20	41.8	30	101	32.2	-18	57.4	62	2.3	-22	46.1		
22	278	6.5	61	20	47.7	27	131	36.0	-18	57.7	92	6.8	-22	46.1		
Δ								19		-1			23		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	16 10.9	.2	16.1	T _m	2 43	2.4	58.6	16.0
12	16 13.2	T _{m☉}	11 h 43.8 min	Starost	18.8 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	11 24	.1	152	-6.8	♄	13 15	.0	125	-1.3
♂	19 2	.1	38	-1.2	♂	15 52	.0	85	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	3.9	-13	21.3	37	16.5	189	53.9	-17	28.3	74	35.1	-17	17.2	
2	214	4.0	-13	23.0	67	21.4	220	1.4	-17	26.3	104	37.4	-17	16.1	
4	244	4.1	-13	24.7	97	26.4	250	8.9	-17	24.2	134	39.6	-17	15.0	
6	274	4.2	-13	26.3	127	31.3	280	16.3	-17	22.2	164	41.8	-17	13.9	
8	304	4.2	-13	28.0	157	36.2	310	23.8	-17	20.2	194	44.1	-17	12.8	
10	334	4.3	-13	29.6	187	41.1	340	31.2	-17	18.1	224	46.3	-17	11.7	
12	4	4.4	-13	31.3	217	46.1	10	38.7	-17	16.1	254	48.6	-17	10.6	
14	34	4.5	-13	32.9	247	51.0	40	46.1	-17	14.1	284	50.8	-17	9.5	
16	64	4.6	-13	34.6	277	55.9	70	53.6	-17	12.0	314	53.0	-17	8.4	
18	94	4.7	-13	36.2	308	.9	101	1.0	-17	10.0	344	55.3	-17	7.3	
20	124	4.7	-13	37.9	338	5.8	131	8.4	-17	7.9	14	57.5	-17	6.2	
22	154	4.8	-13	39.5	8	10.7	161	15.8	-17	5.9	44	59.8	-17	5.1	
Δ		0		-8				37		10			11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 14	16 12	0 44	2 21	19 30	2.8	12 50	2.3
55	6 57	16 29	0 38	2 3	20 5	2.7	12 14	2.3
50	6 44	16 42	0 34	1 49	20 31	2.7	11 49	2.4
45	6 34	16 53	0 30	1 39	20 50	2.6	11 30	2.4
40	6 25	17 1	0 28	1 31	21 6	2.6	11 14	2.4
35	6 18	17 9	0 26	1 25	21 20	2.6	11 0	2.4
30	6 11	17 16	0 25	1 21	21 32	2.6	10 49	2.4
20	6 0	17 27	0 23	1 14	21 52	2.5	10 29	2.4
10	5 50	17 37	0 22	1 11	22 9	2.5	10 11	2.4
0	5 40	17 47	0 21	1 11	22 26	2.4	9 55	2.4
10	5 31	17 57	0 22	1 13	22 42	2.4	9 38	2.5
20	5 20	18 8	0 23	1 17	22 59	2.4	9 21	2.5
30	5 8	18 20	0 25	1 26	23 20	2.4	9 1	2.5
35	5 1	18 27	0 27	1 32	23 32	2.4	8 49	2.5
40	4 53	18 35	0 29	1 41	23 45	2.4	8 36	2.5
45	4 43	18 45	0 32	1 54	23 59	2.5	8 20	2.5
50	4 32	18 56	0 36	2 14	..	.0	7 60	2.5
55	4 18	19 11	0 42	2 50	..	.0	7 34	2.5
60	3 59	19 31	0 51	:::	0 20	2.6	6 59	2.5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	306	56.6	60	20	53.2	24	161	39.8	-18	57.9	122	11.3	-22	46.1		
2	335	46.6	59	20	58.0	22	191	43.7	-18	58.2	152	15.8	-22	46.1		
4	4	36.5	59	21	2.4	19	221	47.5	-18	58.4	182	20.3	-22	46.1		
6	33	26.2	58	21	6.2	16	251	51.3	-18	58.7	212	24.8	-22	46.1		
8	62	15.9	58	21	9.4	13	281	55.2	-18	58.9	242	29.3	-22	46.1		
10	91	5.5	58	21	12.1	11	311	59.0	-18	59.2	272	33.8	-22	46.1		
12	119	55.0	57	21	14.2	8	342	2.8	-18	59.4	302	38.3	-22	46.1		
14	148	44.5	57	21	15.8	5	12	6.6	-18	59.7	332	42.8	-22	46.1		
16	177	33.9	57	21	16.8	2	42	10.5	-18	59.9	2	47.3	-22	46.1		
18	206	23.3	57	21	17.3	-1	72	14.3	-19	.2	32	51.8	-22	46.1		
20	235	12.6	57	21	17.1	-3	102	18.1	-19	.4	62	56.3	-22	46.1		
22	264	1.9	57	21	16.5	-6	132	22.0	-19	.7	93	.8	-22	46.1		
Δ								19		-1			23		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	16 15.6	.					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	4.9	-13	41.2	38	15.6	191	23.2	-17	3.9	75	2.0	-17	4.0	
2	214	5.0	-13	42.8	68	20.6	221	30.6	-17	1.8	105	4.2	-17	2.9	
4	244	5.0	-13	44.5	98	25.5	251	38.0	-16	59.8	135	6.4	-17	1.8	
6	274	5.1	-13	46.1	128	30.4	281	45.4	-16	57.7	165	8.7	-17	.7	
8	304	5.2	-13	47.7	158	35.3	311	52.7	-16	55.6	195	10.9	-16	59.6	
10	334	5.2	-13	49.4	188	40.3	342	.1	-16	53.6	225	13.1	-16	58.5	
12	4	5.3	-13	51.0	218	45.2	12	7.4	-16	51.5	255	15.4	-16	57.4	
14	34	5.4	-13	52.6	248	50.1	42	14.8	-16	49.5	285	17.6	-16	56.2	
16	64	5.4	-13	54.3	278	55.1	72	22.1	-16	47.4	315	19.8	-16	55.1	
18	94	5.5	-13	55.9	309	.0	102	29.5	-16	45.4	345	22.0	-16	54.0	
20	124	5.5	-13	57.5	339	4.9	132	36.8	-16	43.3	15	24.3	-16	52.9	
22	154	5.6	-13	59.2	9	9.8	162	44.1	-16	41.2	45	26.5	-16	51.8	
Δ		0		-8				37		10			11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 17	16 10	0 45	2 22	20 37	3.3	13 44	1.6
55	6 59	16 27	0 38	2 3	21 11	3.1	13 10	1.8
50	6 46	16 41	0 34	1 49	21 35	3.0	12 46	2.0
45	6 35	16 51	0 30	1 39	21 54	2.9	12 27	2.1
40	6 27	17 0	0 28	1 31	22 9	2.8	12 11	2.1
35	6 19	17 8	0 26	1 25	22 22	2.7	11 58	2.2
30	6 12	17 15	0 25	1 21	22 33	2.7	11 47	2.2
20	6 0	17 27	0 23	1 15	22 52	2.6	11 27	2.3
10	5 50	17 37	0 22	1 11	23 9	2.4	11 10	2.4
0	5 40	17 47	0 21	1 11	23 24	2.4	10 54	2.4
10	5 30	17 57	0 22	1 13	23 40	2.4	10 37	2.5
20	5 20	18 8	0 23	1 17	23 56	2.4	10 20	2.5
30	5 7	18 21	0 25	1 26	...	.0	10 0	2.6
35	4 60	18 28	0 27	1 33	...	.0	9 48	2.7
40	4 52	18 36	0 29	1 42	...	.0	9 35	2.7
45	4 42	18 46	0 32	1 55	...	.0	9 19	2.8
50	4 30	18 58	0 36	2 15	0 21	2.2	8 59	2.8
55	4 15	19 13	0 42	2 53	0 47	2.1	8 34	2.9
60	3 56	19 33	0 51	:::	1 23	1.9	7 58	3.1
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	292	51.2	57	21	15.2	-9	162	25.8	-19	.9	123	5.3	-22	46.0	
2	321	40.6	57	21	13.4	-12	192	29.6	-19	1.2	153	9.8	-22	46.0	
4	350	29.9	57	21	11.1	-15	222	33.4	-19	1.4	183	14.3	-22	46.0	
6	19	19.2	57	21	8.2	-17	252	37.3	-19	1.7	213	18.8	-22	46.0	
8	48	8.6	57	21	4.7	-20	282	41.1	-19	1.9	243	23.3	-22	46.0	
10	76	58.1	57	21	.7	-23	312	44.9	-19	2.2	273	27.8	-22	46.0	
12	105	47.6	58	20	56.1	-26	342	48.7	-19	2.4	303	32.3	-22	46.0	
14	134	37.1	58	20	51.0	-28	12	52.5	-19	2.7	333	36.8	-22	46.0	
16	163	26.8	59	20	45.3	-31	42	56.4	-19	2.9	3	41.3	-22	46.0	
18	192	16.5	59	20	39.0	-34	73	.2	-19	3.1	33	45.8	-22	46.0	
20	221	6.3	60	20	32.3	-37	103	4.0	-19	3.4	63	50.3	-22	46.0	
22	249	56.2	60	20	24.9	-39	133	7.8	-19	3.6	93	54.8	-22	46.0	
Δ								19		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	16 19.5	.1	16.1	T _m	4 40	2.4	59.1	16.1	
12	16 21.1	T _{m☉}	11 h 43.6 min	Starost	20.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	h min	'	°	h min	'	°
♂	11 12	.1	153	-6.8	♀	13 9	.0	124	-1.3
♂	18 58	.1	37	-1.1	♂	15 45	.0	85	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	5.7	-14	.8	39	14.8	192	51.4	-16	39.2	75	28.7	-16	50.7	
2	214	5.7	-14	2.4	69	19.7	222	58.7	-16	37.1	105	30.9	-16	49.6	
4	244	5.8	-14	4.0	99	24.6	253	6.0	-16	35.0	135	33.1	-16	48.4	
6	274	5.8	-14	5.7	129	29.6	283	13.3	-16	33.0	165	35.3	-16	47.3	
8	304	5.9	-14	7.3	159	34.5	313	20.5	-16	30.9	195	37.6	-16	46.2	
10	334	5.9	-14	8.9	189	39.4	343	27.8	-16	28.8	225	39.8	-16	45.1	
12	4	6.0	-14	10.5	219	44.3	13	35.0	-16	26.8	255	42.0	-16	44.0	
14	34	6.0	-14	12.1	249	49.3	43	42.3	-16	24.7	285	44.2	-16	42.8	
16	64	6.1	-14	13.7	279	54.2	73	49.5	-16	22.6	315	46.4	-16	41.7	
18	94	6.1	-14	15.4	309	59.1	103	56.7	-16	20.6	345	48.6	-16	40.6	
20	124	6.2	-14	17.0	340	4.1	134	3.9	-16	18.5	15	50.8	-16	39.5	
22	154	6.2	-14	18.6	10	9.0	164	11.1	-16	16.4	45	53.0	-16	38.3	
Δ		0		-8				36		10			11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 19	16 7	0 45	2 22	21 57	3.6	14 24	1.2
55	7 1	16 25	0 38	2 3	22 25	3.3	13 55	1.4
50	6 48	16 39	0 34	1 49	22 46	3.1	13 33	1.6
45	6 37	16 50	0 31	1 39	23 2	2.3	13 16	1.8
40	6 28	16 59	0 28	1 31	23 15	2.3	13 2	1.9
35	6 20	17 7	0 26	1 25	23 27	2.3	12 50	1.9
30	6 13	17 14	0 25	1 21	23 36	2.3	12 40	2.0
20	6 1	17 26	0 23	1 15	23 53	2.3	12 22	2.1
10	5 50	17 37	0 22	1 12	...	.0	12 6	2.3
0	5 40	17 47	0 21	1 11	...	.0	11 52	2.4
10	5 30	17 57	0 22	1 13	...	.0	11 37	2.5
20	5 19	18 8	0 23	1 17	...	.0	11 21	2.6
30	5 6	18 21	0 25	1 26	0 16	2.1	11 3	2.7
35	4 59	18 29	0 27	1 33	0 27	2.1	10 52	2.8
40	4 50	18 37	0 29	1 42	0 39	2.0	10 40	2.8
45	4 40	18 48	0 32	1 56	0 55	1.9	10 25	2.9
50	4 28	18 60	0 36	2 16	1 13	1.8	10 8	3.1
55	4 13	19 15	0 42	2 56	1 37	1.6	9 45	3.3
60	3 53	19 36	0 52	:::	2 9	1.4	9 13	3.5
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	278	46.3	61	20	17.1	-42	163	11.7	-19	3.9	123	59.2	-22	46.0	
2	307	36.4	61	20	8.7	-45	193	15.5	-19	4.1	154	3.7	-22	46.0	
4	336	26.7	62	19	59.8	-47	223	19.3	-19	4.4	184	8.2	-22	46.0	
6	5	17.1	63	19	50.4	-50	253	23.1	-19	4.6	214	12.7	-22	46.0	
8	34	7.7	64	19	40.4	-52	283	26.9	-19	4.9	244	17.2	-22	46.0	
10	62	58.4	64	19	30.0	-55	313	30.8	-19	5.1	274	21.7	-22	46.0	
12	91	49.3	65	19	19.0	-57	343	34.6	-19	5.4	304	26.2	-22	46.0	
14	120	40.3	66	19	7.6	-60	13	38.4	-19	5.6	334	30.7	-22	46.0	
16	149	31.5	67	18	55.6	-62	43	42.2	-19	5.9	4	35.2	-22	46.0	
18	178	22.9	68	18	43.2	-65	73	46.0	-19	6.1	34	39.7	-22	45.9	
20	207	14.5	69	18	30.3	-67	103	49.9	-19	6.4	64	44.1	-22	45.9	
22	236	6.2	70	18	16.9	-69	133	53.7	-19	6.6	94	48.6	-22	45.9	
Δ								19		-1			22		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	16 22.6	.1	16.1	T _m	5 38	2.4	59.2	16.1

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}	
0	184	6.2	-14	20.2	40	13.9	194	18.3	-16	14.4	75	55.2	-16	37.2
2	214	6.3	-14	21.8	70	18.8	224	25.5	-16	12.3	105	57.5	-16	36.1
4	244	6.3	-14	23.4	100	23.8	254	32.7	-16	10.2	135	59.7	-16	35.0
6	274	6.4	-14	25.0	130	28.7	284	39.8	-16	8.1	166	1.9	-16	33.8
8	304	6.4	-14	26.6	160	33.6	314	47.0	-16	6.1	196	4.1	-16	32.7
10	334	6.4	-14	28.2	190	38.6	344	54.1	-16	4.0	226	6.3	-16	31.6
12	4	6.5	-14	29.8	220	43.5	15	1.2	-16	1.9	256	8.5	-16	30.4
14	34	6.5	-14	31.4	250	48.4	45	8.4	-15	59.9	286	10.7	-16	29.3
16	64	6.5	-14	33.0	280	53.3	75	15.5	-15	57.8	316	12.9	-16	28.2
18	94	6.5	-14	34.6	310	58.3	105	22.6	-15	55.7	346	15.1	-16	27.0
20	124	6.6	-14	36.2	341	63.2	135	29.6	-15	53.7	16	17.3	-16	25.9
22	154	6.6	-14	37.7	11	8.1	165	36.7	-15	51.6	46	19.5	-16	24.8
Δ		0		-8				36		10		11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 22	16 4	0 45	2 23	23 24	2.3	14 52	.9
55	7 3	16 23	0 39	2 3	23 45	2.3	14 29	1.1
50	6 49	16 37	0 34	1 50	...	.0	14 12	1.3
45	6 38	16 48	0 31	1 39	23 58	2.9	13 58	1.5
40	6 29	16 58	0 28	1 32	...	.0	13 47	1.6
35	6 21	17 6	0 26	1 26	...	.0	13 37	1.7
30	6 14	17 13	0 25	1 21	...	.0	13 28	1.8
20	6 1	17 26	0 23	1 15	...	.0	13 14	2.0
10	5 50	17 37	0 22	1 12	0 8	2.4	13 1	2.1
0	5 40	17 47	0 21	1 11	0 22	2.3	12 48	2.3
10	5 30	17 58	0 22	1 13	0 35	2.2	12 36	2.4
20	5 18	18 9	0 23	1 18	0 50	2.1	12 23	2.5
30	5 5	18 22	0 25	1 27	1 6	1.9	12 7	2.7
35	4 58	18 30	0 27	1 33	1 16	1.8	11 58	2.8
40	4 49	18 39	0 29	1 43	1 27	1.7	11 48	2.9
45	4 39	18 49	0 32	1 56	1 40	1.6	11 36	3.0
50	4 27	19 2	0 36	2 18	1 56	1.5	11 21	3.2
55	4 11	19 17	0 43	2 60	2 16	1.3	11 3	3.4
60	3 50	19 39	0 52	:	2 42	1.0	10 37	3.7

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{μ}		δ_{μ}		S_{η}		δ_{η}		
0	264	58.1	71	18	3.1	-71	163	57.5	-19	6.9	124	53.1	-22	45.9
2	293	50.3	72	17	48.8	-74	194	1.3	-19	7.1	154	57.6	-22	45.9
4	322	42.6	73	17	34.1	-76	224	5.1	-19	7.3	185	2.1	-22	45.9
6	351	35.2	74	17	18.9	-78	254	9.0	-19	7.6	215	6.6	-22	45.9
8	20	27.9	75	17	3.3	-80	284	12.8	-19	7.8	245	11.1	-22	45.9
10	49	20.9	76	16	47.2	-82	314	16.6	-19	8.1	275	15.5	-22	45.9
12	78	14.0	77	16	30.8	-84	344	20.4	-19	8.3	305	20.0	-22	45.9
14	107	7.4	78	16	13.9	-86	14	24.2	-19	8.6	335	24.5	-22	45.9
16	136	1.0	79	15	56.7	-88	44	28.0	-19	8.8	5	29.0	-22	45.9
18	164	54.8	80	15	39.0	-90	74	31.9	-19	9.1	35	33.5	-22	45.9
20	193	48.8	81	15	21.0	-92	104	35.7	-19	9.3	65	38.0	-22	45.9
22	222	43.0	82	15	2.6	-94	134	39.5	-19	9.6	95	42.4	-22	45.9
Δ								19		-1		22		0

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s		h min	min		
00	16	25.0	.1	16.1	T_m	6 35	2.3
12	16	25.7	$T_{m\odot}$	11 h 43.6 min	Starost	22.8 d	Faza ☉

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
	h min		°			h min		°	
♀	11 0	.1	154	-6.8	♃	13 3	.0	124	-1.3
♁	18 55	.1	36	-1.1	♄	15 38	.0	85	.8

2. NOVEMBAR

PETAK

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}	
0	184	6.6	-14	39.3	41	13.1	195	43.8	-15	49.6	76	21.6	-16	23.6
2	214	6.6	-14	40.9	71	18.0	225	50.8	-15	47.5	106	23.8	-16	22.5
4	244	6.7	-14	42.5	101	22.9	255	57.9	-15	45.4	136	26.0	-16	21.4
6	274	6.7	-14	44.1	131	27.8	286	4.9	-15	43.4	166	28.2	-16	20.2
8	304	6.7	-14	45.7	161	32.8	316	11.9	-15	41.3	196	30.4	-16	19.1
10	334	6.7	-14	47.3	191	37.7	346	18.9	-15	39.3	226	32.6	-16	18.0
12	4	6.7	-14	48.8	221	42.6	16	25.9	-15	37.2	256	34.8	-16	16.8
14	34	6.7	-14	50.4	251	47.5	46	32.9	-15	35.2	286	37.0	-16	15.7
16	64	6.8	-14	52.0	281	52.5	76	39.9	-15	33.1	316	39.2	-16	14.5
18	94	6.8	-14	53.6	311	57.4	106	46.8	-15	31.1	346	41.3	-16	13.4
20	124	6.8	-14	55.1	342	62.3	136	53.8	-15	29.0	16	43.5	-16	12.2
22	154	6.8	-14	56.7	12	7.3	167	.7	-15	27.0	46	45.7	-16	11.1
Δ		0		-8				35		10		11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	7 24	16 2	0 45	2 23	...	.0	15 13	.7
55	7 5	16 21	0 39	2 4	...	.0	14 57	1.0
50	6 51	16 35	0 34	1 50	0 2	3.2	14 44	1.2
45	6 40	16 47	0 31	1 39	...	.0	14 34	1.3
40	6 30	16 57	0 28	1 32	0 25	2.9	14 26	1.5
35	6 22	17 5	0 26	1 26	0 33	2.8	14 19	1.6
30	6 14	17 12	0 25	1 21	0 41	2.7	14 12	1.7
20	6 2	17 25	0 23	1 15	0 54	2.5	14 1	1.9
10	5 51	17 36	0 22	1 12	1 6	2.4	13 52	2.0
0	5 40	17 47	0 21	1 11	1 17	2.2	13 42	2.2
10	5 29	17 58	0 22	1 13	1 28	2.1	13 33	2.3
20	5 18	18 9	0 23	1 18	1 39	1.9	13 23	2.5
30	5 5	18 23	0 25	1 27	1 53	1.8	13 12	2.7
35	4 57	18 31	0 27	1 34	2 0	1.7	13 5	2.8
40	4 48	18 40	0 29	1 43	2 9	1.5	12 58	2.9
45	4 38	18 50	0 32	1 57	2 19	1.4	12 49	3.0
50	4 25	19 3	0 37	2 19	2 31	1.2	12 38	3.2
55	4 9	19 19	0 43	3 4	2 46	1.0	12 24	3.4
60	3 48	19 41	0 53	:	3 6	.7	12 6	3.7

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{μ}		δ_{μ}		S_{η}		δ_{η}		
0	251	37.5	83	14	43.9	-96	164	43.3	-19	9.8	125	46.9	-22	45.9
2	280	32.2	84	14	24.8	-97	194	47.1	-19	10.1	155	51.4	-22	45.9
4	309	27.0	85	14	5.3	-99	224	50.9	-19	10.3	185	55.9	-22	45.9
6	338	22.1	87	13	45.5	-101	254	54.7	-19	10.5	216	.4	-22	45.8
8	7	17.4	88	13	25.4	-102	284	58.6	-19	10.8	246	4.8	-22	45.8
10	36	12.9	89	13	5.0	-104	315	2.4	-19	11.0	276	9.3	-22	45.8
12	65	8.7	90	12	44.3	-105	345	6.2	-19	11.3	306	13.8	-22	45.8
14	94	4.6	91	12	23.3	-106	15	10.0	-19	11.5	336	18.3	-22	45.8
16	123	.7	92	12	2.0	-108	45	13.8	-19	11.8	6	22.7	-22	45.8
18	151	57.1	93	11	40.4	-109	75	17.6	-19	12.0	36	27.2	-22	45.8
20	180	53.6	94	11	18.6	-110	105	21.4	-19	12.3	66	31.7	-22	45.8
22	209	50.4	95	10	56.5	-112	135	25.2	-19	12.5	96	36.2	-22	45.8
Δ								19		-1		22		0

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s		h min	min		
00	16	26.5	.0	16.1	T_m	7 30	2.2
12	16	26.8	$T_{m\odot}$	11 h 43.6 min	Starost	23.8 d	Faza ☉

PLANETE								
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	<

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	6.8	-14	58.3	42	12.2	197	7.6	-15	24.9	76	47.9	-16	10.0
2	214	6.8	-14	59.8	72	17.1	227	14.5	-15	22.9	106	50.1	-16	8.8
4	244	6.8	-15	1.4	102	22.0	257	21.4	-15	20.8	136	52.2	-16	7.7
6	274	6.8	-15	3.0	132	27.0	287	28.3	-15	18.8	166	54.4	-16	6.5
8	304	6.8	-15	4.5	162	31.9	317	35.2	-15	16.8	196	56.6	-16	5.4
10	334	6.8	-15	6.1	192	36.8	347	42.1	-15	14.7	226	58.8	-16	4.2
12	4	6.8	-15	7.6	222	41.8	17	48.9	-15	12.7	257	1.0	-16	3.1
14	34	6.8	-15	9.2	252	46.7	47	55.7	-15	10.7	287	3.1	-16	1.9
16	64	6.8	-15	10.7	282	51.6	78	2.6	-15	8.6	317	5.3	-16	.8
18	94	6.8	-15	12.3	312	56.5	108	9.4	-15	6.6	347	7.5	-15	59.6
20	124	6.8	-15	13.9	343	1.5	138	16.2	-15	4.6	17	9.6	-15	58.5
22	154	6.8	-15	15.4	13	6.4	168	22.9	-15	2.6	47	11.8	-15	57.3
Δ		0		-8				34		10		11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 27	15 59	0 46	2 23	0 54	3.7	15 29	.6
55	7 7	16 19	0 39	2 4	1 8	3.4	15 19	.8
50	6 53	16 34	0 34	1 50	1 19	3.2	15 12	1.1
45	6 41	16 46	0 31	1 40	1 27	3.0	15 6	1.2
40	6 31	16 55	0 28	1 32	1 34	2.9	15 1	1.4
35	6 23	17 4	0 26	1 26	1 40	2.7	14 57	1.5
30	6 15	17 11	0 25	1 21	1 45	2.6	14 53	1.6
20	6 2	17 25	0 23	1 15	1 54	2.4	14 46	1.8
10	5 51	17 36	0 22	1 12	2 2	2.3	14 40	1.9
0	5 40	17 47	0 21	1 11	2 10	2.1	14 35	2.1
10	5 29	17 58	0 22	1 13	2 17	2.0	14 29	2.3
20	5 17	18 10	0 23	1 18	2 25	1.8	14 23	2.4
30	5 4	18 24	0 25	1 27	2 35	1.6	14 16	2.6
35	4 56	18 32	0 27	1 34	2 40	1.5	14 11	2.7
40	4 47	18 41	0 29	1 44	2 46	1.4	14 7	2.9
45	4 36	18 52	0 32	1 58	2 53	1.3	14 1	3.0
50	4 23	19 5	0 37	2 20	3 1	1.1	13 55	3.2
55	4 7	19 22	0 43	3 8	3 11	.9	13 47	3.4
60	3 45	19 44	0 54	:::	3 24	.6	13 36	3.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	238	47.3	96	10	34.2	-113	165	29.0	-19	12.7	126	40.6	-22	45.8		
2	267	44.4	97	10	11.6	-114	195	32.9	-19	13.0	156	45.1	-22	45.8		
4	296	41.7	97	9	48.8	-115	225	36.7	-19	13.2	186	49.6	-22	45.8		
6	325	39.2	98	9	25.8	-116	255	40.5	-19	13.5	216	54.1	-22	45.8		
8	354	36.9	99	9	2.6	-117	285	44.3	-19	13.7	246	58.5	-22	45.8		
10	23	34.7	100	8	39.1	-118	315	48.1	-19	14.0	277	3.0	-22	45.8		
12	52	32.7	101	8	15.6	-119	345	51.9	-19	14.2	307	7.5	-22	45.8		
14	81	30.9	102	7	51.8	-120	15	55.7	-19	14.5	337	12.0	-22	45.7		
16	110	29.3	102	7	27.9	-120	45	59.5	-19	14.7	7	16.4	-22	45.7		
18	139	27.8	103	7	3.8	-121	76	3.3	-19	14.9	37	20.9	-22	45.7		
20	168	26.4	104	6	39.5	-122	106	7.1	-19	15.2	67	25.4	-22	45.7		
22	197	25.2	105	6	15.2	-122	136	10.9	-19	15.4	97	29.8	-22	45.7		
Δ								19		-1		22		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	16 27.2	.0	16.1	T _m	8 22	2.1	59.0	16.1	
12	16 27.1	T _{m☉}	11 h 43.5 min	Starost	24.8 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 49	.1	155	-6.8	♃	12 56	.0	123	-1.3
♂	18 51	.1	35	-1.0	♄	15 31	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	6.8	-15	16.9	43	11.3	198	29.7	-15	.6	77	14.0	-15	56.1
2	214	6.7	-15	18.5	73	16.3	228	36.5	-14	58.6	107	16.2	-15	55.0
4	244	6.7	-15	20.0	103	21.2	258	43.2	-14	56.5	137	18.3	-15	53.8
6	274	6.7	-15	21.6	133	26.1	288	50.0	-14	54.5	167	20.5	-15	52.7
8	304	6.7	-15	23.1	163	31.0	318	56.7	-14	52.5	197	22.7	-15	51.5
10	334	6.7	-15	24.7	193	36.0	349	3.4	-14	50.5	227	24.8	-15	50.4
12	4	6.7	-15	26.2	223	40.9	19	10.1	-14	48.5	257	27.0	-15	49.2
14	34	6.6	-15	27.7	253	45.8	49	16.7	-14	46.5	287	29.1	-15	48.0
16	64	6.6	-15	29.3	283	50.8	79	23.4	-14	44.6	317	31.3	-15	46.9
18	94	6.6	-15	30.8	313	55.7	109	30.1	-14	42.6	347	33.5	-15	45.7
20	124	6.6	-15	32.3	344	.6	139	36.7	-14	40.6	17	35.6	-15	44.5
22	154	6.5	-15	33.9	14	5.5	169	43.3	-14	38.6	47	37.8	-15	43.4
Δ		0		-8				33		10		11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 30	15 57	0 46	2 24	2 23	3.7	15 43	2.1
55	7 10	16 17	0 39	2 4	2 30	3.4	15 40	2.1
50	6 54	16 32	0 34	1 50	2 35	3.2	15 37	2.1
45	6 42	16 44	0 31	1 40	2 39	3.0	15 35	2.1
40	6 32	16 54	0 28	1 32	2 43	2.8	15 34	2.1
35	6 24	17 3	0 26	1 26	2 46	2.7	15 32	2.1
30	6 16	17 11	0 25	1 21	2 49	2.6	15 31	2.1
20	6 3	17 24	0 23	1 15	2 53	2.4	15 29	2.1
10	5 51	17 36	0 22	1 12	2 57	2.2	15 27	2.1
0	5 40	17 47	0 21	1 11	3 1	2.1	15 25	2.1
10	5 29	17 58	0 22	1 13	3 5	1.9	15 23	2.1
20	5 17	18 10	0 23	1 18	3 9	1.7	15 21	2.1
30	5 3	18 25	0 25	1 27	3 14	1.6	15 18	2.1
35	4 55	18 33	0 27	1 34	3 16	1.4	15 17	2.1
40	4 46	18 42	0 29	1 44	3 19	1.3	15 15	2.1
45	4 35	18 53	0 33	1 59	3 23	1.2	15 13	2.1
50	4 22	19 7	0 37	2 22	3 27	1.0	15 11	2.1
55	4 5	19 24	0 43	3 13	3 32	.8	15 8	2.1
60	3 42	19 47	0 54	:::	3 39	.5	15 5	2.1
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	226	24.1	105	5	50.7	-123	166	14.8	-19	15.7	127	34.3	-22	45.7		
2	255	23.2	106	5	26.1	-124	196	18.6	-19	15.9	157	38.8	-22	45.7		
4	284	22.4	107	5	1.4	-124	226	22.4	-19	16.2	187	43.2	-22	45.7		
6	313	21.7	107	4	36.5	-124	256	26.2	-19	16.4	217	47.7	-22	45.7		
8	342	21.2	108	4	11.7	-125	286	30.0	-19	16.7	247	52.2	-22	45.7		
10	11	20.7	108	3	46.7	-125	316	33.8	-19	16.9	277	56.6	-22	45.7		
12	40	20.4	109	3	21.7	-125	346	37.6	-19	17.1	308	1.1	-22	45.7		
14	69	20.2	109	2	56.6	-126	16	41.4	-19	17.4	338	5.6	-22	45.7		
16	98	20.1	110	2	31.5	-126	46	45.2	-19	17.6	8	10.0	-22	45.7		
18	127	20.1	110	2	6.3	-126	76	49.0	-19	17.9	38	14.5	-22	45.6		
20	156	20.1	111	1	41.1	-126	106	52.8	-19	18.1	68	19.0	-22	45.6		
22	185	20.3	111	1	15.9	-126	136	56.6	-19	18.4	98	23.4	-22	45.6		
Δ								19		-1		22		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	6.5	-15	35.4	44	10.5	199	49.9	-14	36.6	77	39.9	-15	42.2	
2	214	6.5	-15	36.9	74	15.4	229	56.5	-14	34.7	107	42.1	-15	41.0	
4	244	6.5	-15	38.4	104	20.3	260	3.1	-14	32.7	137	44.3	-15	39.9	
6	274	6.4	-15	40.0	134	25.3	290	9.7	-14	30.7	167	46.4	-15	38.7	
8	304	6.4	-15	41.5	164	30.2	320	16.2	-14	28.8	197	48.6	-15	37.5	
10	334	6.3	-15	43.0	194	35.1	350	22.8	-14	26.8	227	50.7	-15	36.4	
12	4	6.3	-15	44.5	224	40.0	20	29.3	-14	24.8	257	52.9	-15	35.2	
14	34	6.3	-15	46.0	254	45.0	50	35.8	-14	22.9	287	55.0	-15	34.0	
16	64	6.2	-15	47.5	284	49.9	80	42.3	-14	21.0	317	57.2	-15	32.9	
18	94	6.2	-15	49.0	314	54.8	110	48.8	-14	19.0	347	59.3	-15	31.7	
20	124	6.1	-15	50.5	344	59.8	140	55.3	-14	17.1	18	1.5	-15	30.5	
22	154	6.1	-15	52.1	15	4.7	171	1.7	-14	15.1	48	3.6	-15	29.3	
Δ		0		-8				33		10			11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 32	15 54	0 46	2 24	3 52	.6	16 32	3.6
55	7 12	16 15	0 39	2 4	3 51	.8	16 29	3.3
50	6 56	16 30	0 34	1 50	3 51	1.0	16 27	3.1
45	6 44	16 43	0 31	1 40	3 51	1.2	16 25	2.9
40	6 33	16 53	0 28	1 32	3 51	1.3	16 23	2.8
35	6 25	17 2	0 26	1 26	3 51	1.4	16 22	2.7
30	6 17	17 10	0 25	1 21	3 51	1.5	16 20	2.5
20	6 3	17 24	0 23	1 15	3 51	1.7	16 18	2.4
10	5 51	17 36	0 22	1 12	3 51	1.9	16 16	2.2
0	5 40	17 47	0 21	1 11	3 51	2.0	16 14	2.0
10	5 29	17 59	0 22	1 13	3 51	2.2	16 12	1.9
20	5 16	18 11	0 23	1 18	3 51	2.4	16 10	1.7
30	5 2	18 25	0 25	1 28	3 51	2.6	16 8	1.5
35	4 54	18 34	0 27	1 35	3 51	2.7	16 7	1.4
40	4 45	18 43	0 30	1 45	3 51	2.8	16 5	1.3
45	4 33	18 55	0 33	1 59	3 51	2.9	16 4	1.2
50	4 20	19 8	0 37	2 23	3 51	3.1	16 1	1.0
55	4 3	19 26	0 44	3 18	3 51	3.3	15 59	.8
60	3 40	19 49	0 55	:::	3 52	3.6	15 56	.6
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	214	20.5	111	0	50.7	-126	167	.4	-19	18.6	128	27.9	-22	45.6		
2	243	20.8	112	0	25.5	-126	197	4.2	-19	18.8	158	32.3	-22	45.6		
4	272	21.1	112	0	.3	123	227	8.0	-19	19.1	188	36.8	-22	45.6		
6	301	21.6	112	0	24.9	126	257	11.8	-19	19.3	218	41.3	-22	45.6		
8	330	22.1	113	0	50.1	126	287	15.6	-19	19.6	248	45.7	-22	45.6		
10	359	22.6	113	1	15.2	125	317	19.4	-19	19.8	278	50.2	-22	45.6		
12	28	23.2	113	1	40.2	125	347	23.2	-19	20.1	308	54.6	-22	45.6		
14	57	23.8	113	2	5.2	125	17	27.0	-19	20.3	338	59.1	-22	45.6		
16	86	24.4	113	2	30.1	124	47	30.8	-19	20.5	9	3.6	-22	45.6		
18	115	25.1	114	2	55.0	124	77	34.6	-19	20.8	39	8.0	-22	45.6		
20	144	25.8	114	3	19.7	123	107	38.4	-19	21.0	69	12.5	-22	45.5		
22	173	26.6	114	3	44.4	123	137	42.2	-19	21.3	99	16.9	-22	45.5		
Δ								19		-1			22		0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	16 26.0	.1	16.2	T _m	10 3	2.0	58.5 15.9		
12	16 25.1	T _{m☉}	11 h 43.6 min	Starost	26.8 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	10 38	.1	156	-6.7	♄	12 50	.0	123	-1.3
♂	18 48	.1	33	-1.0	♅	15 24	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	6.1	-15	53.6	45	9.6	201	8.2	-14	13.2	78	5.8	-15	28.2	
2	214	6.0	-15	55.1	75	14.5	231	14.6	-14	11.3	108	7.9	-15	27.0	
4	244	6.0	-15	56.6	105	19.5	261	21.0	-14	9.4	138	10.0	-15	25.8	
6	274	5.9	-15	58.1	135	24.4	291	27.4	-14	7.5	168	12.2	-15	24.6	
8	304	5.9	-15	59.6	165	29.3	321	33.8	-14	5.5	198	14.3	-15	23.5	
10	334	5.8	-16	1.1	195	34.2	351	40.2	-14	3.6	228	16.5	-15	22.3	
12	4	5.8	-16	2.6	225	39.2	21	46.5	-14	1.7	258	18.6	-15	21.1	
14	34	5.7	-16	4.0	255	44.1	51	52.9	-13	59.8	288	20.8	-15	19.9	
16	64	5.6	-16	5.5	285	49.0	81	59.2	-13	58.0	318	22.9	-15	18.7	
18	94	5.6	-16	7.0	315	54.0	112	5.5	-13	56.1	348	25.0	-15	17.6	
20	124	5.5	-16	8.5	345	58.9	142	11.8	-13	54.2	18	27.2	-15	16.4	
22	154	5.5	-16	10.0	16	3.8	172	18.1	-13	52.3	48	29.3	-15	15.2	
Δ		0		-7				32		9			11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 35	15 52	0 46	2 25	4 5	.6	17 59	3.5
55	7 14	16 13	0 39	2 5	4 11	.8	17 49	3.3
50	6 58	16 29	0 34	1 51	4 16	1.0	17 41	3.0
45	6 45	16 42	0 31	1 40	4 19	1.2	17 35	2.9
40	6 35	16 52	0 28	1 32	4 23	1.3	17 30	2.7
35	6 26	17 1	0 26	1 26	4 25	1.5	17 25	2.6
30	6 18	17 9	0 25	1 22	4 28	1.6	17 21	2.5
20	6 4	17 23	0 23	1 15	4 32	1.7	17 15	2.3
10	5 52	17 35	0 22	1 12	4 36	1.9	17 9	2.2
0	5 40	17 47	0 22	1 12	4 40	2.0	17 3	2.1
10	5 29	17 59	0 22	1 14	4 44	2.2	16 58	1.9
20	5 16	18 11	0 23	1 19	4 48	2.4	16 52	1.8
30	5 2	18 26	0 26	1 28	4 52	2.5	16 45	1.6
35	4 53	18 35	0 27	1 35	4 55	2.6	16 41	1.5
40	4 43	18 44	0 30	1 45	4 58	2.8	16 37	1.4
45	4 32	18 56	0 33	2 0	5 2	2.9	16 32	1.2
50	4 18	19 10	0 37	2 25	5 6	3.1	16 26	1.1
55	4 1	19 28	0 44	3 25	5 11	3.3	16 19	.9
60	3 37	19 52	0 56	:::	5 18	3.6	16 9	.6
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	202	27.3	114	4	8.9	122	167	46.1	-19	21.5	129	21.4	-22	45.5		
2	231	28.1	114	4	33.4	122	197	49.9	-19	21.7	159	25.8	-22	45.5		
4	260	28.9	114	4	57.7	121	227	53.7	-19	22.0	189	30.3	-22	45.5		
6	289	29.7	114	5	21.9	120	257	57.5	-19	22.2	219	34.8	-22	45.5		
8	318	30.4	114	5	45.9	119	288	1.3	-19	22.5	249	39.2	-22	45.5		
10	347	31.2	114	6	9.8	119	318	5.0	-19	22.7	279	43.7	-22	45.5		
12	16	32.0	114	6	33.5	118	348	8.8	-19	23.0	309	48.1	-22	45.5		
14	45	32.7	114	6	57.1	117	18	12.6	-19	23.2	339	52.6	-22	45.5		
16	74	33.5	114	7	20.5	116	48	16.4	-19	23.4	9	57.0	-22	45.5		
18	103	34.2	113	7	43.7	115	78	20.2	-19	23.7	40	1.5	-22	45.5		
20	132	34.9	113	8	6.7	114	108	24.0	-19	23.9	70	5.9	-22	45.4		
22	161	35.5	113	8	29.5	113	138	27.8	-19	24.2	100	10.4	-22	45.4		
Δ								19		-1			22		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	P			

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S _☉		δ _☉		S _♊		S _♀		δ _♀		S _♂		δ _♂	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	184	5.4	-16	11.5	46	8.7	202	24.3	-13	50.4	78	31.4	-15	14.0
2	214	5.3	-16	13.0	76	13.7	232	30.6	-13	48.6	108	33.6	-15	12.8
4	244	5.3	-16	14.4	106	18.6	262	36.8	-13	46.7	138	35.7	-15	11.6
6	274	5.2	-16	15.9	136	23.5	292	43.1	-13	44.9	168	37.8	-15	10.5
8	304	5.1	-16	17.4	166	28.5	322	49.3	-13	43.0	198	40.0	-15	9.3
10	334	5.1	-16	18.9	196	33.4	352	55.5	-13	41.2	228	42.1	-15	8.1
12	4	5.0	-16	20.3	226	38.3	23	1.6	-13	39.3	258	44.2	-15	6.9
14	34	4.9	-16	21.8	256	43.2	53	7.8	-13	37.5	288	46.4	-15	5.7
16	64	4.8	-16	23.3	286	48.2	83	13.9	-13	35.7	318	48.5	-15	4.5
18	94	4.8	-16	24.7	316	53.1	113	20.1	-13	33.8	348	50.6	-15	3.3
20	124	4.7	-16	26.2	346	58.0	143	26.2	-13	32.0	378	52.7	-15	2.1
22	154	4.6	-16	27.7	17	3.0	173	32.3	-13	30.2	408	54.9	-15	.9
Δ		0		-7				31		9		11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 37	15 49	0 47	2 25	4 19	.7	19 24	3.4
55	7 16	16 11	0 39	2 5	4 31	.9	19 7	3.1
50	6 59	16 27	0 35	1 51	4 41	1.1	18 54	2.9
45	6 46	16 40	0 31	1 40	4 48	1.3	18 44	2.8
40	6 36	16 51	0 28	1 32	4 55	1.4	18 36	2.7
35	6 27	17 0	0 26	1 26	5 0	1.5	18 28	2.6
30	6 18	17 9	0 25	1 22	5 5	1.6	18 22	2.5
20	6 4	17 23	0 23	1 15	5 14	1.8	18 11	2.3
10	5 52	17 35	0 22	1 12	5 22	1.9	18 1	2.2
0	5 40	17 47	0 22	1 12	5 29	2.1	17 53	2.1
10	5 28	17 59	0 22	1 14	5 36	2.2	17 44	2.0
20	5 16	18 12	0 23	1 19	5 44	2.3	17 34	1.8
30	5 1	18 27	0 26	1 28	5 53	2.5	17 23	1.7
35	4 52	18 36	0 27	1 35	5 58	2.6	17 17	1.6
40	4 42	18 46	0 30	1 46	6 4	2.7	17 10	1.5
45	4 31	18 57	0 33	2 1	6 11	2.8	17 2	1.4
50	4 17	19 12	0 38	2 26	6 20	3.0	16 52	1.2
55	3 59	19 30	0 44	3 33	6 30	3.2	16 40	1.0
60	3 34	19 55	0 56	4 33	6 44	3.5	16 24	.8

UT	MESEC				JUPITER				SATURN					
	S _♄		Δ		δ _♄		Δ		S _♃		δ _♃		Δ	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	190	36.1	113	8	52.2	112	168	31.6	-19	24.4	130	14.8	-22	45.4
2	219	36.7	113	9	14.6	111	198	35.4	-19	24.6	160	19.3	-22	45.4
4	248	37.3	113	9	36.7	110	228	39.2	-19	24.9	190	23.7	-22	45.4
6	277	37.8	112	9	58.7	109	258	43.0	-19	25.1	220	28.2	-22	45.4
8	306	38.3	112	10	20.4	107	288	46.8	-19	25.4	250	32.6	-22	45.4
10	335	38.8	112	10	41.8	106	318	50.6	-19	25.6	280	37.1	-22	45.4
12	4	39.2	112	11	3.0	105	348	54.4	-19	25.8	310	41.5	-22	45.4
14	33	39.5	111	11	24.0	103	378	58.2	-19	26.1	340	46.0	-22	45.4
16	62	39.8	111	11	44.6	102	49	2.0	-19	26.3	370	50.4	-22	45.4
18	91	40.0	111	12	5.0	101	79	5.8	-19	26.6	40	54.9	-22	45.4
20	120	40.2	111	12	25.1	99	109	9.6	-19	26.8	70	59.3	-22	45.3
22	149	40.4	110	12	45.0	98	139	13.4	-19	27.0	101	63.7	-22	45.3
Δ								19		-1		22		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	16 21.6	-.1	16.2	T _m	11 41	2.0	57.6	15.7
12	16 19.8			T _{m☉}	11 h 43.7 min	Starost	28.8 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°	°	☾	h min	'	°	°
♂	10 28	.1	156	-6.7	♃	12 44	.0	122	-1.3
♂	18 45	.1	32	-1.0	♂	15 17	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S _☉		δ _☉		S _♊		S _♀		δ _♀		S _♂		δ _♂	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	184	4.5	-16	29.1	47	7.9	203	38.4	-13	28.4	78	57.0	-14	59.7
2	214	4.4	-16	30.6	77	12.8	233	44.4	-13	26.6	108	59.1	-14	58.5
4	244	4.4	-16	32.0	107	17.7	263	50.5	-13	24.8	139	1.2	-14	57.4
6	274	4.3	-16	33.5	137	22.7	293	56.5	-13	23.0	169	3.4	-14	56.2
8	304	4.2	-16	34.9	167	27.6	324	2.6	-13	21.2	199	5.5	-14	55.0
10	334	4.1	-16	36.4	197	32.5	354	8.6	-13	19.5	229	7.6	-14	53.8
12	4	4.0	-16	37.8	227	37.5	24	14.6	-13	17.7	259	9.7	-14	52.6
14	34	3.9	-16	39.3	257	42.4	54	20.6	-13	15.9	289	11.8	-14	51.4
16	64	3.8	-16	40.7	287	47.3	84	26.5	-13	14.2	319	14.0	-14	50.2
18	94	3.7	-16	42.2	317	52.2	114	32.5	-13	12.4	349	16.1	-14	49.0
20	124	3.6	-16	43.6	347	57.2	144	38.4	-13	10.7	379	18.2	-14	47.8
22	154	3.5	-16	45.1	18	2.1	174	44.3	-13	8.9	409	20.3	-14	46.6
Δ		0		-7				30		9		11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 40	15 47	0 47	2 26	4 35	.8	20 46	3.2
55	7 18	16 9	0 40	2 5	4 54	1.1	20 22	3.0
50	7 1	16 26	0 35	1 51	5 8	1.3	20 5	2.8
45	6 48	16 39	0 31	1 41	5 19	1.4	19 51	2.7
40	6 37	16 50	0 29	1 33	5 29	1.5	19 40	2.6
35	6 27	16 60	0 27	1 26	5 37	1.6	19 30	2.5
30	6 19	17 8	0 25	1 22	5 44	1.7	19 22	2.4
20	6 5	17 22	0 23	1 15	5 57	1.9	19 7	2.3
10	5 52	17 35	0 22	1 12	6 8	2.0	18 54	2.2
0	5 40	17 47	0 22	1 12	6 18	2.1	18 42	2.1
10	5 28	17 59	0 22	1 14	6 29	2.2	18 30	2.0
20	5 15	18 13	0 23	1 19	6 40	2.3	18 18	1.9
30	5 0	18 28	0 26	1 28	6 53	2.5	18 3	1.8
35	4 51	18 37	0 27	1 36	7 1	2.5	17 55	1.7
40	4 41	18 47	0 30	1 46	7 9	2.6	17 46	1.6
45	4 29	18 59	0 33	2 2	7 19	2.7	17 34	1.5
50	4 15	19 13	0 38	2 28	7 32	2.9	17 21	1.4
55	3 57	19 32	0 45	3 44	7 47	3.1	17 4	1.2
60	3 32	19 57	0 57	4 33	8 8	3.3	16 42	1.0

UT	MESEC				JUPITER				SATURN					
	S _♄		Δ		δ _♄		Δ		S _♃		δ _♃		Δ	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	178	40.5	110	13	4.5	96	169	17.2	-19	27.3	131	8.2	-22	45.3
2	207	40.5	110	13	23.7	95	199	21.0	-19	27.5	161	12.6	-22	45.3
4	236	40.5	110	13	42.6	93	229	24.8	-19	27.8	191	17.1	-22	45.3
6	265	40.4	109	14	1.2	91	259	28.6	-19	28.0	221	21.5	-22	45.3
8	294	40.3	109	14	19.5	90	289	32.4	-19	28.2	251	26.0	-22	45.3
10	323	40.1	109	14	37.5	88	319	36.2	-19	28.5	281	30.4	-22	45.3
12	352	39.8	108	14	55.1	86	349	39.9	-19	28.7	311	34.9	-22	45.3
14	21	39.5	108	15	12.4	85	379	43.7	-19	29.0	341	39.3	-22	45.3
16	50	39.1	108	15	29.3	83	49	47.5	-19	29.2	371	43.7	-22	45.2
18	79	38.7	108	15	45.9	81	79	51.3	-19	29.4	401	48.2	-22	45.2
20	108	38.3	107	16	2.2	79	109	55.1	-19	29.7	431	52.6	-22	45.2
22	137	37.7	107	16	18.1	78	139	58.9	-19	29.9	461	57.1	-22	45.2
Δ								19		-1		22		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	3.4	-16	46.5	48	7.0	204	50.2	-13	7.2	79	22.4	-14	45.4	
2	214	3.3	-16	47.9	78	12.0	234	56.1	-13	5.5	109	24.5	-14	44.2	
4	244	3.2	-16	49.4	108	16.9	265	2.0	-13	3.7	139	26.6	-14	43.0	
6	274	3.1	-16	50.8	138	21.8	295	7.8	-13	2.0	169	28.8	-14	41.7	
8	304	3.0	-16	52.2	168	26.7	325	13.7	-13	.3	199	30.9	-14	40.5	
10	334	2.9	-16	53.6	198	31.7	355	19.5	-12	58.6	229	33.0	-14	39.3	
12	4	2.8	-16	55.1	228	36.6	25	25.3	-12	56.9	259	35.1	-14	38.1	
14	34	2.7	-16	56.5	258	41.5	55	31.1	-12	55.2	289	37.2	-14	36.9	
16	64	2.6	-16	57.9	288	46.4	85	36.9	-12	53.6	319	39.3	-14	35.7	
18	94	2.5	-16	59.3	318	51.4	115	42.6	-12	51.9	349	41.4	-14	34.5	
20	124	2.4	-17	.7	348	56.3	145	48.4	-12	50.2	19	43.5	-14	33.3	
22	154	2.3	-17	2.2	19	1.2	175	54.1	-12	48.5	49	45.6	-14	32.1	
Δ		-1		-7				29		8			11		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 42	15 44	0 47	2 26	4 55	1.1	22 3	2.9
55	7 20	16 7	0 40	2 6	5 20	1.3	21 34	2.7
50	7 3	16 24	0 35	1 51	5 39	1.5	21 12	2.6
45	6 49	16 38	0 31	1 41	5 54	1.6	20 55	2.5
40	6 38	16 49	0 29	1 33	6 6	1.7	20 41	2.4
35	6 28	16 59	0 27	1 27	6 16	1.8	20 30	2.4
30	6 20	17 7	0 25	1 22	6 26	1.8	20 20	2.3
20	6 5	17 22	0 23	1 16	6 41	1.9	20 2	2.2
10	5 52	17 35	0 22	1 12	6 55	2.0	19 47	2.2
0	5 40	17 47	0 22	1 12	7 8	2.1	19 33	2.1
10	5 28	17 60	0 22	1 14	7 22	2.2	19 18	2.0
20	5 15	18 13	0 23	1 19	7 36	2.3	19 3	2.0
30	4 59	18 29	0 26	1 29	7 52	2.4	18 46	1.9
35	4 51	18 38	0 28	1 36	8 2	2.4	18 36	1.8
40	4 40	18 48	0 30	1 47	8 12	2.5	18 24	1.8
45	4 28	19 0	0 33	2 3	8 25	2.6	18 11	1.7
50	4 13	19 15	0 38	2 30	8 41	2.7	17 54	1.6
55	3 55	19 34	0 45	:::	9 1	2.8	17 33	1.5
60	3 29	20 0	0 58	:::	9 28	3.1	17 5	1.3
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	166	37.2	107	16	33.6	76	170	2.7	-19	30.2	132	1.5	-22	45.2	
2	195	36.5	107	16	48.7	74	200	6.5	-19	30.4	162	5.9	-22	45.2	
4	224	35.9	106	17	3.5	72	230	10.3	-19	30.6	192	10.4	-22	45.2	
6	253	35.1	106	17	17.9	70	260	14.1	-19	30.9	222	14.8	-22	45.2	
8	282	34.4	106	17	31.9	68	290	17.9	-19	31.1	252	19.3	-22	45.2	
10	311	33.6	106	17	45.6	66	320	21.7	-19	31.3	282	23.7	-22	45.2	
12	340	32.7	106	17	58.8	64	350	25.4	-19	31.6	312	28.1	-22	45.2	
14	9	31.9	105	18	11.6	62	20	29.2	-19	31.8	342	32.6	-22	45.1	
16	38	30.9	105	18	24.1	60	50	33.0	-19	32.1	12	37.0	-22	45.1	
18	67	30.0	105	18	36.2	58	80	36.8	-19	32.3	42	41.4	-22	45.1	
20	96	29.0	105	18	47.8	56	110	40.6	-19	32.5	72	45.9	-22	45.1	
22	125	28.0	105	18	59.1	54	140	44.4	-19	32.8	102	50.3	-22	45.1	
Δ								19		-1			22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	16	13.7	- .2	16.2	T _m	13 21	2.1	56.4	15.4
12	16	11.1	T _{m☉}	11 h 43.8 min	Starost	1.3 d	Faza	●	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 19	.1	157	-6.7	♄	12 38	.0	122	-1.3
♂	18 41	.1	31	- .9	♂	15 10	.0	84	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	184	2.1	-17	3.6	49	6.2	205	59.8	-12	46.9	79	47.7	-14	30.9	
2	214	2.0	-17	5.0	79	11.1	236	5.5	-12	45.2	109	49.8	-14	29.7	
4	244	1.9	-17	6.4	109	16.0	266	11.2	-12	43.6	139	51.9	-14	28.4	
6	274	1.8	-17	7.8	139	20.9	296	16.9	-12	42.0	169	54.0	-14	27.2	
8	304	1.7	-17	9.2	169	25.9	326	22.5	-12	40.3	199	56.1	-14	26.0	
10	334	1.5	-17	10.6	199	30.8	356	28.2	-12	38.7	229	58.2	-14	24.8	
12	4	1.4	-17	12.0	229	35.7	26	33.8	-12	37.1	260	.3	-14	23.6	
14	34	1.3	-17	13.4	259	40.7	56	39.4	-12	35.5	290	2.4	-14	22.4	
16	64	1.2	-17	14.8	289	45.6	86	45.0	-12	33.9	320	4.5	-14	21.2	
18	94	1.0	-17	16.2	319	50.5	116	50.6	-12	32.3	350	6.6	-14	19.9	
20	124	.9	-17	17.6	349	55.4	146	56.1	-12	30.7	20	8.7	-14	18.7	
22	154	.8	-17	19.0	20	.4	177	1.7	-12	29.1	50	10.8	-14	17.5	
Δ		-1		-7				28		8			10		6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 45	15 42	0 47	2 27	5 22	1.5	23 12	2.4
55	7 22	16 5	0 40	2 6	5 52	1.6	22 38	2.3
50	7 4	16 23	0 35	1 52	6 15	1.7	22 14	2.3
45	6 51	16 37	0 31	1 41	6 32	1.8	21 55	2.2
40	6 39	16 48	0 29	1 33	6 47	1.9	21 39	2.2
35	6 29	16 58	0 27	1 27	6 59	1.9	21 26	2.2
30	6 21	17 7	0 25	1 22	7 9	1.9	21 15	2.2
20	6 6	17 22	0 23	1 16	7 28	2.0	20 56	2.1
10	5 53	17 35	0 22	1 13	7 44	2.1	20 39	2.1
0	5 40	17 47	0 22	1 12	7 59	2.1	20 23	2.1
10	5 28	18 0	0 22	1 14	8 14	2.1	20 7	2.1
20	5 14	18 14	0 23	1 19	8 30	2.2	19 51	2.0
30	4 59	18 29	0 26	1 29	8 49	2.3	19 31	2.0
35	4 50	18 39	0 28	1 37	8 60	2.3	19 20	2.0
40	4 39	18 49	0 30	1 47	9 12	2.3	19 7	2.0
45	4 27	19 2	0 33	2 3	9 27	2.4	18 52	1.9
50	4 12	19 17	0 38	2 31	9 45	2.4	18 33	1.9
55	3 53	19 36	0 45	:::	10 9	2.5	18 9	1.8
60	3 27	20 3	0 58	:::	10 42	2.6	17 36	1.7
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	154	27.0	105	19	9.9	52	170	48.2	-19	33.0	132	54.7	-22	45.1	
2	183	26.0	105	19	20.3	50	200	52.0	-19	33.2	162	59.2	-22	45.1	
4	212	24.9	105	19	30.3	48	230	55.8	-19	33.5	193	3.6	-22	45.1	
6	241	23.9	105	19	39.9	46	260	59.5	-19	33.7	223	8.0	-22	45.1	
8	270	22.8	105	19	49.1	44	291	3.3	-19	34.0	253	12.5	-22	45.0	
10	299	21.8	105	19	57.9	42	321	7.1	-19	34.2	283	16.9	-22	45.0	
12	328	20.7	105	20	6.2	40	351	10.9	-19	34.4	313	21.3	-22	45.0	
14	357	19.6	105	20	14.1	37	21	14.7	-19	34.7	343	25.8	-22	45.0	
16	26	18.6	105	20	21.6	35	51	18.5	-19	34.9	13	30.2	-22	45.0	
18	55	17.6	105	20	28.7	33	81	22.3	-19	35.1	43	34.6	-22	45.0	
20	84	16.5	105	20	35.4	31	111	26.1	-19	35.4	73	39.1	-22	45.0	
22	113	15.6	105	20	41.6	29	141	29.8	-19	35.6	103	43.5	-22	45.0	
Δ								19		-1			22		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	184	.6	-17	20.4	207	7.2	-12	27.5	80	12.9	-14	16.3		
2	214	.5	-17	21.8	237	12.7	-12	26.0	110	15.0	-14	15.1		
4	244	.4	-17	23.1	267	18.2	-12	24.4	140	17.1	-14	13.8		
6	274	.2	-17	24.5	297	23.7	-12	22.9	170	19.2	-14	12.6		
8	304	.1	-17	25.9	327	29.1	-12	21.3	200	21.3	-14	11.4		
10	333	59.9	-17	27.3	357	34.6	-12	19.8	230	23.4	-14	10.2		
12	3	59.8	-17	28.7	230	34.9	27	40.0	-12	18.2	260	25.5	-14	8.9
14	33	59.7	-17	30.0	260	39.8	57	45.4	-12	16.7	290	27.6	-14	7.7
16	63	59.5	-17	31.4	290	44.7	87	50.8	-12	15.2	320	29.6	-14	6.5
18	93	59.4	-17	32.8	320	49.7	117	56.2	-12	13.7	350	31.7	-14	5.3
20	123	59.2	-17	34.1	350	54.6	148	1.6	-12	12.2	20	33.8	-14	4.0
22	153	59.1	-17	35.5	20	59.5	178	6.9	-12	10.7	50	35.9	-14	2.8
Δ		-1		-7			27		8		10			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 48	15 40	0 48	2 27	5 57	1.9	.. .	.0
55	7 24	16 4	0 40	2 6	6 32	2.0	23 34	1.9
50	7 6	16 21	0 35	1 52	6 57	2.0	23 8	2.0
45	6 52	16 36	0 31	1 41	7 16	2.0	22 49	2.0
40	6 40	16 47	0 29	1 33	7 31	2.0	22 33	2.0
35	6 30	16 57	0 27	1 27	7 45	2.0	22 19	2.0
30	6 22	17 6	0 25	1 22	7 56	2.0	22 8	2.0
20	6 6	17 21	0 23	1 16	8 16	2.1	21 47	2.0
10	5 53	17 35	0 22	1 13	8 33	2.1	21 30	2.0
0	5 40	17 48	0 22	1 12	8 49	2.1	21 14	2.1
10	5 28	18 0	0 22	1 14	9 6	2.1	20 57	2.1
20	5 14	18 14	0 23	1 19	9 23	2.1	20 40	2.1
30	4 58	18 30	0 26	1 29	9 43	2.1	20 19	2.1
35	4 49	18 40	0 28	1 37	9 55	2.1	20 8	2.1
40	4 38	18 50	0 30	1 48	10 8	2.1	19 54	2.1
45	4 26	19 3	0 34	2 4	10 24	2.1	19 38	2.1
50	4 10	19 19	0 38	2 33	10 44	2.1	19 18	2.1
55	3 51	19 38	0 46	:::	11 9	2.1	18 53	2.1
60	3 24	20 6	0 59	:::	11 45	2.1	18 16	2.2
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	142	14.6	105	20	47.4	27	171	33.6	-19	35.8	133	47.9	-22	45.0
2	171	13.7	106	20	52.7	25	201	37.4	-19	36.1	163	52.3	-22	44.9
4	200	12.8	106	20	57.7	23	231	41.2	-19	36.3	193	56.8	-22	44.9
6	229	11.9	106	21	2.2	20	261	45.0	-19	36.6	224	1.2	-22	44.9
8	258	11.1	106	21	6.3	18	291	48.8	-19	36.8	254	5.6	-22	44.9
10	287	10.4	107	21	9.9	16	321	52.5	-19	37.0	284	10.1	-22	44.9
12	316	9.7	107	21	13.2	14	351	56.3	-19	37.3	314	14.5	-22	44.9
14	345	9.0	107	21	16.0	12	22	.1	-19	37.5	344	18.9	-22	44.9
16	14	8.5	107	21	18.3	10	52	3.9	-19	37.7	14	23.3	-22	44.9
18	43	8.0	108	21	20.3	8	82	7.7	-19	38.0	44	27.8	-22	44.9
20	72	7.5	108	21	21.8	6	112	11.5	-19	38.2	74	32.2	-22	44.8
22	101	7.2	109	21	22.9	3	142	15.3	-19	38.4	104	36.6	-22	44.8
Δ							19		-1		22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	16	2.5	- .3	16.2	T _m	15 1	2.1	55.3	15.1
12	15	59.1	T _{m☉}	11 h 44.0 min	Starost	3.3 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	10 10	.1	157	-6.6	♄	12 32	.0	121	-1.3
	18 38	.1	30	- .9	♅	15 3	.0	84	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	183	58.9	-17	36.9	208	12.3	-12	9.2	80	38.0	-14	1.6		
2	213	58.8	-17	38.2	238	17.6	-12	7.7	110	40.1	-14	.3		
4	243	58.6	-17	39.6	268	22.9	-12	6.3	140	42.2	-13	59.1		
6	273	58.5	-17	40.9	298	28.2	-12	4.8	170	44.2	-13	57.9		
8	303	58.3	-17	42.3	328	33.5	-12	3.3	200	46.3	-13	56.6		
10	333	58.1	-17	43.6	358	38.7	-12	1.9	230	48.4	-13	55.4		
12	3	58.0	-17	45.0	231	34.0	28	44.0	-12	.5	260	50.5	-13	54.2
14	33	57.8	-17	46.3	261	38.9	58	49.2	-11	59.0	290	52.6	-13	52.9
16	63	57.7	-17	47.7	291	43.9	88	54.4	-11	57.6	320	54.7	-13	51.7
18	93	57.5	-17	49.0	321	48.8	118	59.6	-11	56.2	350	56.7	-13	50.5
20	123	57.3	-17	50.4	351	53.7	149	4.8	-11	54.8	20	58.8	-13	49.2
22	153	57.2	-17	51.7	21	58.7	179	10.0	-11	53.4	51	.9	-13	48.0
Δ		-1		-7			26		7		10			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 50	15 37	0 48	2 28	6 43	2.4	0 10	1.9
55	7 26	16 2	0 40	2 7	7 19	2.3	.. .	.0
50	7 8	16 20	0 35	1 52	7 45	2.2	23 55	1.6
45	6 53	16 34	0 31	1 41	8 4	2.2	23 36	1.7
40	6 41	16 46	0 29	1 33	8 20	2.2	23 21	1.8
35	6 31	16 57	0 27	1 27	8 34	2.1	23 7	1.8
30	6 22	17 6	0 25	1 22	8 45	2.1	22 56	1.8
20	6 7	17 21	0 23	1 16	9 5	2.1	22 36	1.9
10	5 53	17 35	0 22	1 13	9 23	2.1	22 19	2.0
0	5 41	17 48	0 22	1 12	9 39	2.0	22 3	2.0
10	5 28	18 1	0 22	1 14	9 56	2.0	21 47	2.1
20	5 14	18 15	0 23	1 20	10 13	2.0	21 30	2.1
30	4 58	18 31	0 26	1 30	10 33	1.9	21 10	2.2
35	4 48	18 41	0 28	1 37	10 45	1.9	20 58	2.2
40	4 37	18 52	0 30	1 48	10 59	1.9	20 45	2.2
45	4 25	19 4	0 34	2 5	11 15	1.8	20 29	2.3
50	4 9	19 20	0 39	2 35	11 34	1.8	20 9	2.3
55	3 49	19 41	0 46	:::	11 60	1.7	19 44	2.4
60	3 22	20 8	1 0	:::	12 36	1.6	19 8	2.6
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	130	6.9	109	21	23.6	1	172	19.0	-19	38.7	134	41.0	-22	44.8
2	159	6.7	110	21	23.9	-1	202	22.8	-19	38.9	164	45.5	-22	44.8
4	188	6.6	110	21	23.8	-3	232	26.6	-19	39.1	194	49.9	-22	44.8
6	217	6.6	110	21	23.2	-5	262	30.4	-19	39.4	224	54.3	-22	44.8
8	246	6.7	111	21	22.2	-7	292	34.2	-19	39.6	254	58.7	-22	44.8
10	275	6.9	111	21	20.8	-9	322	38.0	-19	39.9	285	3.1	-22	44.8
12	304	7.2	112	21	19.0	-11	352	41.7	-19	40.1	315	7.6	-22	44.8
14	333	7.6	113	21	16.8	-13	22	45.5	-19	40.3	345	12.0	-22	44.7
16	2	8.1	113	21	14.2	-15	52	49.3	-19	40.6	15	16.4	-22	44.7
18	31	8.8	114	21	11.2	-17	82	53.1	-19	40.8	45	20.8	-22	44.7
20	60	9.5	114	21	7.8	-19	112	56.9	-19	41.0	75	25.2	-22	44.7
22	89	10.4	115	21	4.0	-21	143	.6	-19	41.3	105	29.7	-22	44.7
Δ							19		-1		22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	15	55.7	- .3	16.2	T _m	15 51	2.0	54.8	14.9
12	15	51.8	T _{m☉}	11 h 44.1 min	Starost	4.3 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°</	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 57.0	-17 53.1	52 3.6	209 15.1	-11 52.0	81 3.0	-13 46.8
2	213 56.8	-17 54.4	82 8.5	239 20.2	-11 50.6	111 5.1	-13 45.5
4	243 56.6	-17 55.7	112 13.4	269 25.4	-11 49.2	141 7.1	-13 44.3
6	273 56.5	-17 57.1	142 18.4	299 30.5	-11 47.8	171 9.2	-13 43.0
8	303 56.3	-17 58.4	172 23.3	329 35.5	-11 46.5	201 11.3	-13 41.8
10	333 56.1	-17 59.7	202 28.2	359 40.6	-11 45.1	231 13.4	-13 40.6
12	3 55.9	-18 1.0	232 33.1	29 45.7	-11 43.7	261 15.4	-13 39.3
14	33 55.8	-18 2.4	262 38.1	59 50.7	-11 42.4	291 17.5	-13 38.1
16	63 55.6	-18 3.7	292 43.0	89 55.7	-11 41.1	321 19.6	-13 36.8
18	93 55.4	-18 5.0	322 47.9	120 .7	-11 39.7	351 21.6	-13 35.6
20	123 55.2	-18 6.3	352 52.9	150 5.7	-11 38.4	21 23.7	-13 34.3
22	153 55.0	-18 7.6	22 57.8	180 10.7	-11 37.1	51 25.8	-13 33.1
Δ	-1	-7		25	7	10	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 53	15 35	0 48	2 29	7 40	2.7	0 54	1.4
55	7 28	16 0	0 41	2 7	8 14	2.5	0 20	1.5
50	7 9	16 19	0 35	1 52	8 38	2.4	...	.0
45	6 55	16 33	0 32	1 42	8 57	2.3	...	.0
40	6 43	16 45	0 29	1 33	9 12	2.3	...	.0
35	6 32	16 56	0 27	1 27	9 25	2.2	23 51	1.6
30	6 23	17 5	0 25	1 22	9 36	2.2	23 40	1.7
20	6 8	17 21	0 23	1 16	9 56	2.1	23 22	1.8
10	5 54	17 35	0 22	1 13	10 12	2.0	23 6	1.9
0	5 41	17 48	0 22	1 12	10 28	2.0	22 51	1.9
10	5 28	18 1	0 22	1 14	10 44	1.9	22 36	2.0
20	5 13	18 15	0 24	1 20	11 0	1.8	22 20	2.1
30	4 57	18 32	0 26	1 30	11 20	1.8	22 2	2.2
35	4 47	18 42	0 28	1 38	11 31	1.7	21 51	2.3
40	4 36	18 53	0 30	1 49	11 44	1.7	21 38	2.3
45	4 23	19 6	0 34	2 6	11 59	1.6	21 23	2.4
50	4 8	19 22	0 39	2 37	12 17	1.5	21 5	2.5
55	3 47	19 43	0 47	:::	12 41	1.4	20 42	2.6
60	3 19	20 11	1 1	:::	13 14	1.2	20 10	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	118 11.4	116	20 59.8	-23	173 4.4	-19 41.5	135 34.1	-22 44.7
2	147 12.5	116	20 55.2	-25	203 8.2	-19 41.7	165 38.5	-22 44.7
4	176 13.7	117	20 50.2	-27	233 12.0	-19 42.0	195 42.9	-22 44.7
6	205 15.1	118	20 44.9	-29	263 15.8	-19 42.2	225 47.3	-22 44.6
8	234 16.6	118	20 39.1	-31	293 19.5	-19 42.4	255 51.7	-22 44.6
10	263 18.3	119	20 33.0	-33	323 23.3	-19 42.7	285 56.2	-22 44.6
12	292 20.1	120	20 26.5	-34	353 27.1	-19 42.9	316 .6	-22 44.6
14	321 22.0	120	20 19.6	-36	23 30.9	-19 43.1	346 5.0	-22 44.6
16	350 24.0	121	20 12.3	-38	53 34.7	-19 43.4	16 9.4	-22 44.6
18	19 26.2	122	20 4.7	-40	83 38.4	-19 43.6	46 13.8	-22 44.6
20	48 28.6	122	19 56.7	-42	113 42.2	-19 43.8	76 18.2	-22 44.6
22	77 31.0	123	19 48.4	-43	143 46.0	-19 44.1	106 22.7	-22 44.5
Δ					19	-1	22	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	15 48.0	.4	16.2	T _m	16 40	2.0	54.5 14.8
12	15 43.7			T _m ☉	11 h 44.3 min	Starost	5.3 d Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	°	♃	h min	'	°	°
♂	10 1	.1	157	-6.5	♃	12 26	.0	121	-1.3
♂	18 35	.1	29	-8	♄	14 56	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 54.9	-18 8.9	53 2.7	210 15.7	-11 35.8	81 27.9	-13 31.9
2	213 54.7	-18 10.2	83 7.6	240 20.6	-11 34.5	111 29.9	-13 30.6
4	243 54.5	-18 11.6	113 12.6	270 25.5	-11 33.2	141 32.0	-13 29.4
6	273 54.3	-18 12.9	143 17.5	300 30.5	-11 31.9	171 34.1	-13 28.1
8	303 54.1	-18 14.2	173 22.4	330 35.4	-11 30.7	201 36.1	-13 26.9
10	333 53.9	-18 15.5	203 27.4	0 40.2	-11 29.4	231 38.2	-13 25.6
12	3 53.7	-18 16.8	233 32.3	30 45.1	-11 28.2	261 40.3	-13 24.4
14	33 53.5	-18 18.1	263 37.2	60 50.0	-11 26.9	291 42.3	-13 23.1
16	63 53.3	-18 19.3	293 42.1	90 54.8	-11 25.7	321 44.4	-13 21.9
18	93 53.1	-18 20.6	323 47.1	120 59.6	-11 24.4	351 46.5	-13 20.6
20	123 52.9	-18 21.9	353 52.0	151 4.4	-11 23.2	21 48.5	-13 19.4
22	153 52.7	-18 23.2	23 56.9	181 9.2	-11 22.0	51 50.6	-13 18.1
Δ	-1	-6		24	6	10	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 55	15 33	0 49	2 29	8 45	2.9	1 28	1.0
55	7 30	15 58	0 41	2 8	9 15	2.7	0 57	1.2
50	7 11	16 17	0 35	1 53	9 36	2.6	0 35	1.4
45	6 56	16 32	0 32	1 42	9 53	2.4	0 17	1.5
40	6 44	16 45	0 29	1 34	10 7	2.3	0 3	1.6
35	6 33	16 55	0 27	1 27	10 19	2.3	...	.0
30	6 24	17 4	0 25	1 23	10 29	2.2	...	.0
20	6 8	17 21	0 23	1 16	10 46	2.1	...	.0
10	5 54	17 35	0 22	1 13	11 1	2.0	23 51	1.8
0	5 41	17 48	0 22	1 12	11 15	1.9	23 38	1.9
10	5 28	18 1	0 22	1 15	11 30	1.8	23 25	2.0
20	5 13	18 16	0 24	1 20	11 45	1.7	23 11	2.1
30	4 56	18 33	0 26	1 30	12 2	1.6	22 54	2.2
35	4 47	18 43	0 28	1 38	12 12	1.6	22 45	2.3
40	4 36	18 54	0 30	1 49	12 24	1.5	22 34	2.4
45	4 22	19 7	0 34	2 7	12 37	1.4	22 21	2.5
50	4 6	19 24	0 39	2 39	12 53	1.3	22 5	2.6
55	3 45	19 45	0 47	:::	13 14	1.1	21 45	2.8
60	3 17	20 14	1 2	:::	13 42	.9	21 18	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	106 33.7	124	19 39.7	-45	173 49.8	-19 44.3	136 27.1	-22 44.5
2	135 36.4	125	19 30.7	-47	203 53.6	-19 44.5	166 31.5	-22 44.5
4	164 39.3	125	19 21.3	-49	233 57.3	-19 44.8	196 35.9	-22 44.5
6	193 42.4	126	19 11.5	-50	264 1.1	-19 45.0	226 40.3	-22 44.5
8	222 45.6	127	19 1.4	-52	294 4.9	-19 45.2	256 44.7	-22 44.5
10	251 48.9	127	18 51.0	-54	324 8.7	-19 45.4	286 49.1	-22 44.5
12	280 52.4	128	18 40.2	-55	354 12.4	-19 45.7	316 53.5	-22 44.5
14	309 56.0	129	18 29.2	-57	24 16.2	-19 45.9	346 57.9	-22 44.4
16	338 59.8	130	18 17.8	-59	54 20.0	-19 46.1	17 2.4	-22 44.4
18	8 3.7	130	18 6.0	-60	84 23.8	-19 46.4	47 6.8	-22 44.4
20	37 7.7	131	17 54.0	-62	114 27.6	-19 46.6	77 11.2	-22 44.4
22	66 11.9	132	17 41.6	-63	144 31.3	-19 46.8	107 15.6	-22 44.4
Δ					19	-1	22	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	15 39.4	.4	16.2	T _m	17 27	1.9	54.3 14.8
12	15 34.7			T _m ☉	11 h 44.4 min	Starost	6.3 d Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♃	h min	'	°	°	♃	h min	'	°	°
♂	9 57	.1	157	-6.5	♃	12 23	.0	121	-1.3
♂	18 33	.1	28	-8	♄	14 52	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	183 52.5	-18 24.5	54 1.9	211 14.0	-11 20.8	81 52.6	-13 16.8
2	213 52.3	-18 25.8	84 6.8	241 18.7	-11 19.6	111 54.7	-13 15.6
4	243 52.1	-18 27.1	114 11.7	271 23.5	-11 18.4	141 56.8	-13 14.3
6	273 51.9	-18 28.3	144 16.6	301 28.2	-11 17.2	171 58.8	-13 13.1
8	303 51.7	-18 29.6	174 21.6	331 32.9	-11 16.0	202 .9	-13 11.8
10	333 51.5	-18 30.9	204 26.5	1 37.6	-11 14.9	232 2.9	-13 10.6
12	3 51.3	-18 32.2	234 31.4	31 42.3	-11 13.7	262 5.0	-13 9.3
14	33 51.1	-18 33.4	264 36.4	61 47.0	-11 12.6	292 7.1	-13 8.0
16	63 50.8	-18 34.7	294 41.3	91 51.6	-11 11.4	322 9.1	-13 6.8
18	93 50.6	-18 36.0	324 46.2	121 56.3	-11 10.3	352 11.2	-13 5.5
20	123 50.4	-18 37.2	354 51.1	152 .9	-11 9.2	22 13.2	-13 4.3
22	153 50.2	-18 38.5	24 56.1	182 5.5	-11 8.0	52 15.3	-13 3.0
Δ	-1	-6		23	6	10	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	7 58	15 31	0 49	2 30	9 56	3.1	1 52	.8
55	7 32	15 57	0 41	2 8	10 20	2.8	1 27	1.0
50	7 13	16 16	0 36	1 53	10 38	2.6	1 8	1.2
45	6 57	16 31	0 32	1 42	10 52	2.5	0 53	1.3
40	6 45	16 44	0 29	1 34	11 3	2.4	0 41	1.4
35	6 34	16 55	0 27	1 27	11 13	2.3	0 30	1.5
30	6 25	17 4	0 25	1 23	11 22	2.2	0 21	1.6
20	6 9	17 20	0 23	1 16	11 36	2.1	0 5	1.7
10	5 54	17 35	0 22	1 13	11 49	2.0	...	.0
0	5 41	17 48	0 22	1 13	12 1	1.9	...	.0
10	5 27	18 2	0 22	1 15	12 13	1.8	...	.0
20	5 13	18 17	0 24	1 20	12 26	1.6	...	.0
30	4 56	18 34	0 26	1 30	12 41	1.5	23 47	2.2
35	4 46	18 44	0 28	1 38	12 49	1.4	23 40	2.3
40	4 35	18 55	0 31	1 50	12 59	1.3	23 31	2.4
45	4 21	19 9	0 34	2 8	13 10	1.2	23 20	2.5
50	4 5	19 25	0 39	2 41	13 24	1.1	23 8	2.7
55	3 44	19 47	0 47	:::	13 41	.9	22 52	2.9
60	3 15	20 16	1 3	:::	14 3	.7	22 30	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	95 16.2	132	17 28.9	-65	174 35.1	-19 47.1	137 20.0	-22 44.4
2	124 20.7	133	17 15.9	-66	204 38.9	-19 47.3	167 24.4	-22 44.4
4	153 25.3	134	17 2.6	-68	234 42.7	-19 47.5	197 28.8	-22 44.3
6	182 30.0	134	16 49.0	-69	264 46.4	-19 47.8	227 33.2	-22 44.3
8	211 34.8	135	16 35.2	-71	294 50.2	-19 48.0	257 37.6	-22 44.3
10	240 39.8	135	16 21.0	-72	324 54.0	-19 48.2	287 42.0	-22 44.3
12	269 44.9	136	16 6.5	-74	354 57.8	-19 48.5	317 46.4	-22 44.3
14	298 50.1	137	15 51.8	-75	25 1.5	-19 48.7	347 50.8	-22 44.3
16	327 55.4	137	15 36.8	-77	55 5.3	-19 48.9	17 55.2	-22 44.3
18	357 .8	138	15 21.5	-78	85 9.1	-19 49.1	47 59.7	-22 44.3
20	26 6.4	138	15 5.9	-79	115 12.9	-19 49.4	78 4.1	-22 44.2
22	55 12.0	139	14 50.0	-81	145 16.6	-19 49.6	108 8.5	-22 44.2
Δ					19	-1	22	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	15 30.1	-.4	16.2	T _m	18 12	1.9	54.2 14.8
12	15 25.0			T _{m☉}	11 h 44.6 min	Starost	7.3 d Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♀	9 54	.1	157	-6.5	♃	12 20	.0	121	-1.3
♂	18 31	.1	28	-.8	♄	14 48	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	183 50.0	-18 39.7	55 1.0	212 10.1	-11 6.9	82 17.3	-13 1.7
2	213 49.7	-18 41.0	85 5.9	242 14.7	-11 5.8	112 19.4	-13 .5
4	243 49.5	-18 42.2	115 10.9	272 19.2	-11 4.7	142 21.5	-12 59.2
6	273 49.3	-18 43.5	145 15.8	302 23.8	-11 3.6	172 23.5	-12 58.0
8	303 49.1	-18 44.7	175 20.7	332 28.3	-11 2.6	202 25.6	-12 56.7
10	333 48.8	-18 46.0	205 25.6	2 32.8	-11 1.5	232 27.6	-12 55.4
12	3 48.6	-18 47.2	235 30.6	32 37.3	-11 .4	262 29.7	-12 54.2
14	33 48.4	-18 48.5	265 35.5	62 41.8	-10 59.4	292 31.7	-12 52.9
16	63 48.2	-18 49.7	295 40.4	92 46.3	-10 58.3	322 33.8	-12 51.6
18	93 47.9	-18 50.9	325 45.3	122 50.7	-10 57.3	352 35.8	-12 50.4
20	123 47.7	-18 52.2	355 50.3	152 55.2	-10 56.3	22 37.9	-12 49.1
22	153 47.5	-18 53.4	25 55.2	182 59.6	-10 55.2	52 39.9	-12 47.8
Δ	-1	-6		22	5	10	6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 0	15 29	0 49	2 30	11 10	3.1	2 11	.6
55	7 34	15 55	0 41	2 8	11 27	2.9	1 51	.9
50	7 14	16 15	0 36	1 53	11 41	2.7	1 36	1.0
45	6 59	16 30	0 32	1 42	11 52	2.6	1 24	1.2
40	6 46	16 43	0 29	1 34	12 1	2.4	1 14	1.3
35	6 35	16 54	0 27	1 28	12 8	2.3	1 6	1.4
30	6 26	17 3	0 25	1 23	12 15	2.2	0 58	1.5
20	6 9	17 20	0 23	1 16	12 27	2.1	0 45	1.6
10	5 55	17 35	0 22	1 13	12 37	2.0	0 34	1.7
0	5 41	17 48	0 22	1 13	12 46	1.8	0 23	1.8
10	5 27	18 2	0 22	1 15	12 56	1.7	0 12	2.0
20	5 13	18 17	0 24	1 20	13 6	1.6	0 1	2.1
30	4 55	18 34	0 26	1 31	13 17	1.4	...	.0
35	4 45	18 45	0 28	1 39	13 24	1.3	...	.0
40	4 34	18 56	0 31	1 51	13 31	1.2	...	.0
45	4 20	19 10	0 34	2 9	13 40	1.1	...	.0
50	4 3	19 27	0 39	2 43	13 50	1.0	...	.0
55	3 42	19 49	0 48	:::	14 3	.8	...	.0
60	3 12	20 19	1 4	:::	14 20	.6	23 45	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	84 17.8	139	14 33.9	-82	175 20.4	-19 49.8	138 12.9	-22 44.2
2	113 23.7	140	14 17.6	-83	205 24.2	-19 50.1	168 17.3	-22 44.2
4	142 29.6	140	14 .9	-84	235 28.0	-19 50.3	198 21.7	-22 44.2
6	171 35.7	141	13 44.1	-86	265 31.7	-19 50.5	228 26.1	-22 44.2
8	200 41.8	141	13 27.0	-87	295 35.5	-19 50.7	258 30.5	-22 44.2
10	229 48.0	142	13 9.6	-88	325 39.3	-19 51.0	288 34.9	-22 44.1
12	258 54.4	142	12 52.0	-89	355 43.1	-19 51.2	318 39.3	-22 44.1
14	288 .7	142	12 34.2	-90	25 46.8	-19 51.4	348 43.7	-22 44.1
16	317 7.2	143	12 16.1	-91	55 50.6	-19 51.7	18 48.1	-22 44.1
18	346 13.7	143	11 57.8	-93	85 54.4	-19 51.9	48 52.5	-22 44.1
20	15 20.3	143	11 39.3	-94	115 58.2	-19 52.1	78 56.9	-22 44.1
22	44 27.0	144	11 20.5	-95	146 1.9	-19 52.4	109 1.3	-22 44.1
Δ					19	-1	22	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	15 19.9	-.5	16.2	T _m	18 57	1.8	54.4 14.8
12	15 14.4			T _{m☉}	11 h 44.8 min	Starost	8.3 d Faza ☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♀	9 50	.1	157	-6.4	♃	12 17	.0	120	-1.3
♂	18 30	.1	27	-.8	♄	14 45	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	47.2	-18	54.6	56	.1	213	4.0	-10	54.2	82	42.0	-12	46.5	
2	213	47.0	-18	55.9	86	5.1	243	8.4	-10	53.2	112	44.0	-12	45.3	
4	243	46.7	-18	57.1	116	10.0	273	12.8	-10	52.2	142	46.1	-12	44.0	
6	273	46.5	-18	58.3	146	14.9	303	17.1	-10	51.2	172	48.1	-12	42.7	
8	303	46.3	-18	59.5	176	19.8	333	21.5	-10	50.2	202	50.1	-12	41.5	
10	333	46.0	-19	.7	206	24.8	3	25.8	-10	49.3	232	52.2	-12	40.2	
12	3	45.8	-19	2.0	236	29.7	33	30.2	-10	48.3	262	54.2	-12	38.9	
14	33	45.5	-19	3.2	266	34.6	63	34.5	-10	47.4	292	56.3	-12	37.6	
16	63	45.3	-19	4.4	296	39.6	93	38.8	-10	46.4	322	58.3	-12	36.4	
18	93	45.0	-19	5.6	326	44.5	123	43.0	-10	45.5	353	.4	-12	35.1	
20	123	44.8	-19	6.8	356	49.4	153	47.3	-10	44.5	23	2.4	-12	33.8	
22	153	44.5	-19	8.0	26	54.3	183	51.5	-10	43.6	53	4.5	-12	32.5	
Δ		-1		-6				22		5		10			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 3	15 27	0 50	2 31	12 25	3.2	2 25	.5
55	7 36	15 54	0 41	2 9	12 37	3.0	2 12	.8
50	7 16	16 14	0 36	1 53	12 46	2.8	2 1	.9
45	7 0	16 29	0 32	1 42	12 53	2.6	1 52	1.1
40	6 47	16 42	0 29	1 34	12 59	2.5	1 45	1.2
35	6 36	16 53	0 27	1 28	13 4	2.4	1 39	1.3
30	6 27	17 3	0 25	1 23	13 9	2.3	1 33	1.4
20	6 10	17 20	0 23	1 16	13 17	2.1	1 24	1.6
10	5 55	17 35	0 22	1 13	13 24	2.0	1 15	1.7
0	5 41	17 49	0 22	1 13	13 30	1.8	1 7	1.8
10	5 27	18 3	0 22	1 15	13 37	1.7	0 59	2.0
20	5 12	18 18	0 24	1 20	13 43	1.5	0 51	2.1
30	4 55	18 35	0 26	1 31	13 51	1.4	0 41	2.3
35	4 45	18 46	0 28	1 39	13 56	1.3	0 35	2.3
40	4 33	18 57	0 31	1 51	14 1	1.2	0 29	2.5
45	4 19	19 11	0 34	2 10	14 7	1.1	0 21	2.6
50	4 2	19 29	0 40	2 46	14 13	.9	0 12	2.7
55	3 40	19 51	0 48	:::	14 22	.7	0 1	2.9
60	3 10	20 22	1 5	:::	14 33	.5	...	3.0
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	73	33.7	144	11	1.6	-96	176	5.7	-19	52.6	139	5.7	-22	44.0
2	102	40.4	144	10	42.4	-97	206	9.5	-19	52.8	169	10.1	-22	44.0
4	131	47.2	144	10	23.0	-98	236	13.2	-19	53.0	199	14.5	-22	44.0
6	160	54.1	144	10	3.5	-99	266	17.0	-19	53.3	229	18.9	-22	44.0
8	190	1.0	144	9	43.7	-100	296	20.8	-19	53.5	259	23.3	-22	44.0
10	219	7.9	145	9	23.7	-101	326	24.6	-19	53.7	289	27.7	-22	44.0
12	248	14.8	145	9	3.6	-102	356	28.3	-19	53.9	319	32.1	-22	44.0
14	277	21.7	145	8	43.2	-103	26	32.1	-19	54.2	349	36.5	-22	43.9
16	306	28.7	145	8	22.7	-103	56	35.9	-19	54.4	19	40.9	-22	43.9
18	335	35.6	145	8	2.0	-104	86	39.6	-19	54.6	49	45.3	-22	43.9
20	4	42.6	145	7	41.2	-105	116	43.4	-19	54.9	79	49.6	-22	43.9
22	33	49.5	145	7	20.1	-106	146	47.2	-19	55.1	109	54.0	-22	43.9
Δ							19		-1		22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	15	8.9	- .5	16.2	T _m	19 41	1.8	54.7	14.9
12	15	3.0	T _{m☉}	11 h 44.9 min	Starost	9.3 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 46	.1	157	-6.4	♄	12 14	.0	120	-1.3
♂	18 28	.1	27	- .8	♄	14 41	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	44.3	-19	9.2	56	59.3	213	55.8	-10	42.7	83	6.5	-12	31.3	
2	213	44.0	-19	10.4	87	4.2	243	60.0	-10	41.8	113	8.5	-12	30.0	
4	243	43.7	-19	11.6	117	9.1	274	4.2	-10	40.9	143	10.6	-12	28.7	
6	273	43.5	-19	12.8	147	14.1	304	8.4	-10	40.0	173	12.6	-12	27.4	
8	303	43.2	-19	14.0	177	19.0	334	12.6	-10	39.1	203	14.7	-12	26.1	
10	333	43.0	-19	15.2	207	23.9	4	16.7	-10	38.2	233	16.7	-12	24.9	
12	3	42.7	-19	16.4	237	28.8	34	20.9	-10	37.4	263	18.7	-12	23.6	
14	33	42.4	-19	17.5	267	33.8	64	25.0	-10	36.5	293	20.8	-12	22.3	
16	63	42.2	-19	18.7	297	38.7	94	29.1	-10	35.6	323	22.8	-12	21.0	
18	93	41.9	-19	19.9	327	43.6	124	33.2	-10	34.8	353	24.9	-12	19.7	
20	123	41.6	-19	21.1	357	48.6	154	37.3	-10	34.0	23	26.9	-12	18.4	
22	153	41.4	-19	22.3	27	53.5	184	41.4	-10	33.1	53	28.9	-12	17.2	
Δ		-1		-6				21		4		10			6

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 5	15 25	0 50	2 32	13 42	3.1	2 38	.5
55	7 38	15 52	0 41	2 9	13 48	2.9	2 30	.7
50	7 17	16 12	0 36	1 54	13 52	2.7	2 23	.9
45	7 1	16 28	0 32	1 43	13 56	2.6	2 18	1.1
40	6 48	16 42	0 29	1 34	13 59	2.5	2 14	1.2
35	6 37	16 53	0 27	1 28	14 1	2.4	2 10	1.3
30	6 27	17 3	0 25	1 23	14 3	2.3	2 7	1.4
20	6 10	17 20	0 23	1 17	14 7	2.1	2 1	1.5
10	5 56	17 35	0 22	1 13	14 11	2.0	1 56	1.7
0	5 42	17 49	0 22	1 13	14 14	1.9	1 51	1.8
10	5 27	18 3	0 22	1 15	14 17	1.7	1 46	2.0
20	5 12	18 18	0 24	1 21	14 20	1.6	1 41	2.1
30	4 55	18 36	0 26	1 31	14 24	1.4	1 35	2.3
35	4 44	18 47	0 28	1 40	14 27	1.4	1 32	2.4
40	4 32	18 59	0 31	1 52	14 29	1.3	1 28	2.5
45	4 18	19 13	0 35	2 11	14 32	1.2	1 23	2.6
50	4 1	19 30	0 40	2 48	14 35	1.0	1 18	2.8
55	3 39	19 53	0 49	:::	14 40	.9	1 11	3.0
60	3 8	20 24	1 6	:::	14 45	.7	1 2	3.2
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	62	56.5	145	6	59.0	-107	176	51.0	-19	55.3	139	58.4	-22	43.9
2	92	3.4	145	6	37.6	-108	206	54.7	-19	55.5	170	2.8	-22	43.8
4	121	10.3	144	6	16.1	-108	236	58.5	-19	55.8	200	7.2	-22	43.8
6	150	17.2	144	5	54.4	-109	267	2.3	-19	56.0	230	11.6	-22	43.8
8	179	24.0	144	5	32.7	-110	297	6.0	-19	56.2	260	16.0	-22	43.8
10	208	30.8	144	5	10.7	-110	327	9.8	-19	56.4	290	20.4	-22	43.8
12	237	37.6	143	4	48.7	-111	357	13.6	-19	56.7	320	24.8	-22	43.8
14	266	44.3	143	4	26.5	-112	27	17.4	-19	56.9	350	29.2	-22	43.8
16	295	50.9	143	4	4.2	-112	57	21.1	-19	57.1	20	33.6	-22	43.7
18	324	57.5	142	3	41.7	-113	87	24.9	-19	57.3	50	38.0	-22	43.7
20	354	4.0	142	3	19.2	-113	117	28.7	-19	57.6	80	42.4	-22	43.7
22	23	10.4	142	2	56.5	-114	147	32.4	-19	57.8	110	46.8	-22	43.7
Δ							19		-1		22			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	14	57.0	- .5	16.2	T _m	20 24	1.9	55.2	15.0
12	14	50.7	T _{m☉}	11					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 41.1 -19 23.4		57 58.4	214 45.4 -10 32.3		83 31.0 -12 15.9	
2	213 40.8 -19 24.6		88 3.3	244 49.5 -10 31.5		113 33.0 -12 14.6	
4	243 40.6 -19 25.8		118 8.3	274 53.5 -10 30.7		143 35.0 -12 13.3	
6	273 40.3 -19 26.9		148 13.2	304 57.5 -10 29.9		173 37.1 -12 12.0	
8	303 40.0 -19 28.1		178 18.1	335 1.5 -10 29.1		203 39.1 -12 10.7	
10	333 39.7 -19 29.3		208 23.1	5 5.5 -10 28.3		233 41.1 -12 9.4	
12	3 39.4 -19 30.4		238 28.0	35 9.5 -10 27.6		263 43.2 -12 8.1	
14	33 39.2 -19 31.6		268 32.9	65 13.4 -10 26.8		293 45.2 -12 6.9	
16	63 38.9 -19 32.7		298 37.8	95 17.4 -10 26.1		323 47.2 -12 5.6	
18	93 38.6 -19 33.9		328 42.8	125 21.3 -10 25.3		353 49.3 -12 4.3	
20	123 38.3 -19 35.0		358 47.7	155 25.2 -10 24.6		23 51.3 -12 3.0	
22	153 38.0 -19 36.2		28 52.6	185 29.1 -10 23.8		53 53.3 -12 1.7	
Δ	-1 -6			20 4		10 6	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 8	15 23	0 50	2 32	14 57	.5	2 50	2.1
55	7 40	15 51	0 42	2 9	14 57	.7	2 47	2.0
50	7 19	16 11	0 36	1 54	14 57	.9	2 45	2.0
45	7 3	16 28	0 32	1 43	14 57	1.1	2 44	2.0
40	6 49	16 41	0 29	1 34	14 58	1.2	2 42	2.0
35	6 38	16 52	0 27	1 28	14 58	1.3	2 41	2.0
30	6 28	17 2	0 26	1 23	14 58	1.4	2 40	1.9
20	6 11	17 19	0 23	1 17	14 58	1.6	2 38	1.9
10	5 56	17 35	0 22	1 14	14 58	1.8	2 37	1.9
0	5 42	17 49	0 22	1 13	14 58	1.9	2 35	1.9
10	5 27	18 3	0 22	1 15	14 59	2.1	2 34	1.9
20	5 12	18 19	0 24	1 21	14 59	2.2	2 32	1.8
30	4 54	18 37	0 26	1 31	14 59	2.4	2 30	1.8
35	4 44	18 48	0 28	1 40	14 59	2.5	2 29	1.8
40	4 32	18 60	0 31	1 52	14 59	2.6	2 28	1.8
45	4 17	19 14	0 35	2 12	14 60	2.8	2 26	1.8
50	3 60	19 32	0 40	2 50	14 60	2.9	2 24	1.8
55	3 37	19 55	0 49	:::	15 0	3.1	2 22	1.7
60	3 6	20 27	1 7	:::	15 1	3.4	2 19	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	52 16.7 141	2 33.8 -114			177 36.2 -19 58.0		140 51.1 -22 43.7	
2	81 23.0 141	2 10.9 -115			207 40.0 -19 58.2		170 55.5 -22 43.7	
4	110 29.1 140	1 48.0 -115			237 43.7 -19 58.5		200 59.9 -22 43.6	
6	139 35.2 140	1 25.0 -115			267 47.5 -19 58.7		231 4.3 -22 43.6	
8	168 41.1 139	1 1.9 -116			297 51.3 -19 58.9		261 8.7 -22 43.6	
10	197 46.9 138	0 38.7 -116			327 55.0 -19 59.1		291 13.1 -22 43.6	
12	226 52.6 138	0 15.5 -39			357 58.8 -19 59.4		321 17.5 -22 43.6	
14	255 58.1 137	0 7.8 117			28 2.6 -19 59.6		351 21.9 -22 43.6	
16	285 3.6 136	0 31.1 117			58 6.3 -19 59.8		21 26.2 -22 43.5	
18	314 8.8 136	0 54.5 117			88 10.1 -20 .0		51 30.6 -22 43.5	
20	343 13.9 135	1 18.0 117			118 13.9 -20 .3		81 35.0 -22 43.5	
22	12 18.9 134	1 41.4 117			148 17.7 -20 .5		111 39.4 -22 43.5	
Δ					19 -1		22 0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	14 44.4	-.6	16.2	T _m	21 9	2.0	55.8 15.2		
12	14 37.7	T _{m☉}	11 h 45.4 min	Starost	11.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	18 25 .1 26	157 -6.3	7	12 8 .0 120	14 34 .0 83	-1.3 .8			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 37.7 -19 37.3		58 57.6	215 33.0 -10 23.1		83 55.4 -12 .4	
2	213 37.5 -19 38.4		89 2.5	245 36.9 -10 22.4		113 57.4 -11 59.1	
4	243 37.2 -19 39.6		119 7.4	275 40.8 -10 21.7		143 59.4 -11 57.8	
6	273 36.9 -19 40.7		149 12.3	305 44.6 -10 21.0		174 1.4 -11 56.5	
8	303 36.6 -19 41.8		179 17.3	335 48.5 -10 20.3		204 3.5 -11 55.2	
10	333 36.3 -19 43.0		209 22.2	5 52.3 -10 19.6		234 5.5 -11 53.9	
12	3 36.0 -19 44.1		239 27.1	35 56.1 -10 19.0		264 7.5 -11 52.6	
14	33 35.7 -19 45.2		269 32.0	65 59.9 -10 18.3		294 9.5 -11 51.3	
16	63 35.4 -19 46.4		299 37.0	96 3.6 -10 17.6		324 11.6 -11 50.0	
18	93 35.1 -19 47.5		329 41.9	126 7.4 -10 17.0		354 13.6 -11 48.7	
20	123 34.8 -19 48.6		359 46.8	156 11.2 -10 16.3		24 15.6 -11 47.4	
22	153 34.5 -19 49.7		29 51.8	186 14.9 -10 15.7		54 17.6 -11 46.1	
Δ	-1 -6			19 3		10 6	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 10	15 21	0 51	2 33	15 8	.6	3 40	3.5
55	7 41	15 49	0 42	2 10	15 15	.8	3 36	3.2
50	7 20	16 10	0 36	1 54	15 19	1.0	3 34	3.0
45	7 4	16 27	0 32	1 43	15 23	1.2	3 31	2.8
40	6 51	16 40	0 29	1 35	15 27	1.3	3 30	2.7
35	6 39	16 52	0 27	1 28	15 30	1.4	3 28	2.5
30	6 29	17 2	0 26	1 23	15 32	1.5	3 27	2.4
20	6 12	17 19	0 23	1 17	15 37	1.7	3 24	2.3
10	5 56	17 35	0 22	1 14	15 41	1.9	3 22	2.1
0	5 42	17 49	0 22	1 13	15 44	2.0	3 20	2.0
10	5 27	18 4	0 22	1 15	15 48	2.2	3 18	1.8
20	5 12	18 20	0 24	1 21	15 52	2.3	3 16	1.7
30	4 54	18 38	0 26	1 32	15 57	2.5	3 14	1.5
35	4 43	18 49	0 28	1 40	15 60	2.6	3 12	1.4
40	4 31	19 1	0 31	1 53	16 3	2.7	3 11	1.3
45	4 16	19 15	0 35	2 13	16 6	2.9	3 9	1.1
50	3 59	19 33	0 40	2 53	16 10	3.0	3 7	1.0
55	3 36	19 57	0 49	:::	16 16	3.3	3 4	.8
60	3 4	20 29	1 8	:::	16 23	3.5	3 1	.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	41 23.7 133	2 4.9 118			178 21.4 -20 .7		141 43.8 -22 43.5	
2	70 28.3 132	2 28.4 118			208 25.2 -20 .9		171 48.2 -22 43.5	
4	99 32.8 131	2 51.9 118			238 29.0 -20 1.2		201 52.6 -22 43.4	
6	128 37.0 130	3 15.4 118			268 32.7 -20 1.4		231 56.9 -22 43.4	
8	157 41.1 129	3 39.0 118			298 36.5 -20 1.6		262 1.3 -22 43.4	
10	186 45.0 128	4 2.5 117			328 40.3 -20 1.8		292 5.7 -22 43.4	
12	215 48.6 127	4 25.9 117			358 44.0 -20 2.1		322 10.1 -22 43.4	
14	244 52.1 126	4 49.4 117			28 47.8 -20 2.3		352 14.5 -22 43.4	
16	273 55.3 125	5 12.8 117			58 51.6 -20 2.5		22 18.9 -22 43.3	
18	302 58.3 124	5 36.2 117			88 55.3 -20 2.7		52 23.2 -22 43.3	
20	332 1.1 123	5 59.5 116			118 59.1 -20 2.9		82 27.6 -22 43.3	
22	1 3.7 122	6 22.8 116			149 2.9 -20 3.2		112 32.0 -22 43.3	
Δ					19 -1		22 0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	14 31.0	-.6	16.2	T _m	21 56	2.0	56.5 15.4		
12	14 23.8	T _{m☉}	11 h 45.6 min	Starost	12.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♂	18 23 .1 25	157 -6.3	7	12 5 .0 119	14 31 .0 83	-1.3 .8			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 34.2 -19 50.8		59 56.7	216 18.6 -10 15.1		84 19.7 -11 44.8	
2	213 33.9 -19 51.9		90 1.6	246 22.3 -10 14.4		114 21.7 -11 43.5	
4	243 33.6 -19 53.0		120 6.5	276 26.0 -10 13.8		144 23.7 -11 42.2	
6	273 33.3 -19 54.1		150 11.5	306 29.7 -10 13.2		174 25.7 -11 40.9	
8	303 32.9 -19 55.2		180 16.4	336 33.4 -10 12.6		204 27.8 -11 39.6	
10	333 32.6 -19 56.3		210 21.3	6 37.0 -10 12.0		234 29.8 -11 38.3	
12	3 32.3 -19 57.4		240 26.3	36 40.7 -10 11.5		264 31.8 -11 37.0	
14	33 32.0 -19 58.5		270 31.2	66 44.3 -10 10.9		294 33.8 -11 35.7	
16	63 31.7 -19 59.6		300 36.1	96 47.9 -10 10.3		324 35.9 -11 34.4	
18	93 31.4 -20 1.7		330 41.0	126 51.5 -10 9.8		354 37.9 -11 33.1	
20	123 31.1 -20 2.8		0 46.0	156 55.1 -10 9.2		24 39.9 -11 31.8	
22	153 30.7 -20 2.9		30 50.9	186 58.7 -10 8.7		54 41.9 -11 30.5	
Δ	-2 -5			18 3		10 7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 12	15 19	0 51	2 33	15 22	.7	5 3	3.6
55	7 43	15 48	0 42	2 10	15 34	1.0	4 53	3.3
50	7 22	16 9	0 36	1 55	15 44	1.2	4 45	3.1
45	7 5	16 26	0 32	1 43	15 52	1.3	4 39	2.9
40	6 52	16 40	0 29	1 35	15 58	1.5	4 34	2.8
35	6 40	16 51	0 27	1 28	16 4	1.6	4 29	2.7
30	6 30	17 2	0 26	1 23	16 9	1.7	4 25	2.5
20	6 12	17 19	0 23	1 17	16 18	1.9	4 19	2.4
10	5 57	17 35	0 22	1 14	16 25	2.0	4 13	2.2
0	5 42	17 49	0 22	1 13	16 33	2.1	4 7	2.1
10	5 28	18 4	0 22	1 16	16 40	2.3	4 2	1.9
20	5 12	18 20	0 24	1 21	16 48	2.4	3 56	1.8
30	4 53	18 39	0 26	1 32	16 57	2.6	3 49	1.6
35	4 43	18 50	0 28	1 41	17 2	2.7	3 45	1.5
40	4 30	19 2	0 31	1 53	17 8	2.8	3 41	1.4
45	4 16	19 17	0 35	2 14	17 15	3.0	3 36	1.2
50	3 57	19 35	0 41	2 56	17 23	3.1	3 30	1.1
55	3 34	19 59	0 50	:::	17 34	3.3	3 23	.9
60	3 1	20 32	1 9	:::	17 48	3.6	3 13	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	30 6.0 120	6 46.0	116		179 6.6 -20 3.4		142 36.4 -22 43.3	
2	59 8.0 119	7 9.1	115		209 10.4 -20 3.6		172 40.8 -22 43.3	
4	88 9.8 118	7 32.2	115		239 14.2 -20 3.8		202 45.2 -22 43.2	
6	117 11.4 116	7 55.1	114		269 17.9 -20 4.1		232 49.5 -22 43.2	
8	146 12.7 115	8 17.9	114		299 21.7 -20 4.3		262 53.9 -22 43.2	
10	175 13.7 114	8 40.6	113		329 25.4 -20 4.5		292 58.3 -22 43.2	
12	204 14.4 112	9 3.2	112		359 29.2 -20 4.7		323 2.7 -22 43.2	
14	233 14.9 111	9 25.7	112		29 33.0 -20 4.9		353 7.1 -22 43.2	
16	262 15.0 109	9 48.0	111		59 36.7 -20 5.2		23 11.4 -22 43.1	
18	291 14.9 108	10 10.2	110		89 40.5 -20 5.4		53 15.8 -22 43.1	
20	320 14.5 106	10 32.1	109		119 44.3 -20 5.6		83 20.2 -22 43.1	
22	349 13.8 105	10 54.0	108		149 48.0 -20 5.8		113 24.6 -22 43.1	
Δ					19 -1		22 0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min		
00	14 16.7	-.6	16.2	T _m	22 45	2.2	57.3 15.6		
12	14 9.2	T _{m☉}	11 h 45.8 min	Starost	13.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	9 34	.1	156	-6.3	♃	12 2	.0	119	-1.3
♂	18 21	.1	24	-7	♄	14 27	.0	83	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 30.4 -20 4.0		60 55.8	217 2.2 -10 8.2		84 43.9 -11 29.2	
2	213 30.1 -20 5.1		91 .8	247 5.8 -10 7.6		114 46.0 -11 27.9	
4	243 29.8 -20 6.1		121 5.7	277 9.3 -10 7.1		144 48.0 -11 26.6	
6	273 29.4 -20 7.2		151 10.6	307 12.9 -10 6.6		174 50.0 -11 25.3	
8	303 29.1 -20 8.3		181 15.5	337 16.4 -10 6.1		204 52.0 -11 24.0	
10	333 28.8 -20 9.3		211 20.5	7 19.9 -10 5.6		234 54.0 -11 22.6	
12	3 28.5 -20 10.4		241 25.4	37 23.3 -10 5.1		264 56.0 -11 21.3	
14	33 28.1 -20 11.5		271 30.3	67 26.8 -10 4.6		294 58.1 -11 20.0	
16	63 27.8 -20 12.5		301 35.3	97 30.3 -10 4.2		325 .1 -11 18.7	
18	93 27.5 -20 13.6		331 40.2	127 33.7 -10 3.7		355 2.1 -11 17.4	
20	123 27.1 -20 14.7		1 45.1	157 37.1 -10 3.2		25 4.1 -11 16.1	
22	153 26.8 -20 15.7		31 50.0	187 40.6 -10 2.8		55 6.1 -11 14.8	
Δ	-2 -5			17 2		10 7	

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 15	15 17	0 51	2 34	15 39	.9	6 29	3.7
55	7 45	15 47	0 42	2 11	15 58	1.2	6 12	3.4
50	7 24	16 8	0 36	1 55	16 12	1.4	5 59	3.1
45	7 7	16 25	0 32	1 43	16 24	1.6	5 49	3.0
40	6 53	16 39	0 29	1 35	16 34	1.7	5 40	2.8
35	6 41	16 51	0 27	1 28	16 42	1.8	5 33	2.7
30	6 31	17 1	0 26	1 24	16 49	1.9	5 26	2.6
20	6 13	17 19	0 23	1 17	17 2	2.0	5 15	2.5
10	5 57	17 35	0 22	1 14	17 13	2.2	5 6	2.3
0	5 42	17 50	0 22	1 13	17 24	2.3	4 57	2.2
10	5 28	18 5	0 23	1 16	17 35	2.4	4 48	2.1
20	5 12	18 21	0 24	1 21	17 46	2.5	4 38	1.9
30	4 53	18 40	0 27	1 32	17 59	2.7	4 27	1.8
35	4 42	18 51	0 29	1 41	18 7	2.8	4 21	1.7
40	4 30	19 3	0 31	1 54	18 16	2.9	4 14	1.6
45	4 15	19 18	0 35	2 14	18 26	3.0	4 6	1.4
50	3 56	19 37	0 41	2 59	18 38	3.2	3 56	1.3
55	3 33	20 1	0 50	:::	18 54	3.4	3 44	1.1
60	2 59	20 34	1 10	:::	19 15	3.7	3 28	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	18 12.8 103	11 15.6	107		179 51.8 -20 6.0		143 28.9 -22 43.1	
2	47 11.5 102	11 37.0	106		209 55.6 -20 6.3		173 33.3 -22 43.0	
4	76 9.8 100	11 58.3	105		239 59.3 -20 6.5		203 37.7 -22 43.0	
6	105 7.9 99	12 19.3	104		270 3.1 -20 6.7		233 42.1 -22 43.0	
8	134 5.6 97	12 40.1	103		300 6.9 -20 6.9		263 46.4 -22 43.0	
10	163 3.1 95	13 .6	101		330 10.6 -20 7.2		293 50.8 -22 43.0	
12	192 .2 94	13 20.9	100		0 14.4 -20 7.4		323 55.2 -22 43.0	
14	220 56.9 92	13 41.0	99		30 18.2 -20 7.6		353 59.6 -22 42.9	
16	249 53.4 91	14 .7	97		60 21.9 -20 7.8		24 3.9 -22 42.9	
18	278 49.5 89	14 20.2	96		90 25.7 -20 8.0		54 8.3 -22 42.9	
20	307 45.3 87	14 39.4	94		120 29.4 -20 8.3		84 12.7 -22 42.9	
22	336 40.8 86	14 58.3	93		150 33.2 -20 8.5		114 17.1 -22 42.9	
Δ					19 -1		22 0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "	h min	h min	min / ' / "	h min	h min		
00	14 1.7	-.7	16.2	T _m	23 37	2.3	58.0 15.8		
12	13 53.7	T _{m☉}	11 h 46.1 min	Starost	14.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	9 31	.1	156	-6.2	♃	11 59	.0	119	-1.3
♂	18 20	.1	24	-7	♄	14 24	.0	83	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	26.5	-20	16.8	61	55.0	217	44.0	-10	2.4	85	8.1	-11	13.5
2	213	26.1	-20	17.8	91	59.9	247	47.4	-10	1.9	115	10.1	-11	12.2
4	243	25.8	-20	18.9	122	4.8	277	50.7	-10	1.5	145	12.2	-11	10.8
6	273	25.4	-20	19.9	152	9.8	307	54.1	-10	1.1	175	14.2	-11	9.5
8	303	25.1	-20	20.9	182	14.7	337	57.4	-10	.7	205	16.2	-11	8.2
10	333	24.7	-20	22.0	212	19.6	8	.8	-10	.3	235	18.2	-11	6.9
12	3	24.4	-20	23.0	242	24.5	38	4.1	-9	59.9	265	20.2	-11	5.6
14	33	24.1	-20	24.0	272	29.5	68	7.4	-9	59.5	295	22.2	-11	4.3
16	63	23.7	-20	25.1	302	34.4	98	10.7	-9	59.1	325	24.2	-11	2.9
18	93	23.4	-20	26.1	332	39.3	128	14.0	-9	58.7	355	26.2	-11	1.6
20	123	23.0	-20	27.1	2	44.2	158	17.3	-9	58.4	25	28.3	-11	.3
22	153	22.6	-20	28.2	32	49.2	188	20.6	-9	58.0	55	30.3	-10	59.0
Δ		-2		-5				17		2		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 17	15 15	0 52	2 35	16 2	1.3	7 57	3.6
55	7 47	15 45	0 42	2 11	16 27	1.6	7 32	3.3
50	7 25	16 7	0 36	1 55	16 47	1.8	7 14	3.1
45	7 8	16 24	0 32	1 44	17 2	1.9	7 0	3.0
40	6 54	16 38	0 30	1 35	17 14	2.0	6 48	2.9
35	6 42	16 50	0 27	1 29	17 25	2.1	6 39	2.8
30	6 32	17 1	0 26	1 24	17 35	2.1	6 30	2.7
20	6 14	17 19	0 23	1 17	17 51	2.2	6 15	2.6
10	5 58	17 35	0 22	1 14	18 5	2.3	6 2	2.5
0	5 43	17 50	0 22	1 13	18 19	2.4	5 50	2.4
10	5 28	18 5	0 23	1 16	18 32	2.5	5 38	2.2
20	5 11	18 21	0 24	1 22	18 47	2.6	5 25	2.1
30	4 53	18 40	0 27	1 32	19 4	2.7	5 10	2.0
35	4 42	18 51	0 29	1 41	19 13	2.8	5 1	1.9
40	4 29	19 4	0 31	1 54	19 25	2.8	4 52	1.8
45	4 14	19 19	0 35	2 15	19 38	2.9	4 40	1.7
50	3 55	19 38	0 41	3 2	19 54	3.1	4 27	1.6
55	3 31	20 3	0 51	:::	20 15	3.2	4 10	1.4
60	2 57	20 37	1 11	:::	20 43	3.5	3 47	1.1
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	5	35.9	84	15	16.9	91	180	37.0	-20	8.7	144	21.4	-22	42.8
2	34	30.7	82	15	35.1	90	210	40.7	-20	8.9	174	25.8	-22	42.8
4	63	25.2	81	15	53.0	88	240	44.5	-20	9.1	204	30.2	-22	42.8
6	92	19.4	79	16	10.6	86	270	48.3	-20	9.3	234	34.5	-22	42.8
8	121	13.2	78	16	27.7	84	300	52.0	-20	9.6	264	38.9	-22	42.8
10	150	6.7	76	16	44.6	82	330	55.8	-20	9.8	294	43.3	-22	42.8
12	178	59.9	74	17	1.0	80	0	59.5	-20	10.0	324	47.7	-22	42.7
14	207	52.8	73	17	17.0	78	31	3.3	-20	10.2	354	52.0	-22	42.7
16	236	45.4	71	17	32.7	76	61	7.1	-20	10.4	24	56.4	-22	42.7
18	265	37.6	70	17	47.9	74	91	10.8	-20	10.7	55	.8	-22	42.7
20	294	29.6	68	18	2.7	72	121	14.6	-20	10.9	85	5.1	-22	42.7
22	323	21.3	67	18	17.0	70	151	18.4	-20	11.1	115	9.5	-22	42.6
Δ								19		-1		22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	13 45.8	-.7	16.2	T _m	1.0	58.7	16.0		
12	13 37.5	T _{m☉}	11 h 46.4 min	Starost	15.3 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	9 28	.1	156	-6.2	♃	11 56	.0	119	-1.3
♂	18 18	.1	23	-.6	♄	14 20	.0	82	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	22.3	-20	29.2	62	54.1	218	23.8	-9	57.6	85	32.3	-10	57.7
2	213	21.9	-20	30.2	92	59.0	248	27.1	-9	57.3	115	34.3	-10	56.3
4	243	21.6	-20	31.2	123	4.0	278	30.3	-9	57.0	145	36.3	-10	55.0
6	273	21.2	-20	32.2	153	8.9	308	33.5	-9	56.6	175	38.3	-10	53.7
8	303	20.9	-20	33.2	183	13.8	338	36.7	-9	56.3	205	40.3	-10	52.4
10	333	20.5	-20	34.2	213	18.7	8	39.9	-9	56.0	235	42.3	-10	51.1
12	3	20.1	-20	35.2	243	23.7	38	43.1	-9	55.7	265	44.3	-10	49.7
14	33	19.8	-20	36.2	273	28.6	68	46.2	-9	55.4	295	46.3	-10	48.4
16	63	19.4	-20	37.2	303	33.5	98	49.4	-9	55.1	325	48.3	-10	47.1
18	93	19.0	-20	38.2	333	38.5	128	52.5	-9	54.8	355	50.3	-10	45.8
20	123	18.7	-20	39.2	3	43.4	158	55.7	-9	54.5	25	52.3	-10	44.4
22	153	18.3	-20	40.2	33	48.3	188	58.8	-9	54.3	55	54.3	-10	43.1
Δ		-2		-5				16		2		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 19	15 13	0 52	2 35	16 34	1.9	9 23	3.2
55	7 49	15 44	0 43	2 11	17 6	2.1	8 52	3.0
50	7 27	16 6	0 37	1 55	17 29	2.2	8 29	2.9
45	7 9	16 24	0 33	1 44	17 47	2.2	8 12	2.8
40	6 55	16 38	0 30	1 35	18 2	2.3	7 57	2.8
35	6 43	16 50	0 27	1 29	18 15	2.3	7 45	2.7
30	6 32	17 1	0 26	1 24	18 26	2.4	7 35	2.7
20	6 14	17 19	0 24	1 17	18 45	2.4	7 17	2.6
10	5 58	17 35	0 22	1 14	19 1	2.5	7 1	2.5
0	5 43	17 50	0 22	1 14	19 17	2.5	6 46	2.5
10	5 28	18 6	0 23	1 16	19 32	2.5	6 31	2.4
20	5 11	18 22	0 24	1 22	19 49	2.6	6 16	2.3
30	4 52	18 41	0 27	1 33	20 9	2.6	6 58	2.2
35	4 41	18 52	0 29	1 42	20 20	2.7	6 47	2.2
40	4 28	19 5	0 31	1 55	20 33	2.7	6 36	2.1
45	4 13	19 21	0 35	2 16	20 48	2.7	6 22	2.1
50	3 54	19 40	0 41	3 5	21 7	2.8	6 4	2.0
55	3 30	20 4	0 51	:::	21 32	2.8	4 43	1.8
60	2 55	20 39	1 12	:::	22 6	3.0	4 13	1.6
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	352	12.6	65	18	30.9	67	181	22.1	-20	11.3	145	13.9	-22	42.6
2	21	3.7	64	18	44.4	65	211	25.9	-20	11.5	175	18.2	-22	42.6
4	49	54.5	63	18	57.4	63	241	29.6	-20	11.7	205	22.6	-22	42.6
6	78	45.0	61	19	9.9	60	271	33.4	-20	12.0	235	27.0	-22	42.6
8	107	35.2	60	19	21.9	58	301	37.2	-20	12.2	265	31.4	-22	42.5
10	136	25.2	59	19	33.4	55	331	40.9	-20	12.4	295	35.7	-22	42.5
12	165	15.0	57	19	44.4	53	1	44.7	-20	12.6	325	40.1	-22	42.5
14	194	4.5	56	19	55.0	50	31	48.4	-20	12.8	355	44.5	-22	42.5
16	222	53.7	55	20	4.9	47	61	52.2	-20	13.0	25	48.8	-22	42.5
18	251	42.8	54	20	14.4	45	91	56.0	-20	13.3	55	53.2	-22	42.4
20	280	31.6	53	20	23.3	42	121	59.7	-20	13.5	85	57.5	-22	42.4
22	309	20.2	52	20	31.7	39	152	3.5	-20	13.7	116	1.9	-22	42.4
Δ								19		-1		22		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	13 29.2	-.7	16.2	T _m	0 32	2.5	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	17.9	-20	41.2	63	53.2	219	1.9	-9	54.0	85	56.4	-10	41.8	
2	213	17.6	-20	42.2	93	58.2	249	5.0	-9	53.8	115	58.4	-10	40.4	
4	243	17.2	-20	43.2	124	3.1	279	8.0	-9	53.5	146	.4	-10	39.1	
6	273	16.8	-20	44.2	154	8.0	309	11.1	-9	53.3	176	2.4	-10	37.8	
8	303	16.4	-20	45.1	184	13.0	339	14.2	-9	53.0	206	4.4	-10	36.5	
10	333	16.1	-20	46.1	214	17.9	9	17.2	-9	52.8	236	6.4	-10	35.1	
12	3	15.7	-20	47.1	244	22.8	39	20.2	-9	52.6	266	8.4	-10	33.8	
14	33	15.3	-20	48.1	274	27.7	69	23.3	-9	52.4	296	10.4	-10	32.5	
16	63	14.9	-20	49.0	304	32.7	99	26.3	-9	52.2	326	12.4	-10	31.1	
18	93	14.6	-20	50.0	334	37.6	129	29.3	-9	52.0	356	14.4	-10	29.8	
20	123	14.2	-20	50.9	4	42.5	159	32.2	-9	51.8	26	16.4	-10	28.5	
22	153	13.8	-20	51.9	34	47.5	189	35.2	-9	51.6	56	18.4	-10	27.2	
Δ		-2		-5				15		1			10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 22	15 12	0 52	2 36	17 20	2.6	10 40	2.6
55	7 51	15 43	0 43	2 12	17 56	2.6	10 5	2.6
50	7 28	16 5	0 37	1 56	18 21	2.6	9 39	2.6
45	7 11	16 23	0 33	1 44	18 41	2.6	9 20	2.6
40	6 56	16 37	0 30	1 35	18 57	2.6	9 4	2.6
35	6 44	16 50	0 27	1 29	19 11	2.6	8 51	2.6
30	6 33	17 0	0 26	1 24	19 23	2.6	8 39	2.6
20	6 15	17 19	0 24	1 17	19 43	2.6	8 19	2.5
10	5 59	17 35	0 22	1 14	20 0	2.5	8 2	2.5
0	5 43	17 51	0 22	1 14	20 17	2.5	7 45	2.5
10	5 28	18 6	0 23	1 16	20 34	2.5	7 29	2.5
20	5 11	18 23	0 24	1 22	20 51	2.5	7 12	2.5
30	4 52	18 42	0 27	1 33	21 12	2.5	6 52	2.5
35	4 41	18 53	0 29	1 42	21 24	2.5	6 40	2.5
40	4 28	19 6	0 32	1 55	21 38	2.4	6 27	2.4
45	4 12	19 22	0 35	2 17	21 54	2.4	6 11	2.4
50	3 53	19 41	0 41	3 9	22 14	2.4	5 51	2.4
55	3 29	20 6	0 51	:::	22 40	2.3	5 26	2.4
60	2 54	20 42	1 14	:::	23 17	2.5	4 51	2.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	338	8.7	51	20	39.5	36	182	7.3	-20	13.9	146	6.3	-22	42.4		
2	6	56.9	50	20	46.8	34	212	11.0	-20	14.1	176	10.6	-22	42.4		
4	35	45.0	50	20	53.5	31	242	14.8	-20	14.3	206	15.0	-22	42.3		
6	64	33.0	49	20	59.7	28	272	18.5	-20	14.6	236	19.4	-22	42.3		
8	93	20.8	48	21	5.2	25	302	22.3	-20	14.8	266	23.7	-22	42.3		
10	122	8.5	48	21	10.2	22	332	26.1	-20	15.0	296	28.1	-22	42.3		
12	150	56.0	47	21	14.6	19	2	29.8	-20	15.2	326	32.5	-22	42.3		
14	179	43.5	47	21	18.4	16	32	33.6	-20	15.4	356	36.8	-22	42.2		
16	208	30.8	46	21	21.7	13	62	37.3	-20	15.6	26	41.2	-22	42.2		
18	237	18.1	46	21	24.3	10	92	41.1	-20	15.8	56	45.5	-22	42.2		
20	266	5.4	46	21	26.4	7	122	44.9	-20	16.1	86	49.9	-22	42.2		
22	294	52.6	46	21	27.8	4	152	48.6	-20	16.3	116	54.3	-22	42.2		
Δ								19		-1			22		0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	13 11.8	- .8	16.2	T _m	1 31	2.5	59.6	16.2	
12	13 2.7	T _{m☉}	11 h 47.0 min	Starost	17.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 23	.1	155	-6.1	♄	11 50	.0	118	-1.3
♂	18 15	.1	22	- .6	♂	14 14	.0	82	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	13.4	-20	52.9	64	52.4	219	38.2	-9	51.4	86	20.4	-10	25.8	
2	213	13.0	-20	53.8	94	57.3	249	41.1	-9	51.2	116	22.4	-10	24.5	
4	243	12.6	-20	54.8	125	2.2	279	44.1	-9	51.1	146	24.4	-10	23.2	
6	273	12.2	-20	55.7	155	7.2	309	47.0	-9	50.9	176	26.4	-10	21.8	
8	303	11.8	-20	56.7	185	12.1	339	49.9	-9	50.8	206	28.4	-10	20.5	
10	333	11.4	-20	57.6	215	17.0	9	52.8	-9	50.6	236	30.4	-10	19.1	
12	3	11.1	-20	58.5	245	22.0	39	55.7	-9	50.5	266	32.4	-10	17.8	
14	33	10.7	-20	59.5	275	26.9	69	58.6	-9	50.4	296	34.4	-10	16.5	
16	63	10.3	-21	.4	305	31.8	100	1.4	-9	50.3	326	36.4	-10	15.1	
18	93	9.9	-21	1.3	335	36.7	130	4.3	-9	50.1	356	38.4	-10	13.8	
20	123	9.5	-21	2.3	5	41.7	160	7.1	-9	50.0	26	40.4	-10	12.5	
22	153	9.1	-21	3.2	35	46.6	190	10.0	-9	49.9	56	42.4	-10	11.1	
Δ		-2		-5				14		1			10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 24	15 10	0 53	2 37	18 24	3.3	11 43	1.9
55	7 52	15 42	0 43	2 12	18 59	3.1	11 7	2.1
50	7 30	16 5	0 37	1 56	19 24	3.0	10 41	2.2
45	7 12	16 22	0 33	1 44	19 43	2.9	10 22	2.2
40	6 57	16 37	0 30	1 36	19 59	2.8	10 6	2.3
35	6 45	16 49	0 27	1 29	20 13	2.7	9 52	2.3
30	6 34	17 0	0 26	1 24	20 24	2.7	9 40	2.4
20	6 15	17 19	0 24	1 17	20 44	2.6	9 20	2.4
10	5 59	17 35	0 22	1 14	21 1	2.5	9 2	2.5
0	5 44	17 51	0 22	1 14	21 18	2.5	8 46	2.5
10	5 28	18 7	0 23	1 16	21 34	2.4	8 29	2.5
20	5 11	18 23	0 24	1 22	21 51	2.3	8 12	2.6
30	4 52	18 43	0 27	1 33	22 11	2.2	7 51	2.6
35	4 41	18 54	0 29	1 42	22 23	2.2	7 39	2.7
40	4 27	19 8	0 32	1 56	22 36	2.1	7 25	2.7
45	4 12	19 23	0 36	2 18	22 52	2.0	7 9	2.7
50	3 53	19 43	0 42	3 12	23 11	2.5	6 49	2.8
55	3 27	20 8	0 52	:::	23 36	2.4	6 23	2.9
60	2 52	20 44	1 15	:::	...	.0	5 46	3.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	323	39.7	46	21	28.7	1	182	52.4	-20	16.5	146	58.6	-22	42.1		
2	352	26.9	46	21	28.9	-2	212	56.1	-20	16.7	177	3.0	-22	42.1		
4	21	14.0	46	21	28.6	-5	242	59.9	-20	16.9	207	7.3	-22	42.1		
6	50	1.1	46	21	27.6	-8	273	3.7	-20	17.1	237	11.7	-22	42.1		
8	78	48.3	46	21	26.1	-11	303	7.4	-20	17.3	267	16.1	-22	42.1		
10	107	35.5	46	21	24.0	-14	333	11.2	-20	17.6	297	20.4	-22	42.0		
12	136	22.8	47	21	21.2	-17	3	14.9	-20	17.8	327	24.8	-22	42.0		
14	165	10.1	47	21	17.9	-20	33	18.7	-20	18.0	357	29.1	-22	42.0		
16	193	57.5	47	21	14.0	-23	63	22.5	-20	18.2	27	33.5	-22	42.0		
18	222	45.0	48	21	9.5	-25	93	26.2	-20	18.4	57	37.9	-22	42.0		
20	251	32.6	49	21	4.4	-28	123	30.0	-20	18.6	87	42.2	-22	41.9		
22	280	20.3	49	20	58.7	-31	153	33.7	-20	18.8	117	46.6	-22	41.9		
Δ								19		-1			22		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	8.7	-21	4.1	65	51.5	220	12.8	-9	49.8	86	44.4	-10	9.8
2	213	8.3	-21	5.0	95	56.5	250	15.6	-9	49.8	116	46.4	-10	8.4
4	243	7.9	-21	6.0	126	1.4	280	18.4	-9	49.7	146	48.4	-10	7.1
6	273	7.4	-21	6.9	156	6.3	310	21.2	-9	49.6	176	50.4	-10	5.8
8	303	7.0	-21	7.8	186	11.2	340	24.0	-9	49.5	206	52.3	-10	4.4
10	333	6.6	-21	8.7	216	16.2	10	26.7	-9	49.5	236	54.3	-10	3.1
12	3	6.2	-21	9.6	246	21.1	40	29.5	-9	49.4	266	56.3	-10	1.7
14	33	5.8	-21	10.5	276	26.0	70	32.2	-9	49.4	296	58.3	-10	.4
16	63	5.4	-21	11.4	306	30.9	100	35.0	-9	49.3	327	.3	-9	59.1
18	93	5.0	-21	12.3	336	35.9	130	37.7	-9	49.3	357	2.3	-9	57.7
20	123	4.6	-21	13.2	6	40.8	160	40.4	-9	49.3	27	4.3	-9	56.4
22	153	4.2	-21	14.1	36	45.7	190	43.1	-9	49.3	57	6.3	-9	55.0
Δ		-2		-5			14		0		10			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 26	15 8	0 53	2 37	19 42	3.6	12 28	1.3
55	7 54	15 41	0 43	2 13	20 13	3.3	11 56	1.6
50	7 31	16 4	0 37	1 56	20 35	3.1	11 33	1.8
45	7 13	16 22	0 33	1 44	20 52	3.0	11 15	1.9
40	6 58	16 37	0 30	1 36	21 6	2.9	11 0	2.0
35	6 46	16 49	0 28	1 29	21 18	2.8	10 48	2.1
30	6 35	17 0	0 26	1 24	21 29	2.7	10 37	2.1
20	6 16	17 19	0 24	1 17	21 47	2.6	10 18	2.2
10	5 59	17 36	0 22	1 14	22 2	2.5	10 2	2.3
0	5 44	17 51	0 22	1 14	22 17	2.4	9 46	2.4
10	5 28	18 7	0 23	1 16	22 31	2.3	9 31	2.5
20	5 11	18 24	0 24	1 22	22 47	2.1	9 14	2.6
30	4 52	18 44	0 27	1 33	23 5	2.0	8 55	2.7
35	4 40	18 55	0 29	1 43	23 15	2.3	8 43	2.8
40	4 27	19 9	0 32	1 56	23 27	2.3	8 30	2.9
45	4 11	19 25	0 36	2 19	23 41	2.3	8 15	3.0
50	3 52	19 44	0 42	3 16	...	.0	7 56	3.1
55	3 26	20 10	0 52	...	...	.0	7 32	3.2
60	2 50	20 47	1 16	...	0 11	1.6	6 58	3.5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	309	8.1	50	20	52.5	-34	183	37.5	-20	19.0	147	50.9	-22	41.9		
2	337	56.1	51	20	45.7	-37	213	41.3	-20	19.3	177	55.3	-22	41.9		
4	6	44.2	51	20	38.3	-40	243	45.0	-20	19.5	207	59.6	-22	41.8		
6	35	32.5	52	20	30.4	-42	273	48.8	-20	19.7	238	4.0	-22	41.8		
8	64	21.0	53	20	21.9	-45	303	52.5	-20	19.9	268	8.4	-22	41.8		
10	93	9.6	54	20	12.8	-48	333	56.3	-20	20.1	298	12.7	-22	41.8		
12	121	58.5	55	20	3.3	-51	4	.0	-20	20.3	328	17.1	-22	41.8		
14	150	47.5	56	19	53.1	-53	34	3.8	-20	20.5	358	21.4	-22	41.7		
16	179	36.8	57	19	42.5	-56	64	7.6	-20	20.7	28	25.8	-22	41.7		
18	208	26.3	59	19	31.3	-58	94	11.3	-20	21.0	58	30.1	-22	41.7		
20	237	16.0	60	19	19.7	-61	124	15.1	-20	21.2	88	34.5	-22	41.7		
22	266	5.9	61	19	7.5	-63	154	18.8	-20	21.4	118	38.8	-22	41.7		
Δ							19		-1		22			0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	12 34.6		- .8	16.2	T _m	3 32	2.5	59.8	16.3
12	12 24.8		T _{m☉}	11 h 47.6 min	Starost	19.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h min	'	°		
♀	9 18	.1	154	-6.1	♃	11 44	.0	118	-1.3
♂	18 12	.1	21	-6	♄	14 7	.0	82	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	3.7	-21	15.0	66	50.7	220	45.8	-9	49.2	87	8.3	-9	53.7
2	213	3.3	-21	15.9	96	55.6	250	48.5	-9	49.2	117	10.3	-9	52.3
4	243	2.9	-21	16.8	127	.5	280	51.1	-9	49.2	147	12.3	-9	51.0
6	273	2.5	-21	17.6	157	5.4	310	53.8	-9	49.2	177	14.3	-9	49.6
8	303	2.1	-21	18.5	187	10.4	340	56.4	-9	49.3	207	16.3	-9	48.3
10	333	1.6	-21	19.4	217	15.3	10	59.1	-9	49.3	237	18.2	-9	46.9
12	3	1.2	-21	20.3	247	20.2	41	1.7	-9	49.3	267	20.2	-9	45.6
14	33	.8	-21	21.1	277	25.2	71	4.3	-9	49.3	297	22.2	-9	44.3
16	63	.4	-21	22.0	307	30.1	101	6.9	-9	49.4	327	24.2	-9	42.9
18	92	59.9	-21	22.9	337	35.0	131	9.5	-9	49.4	357	26.2	-9	41.6
20	122	59.5	-21	23.7	7	39.9	161	12.1	-9	49.5	27	28.2	-9	40.2
22	152	59.1	-21	24.6	37	44.9	191	14.6	-9	49.5	57	30.2	-9	38.9
Δ		-2		-4			13		0		10			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 28	15 7	0 53	2 38	21 9	3.7	12 60	.9
55	7 56	15 40	0 43	2 13	21 33	3.4	12 34	1.2
50	7 32	16 3	0 37	1 56	21 50	3.2	12 15	1.4
45	7 14	16 21	0 33	1 45	22 4	3.0	12 0	1.6
40	6 59	16 36	0 30	1 36	22 16	2.9	11 48	1.7
35	6 47	16 49	0 28	1 29	22 26	2.8	11 37	1.8
30	6 36	16 60	0 26	1 24	22 34	2.7	11 28	1.9
20	6 17	17 19	0 24	1 18	22 49	2.5	11 12	2.0
10	5 60	17 36	0 23	1 14	23 2	2.4	10 58	2.2
0	5 44	17 52	0 22	1 14	23 14	2.2	10 44	2.3
10	5 28	18 7	0 23	1 16	23 26	2.2	10 31	2.4
20	5 11	18 25	0 24	1 22	23 38	2.2	10 17	2.6
30	4 52	18 45	0 27	1 34	23 53	2.2	9 60	2.7
35	4 40	18 56	0 29	1 43	...	.0	9 50	2.8
40	4 27	19 10	0 32	1 57	...	.0	9 39	2.9
45	4 11	19 26	0 36	2 20	...	.0	9 26	3.0
50	3 51	19 46	0 42	3 21	0 -2	1.6	9 10	3.2
55	3 25	20 12	0 53	...	0 19	1.4	8 50	3.4
60	2 48	20 49	1 18	...	0 49	1.1	8 22	3.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	294	56.1	62	18	54.8	-66	184	22.6	-20	21.6	148	43.2	-22	41.6		
2	323	46.5	63	18	41.6	-68	214	26.4	-20	21.8	178	47.5	-22	41.6		
4	352	37.2	65	18	28.0	-71	244	30.1	-20	22.0	208	51.9	-22	41.6		
6	21	28.1	66	18	13.9	-73	274	33.9	-20	22.2	238	56.2	-22	41.6		
8	50	19.3	67	17	59.3	-75	304	37.6	-20	22.4	269	.6	-22	41.5		
10	79	10.8	69	17	44.3	-77	334	41.4	-20	22.6	299	5.0	-22	41.5		
12	108	2.5	70	17	28.8	-79	4	45.1	-20	22.9	329	9.3	-22	41.5		
14	136	54.5	71	17	13.0	-82	34	48.9	-20	23.1	359	13.7	-22	41.5		
16	165	46.8	73	16	56.6	-84	64	52.7	-20	23.3	29	18.0	-22	41.5		
18	194	39.4	74	16	39.9	-86	94	56.4	-20	23.5	59	22.4	-22	41.4		
20	223	32.2	76	16	22.8	-88	125	.2	-20	23.7	89	26.7	-22	41.4		
22	252	25.3	77	16	5.3	-89	155	3.9	-20	23.9	119	31.1	-22	41.4		
Δ							19		-1		22			0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	12 15.0		- .9	16.2	T _m	4 31	2.3	59.6	16.2
12									

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 58.6 -21 25.5		67 49.8	221 17.2 -9 49.6	87 32.2 -9 37.5		
2	212 58.2 -21 26.3		97 54.7	251 19.8 -9 49.7	117 34.2 -9 36.2		
4	242 57.8 -21 27.2		127 59.7	281 22.3 -9 49.7	147 36.1 -9 34.8		
6	272 57.3 -21 28.0		158 4.6	311 24.8 -9 49.8	177 38.1 -9 33.5		
8	302 56.9 -21 28.9		188 9.5	341 27.3 -9 49.9	207 40.1 -9 32.1		
10	332 56.5 -21 29.7		218 14.4	11 29.8 -9 50.0	237 42.1 -9 30.7		
12	2 56.0 -21 30.5		248 19.4	41 32.3 -9 50.1	267 44.1 -9 29.4		
14	32 55.6 -21 31.4		278 24.3	71 34.8 -9 50.2	297 46.1 -9 28.0		
16	62 55.1 -21 32.2		308 29.2	101 37.3 -9 50.3	327 48.1 -9 26.7		
18	92 54.7 -21 33.0		338 34.2	131 39.8 -9 50.5	357 50.1 -9 25.3		
20	122 54.3 -21 33.9		8 39.1	161 42.2 -9 50.6	27 52.0 -9 24.0		
22	152 53.8 -21 34.7		38 44.0	191 44.7 -9 50.7	57 54.0 -9 22.6		
Δ	-2	-4		12	-1	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 31	15 6	0 54	2 38	22 38	3.7	13 22	.7
55	7 58	15 39	0 43	2 13	22 55	2.2	13 4	1.0
50	7 34	16 2	0 37	1 57	23 7	2.2	12 50	1.2
45	7 15	16 21	0 33	1 45	23 17	2.2	12 38	1.4
40	7 0	16 36	0 30	1 36	23 25	2.2	12 29	1.5
35	6 48	16 49	0 28	1 29	23 33	2.2	12 21	1.6
30	6 36	16 60	0 26	1 24	23 39	2.2	12 13	1.7
20	6 17	17 19	0 24	1 18	23 49	2.1	12 1	1.9
10	6 0	17 36	0 23	1 14	23 59	2.1	11 50	2.0
0	5 45	17 52	0 22	1 14	...	.0	11 40	2.2
10	5 29	18 8	0 23	1 16	...	.0	11 29	2.3
20	5 11	18 25	0 24	1 22	...	.0	11 18	2.5
30	4 51	18 45	0 27	1 34	...	.0	11 5	2.7
35	4 40	18 57	0 29	1 43	0 1	1.7	10 58	2.8
40	4 26	19 11	0 32	1 57	0 11	1.6	10 49	2.9
45	4 10	19 27	0 36	2 21	0 22	1.5	10 39	3.0
50	3 50	19 47	0 42	3 27	0 36	1.3	10 27	3.2
55	3 24	20 13	0 53	:::	0 52	1.1	10 11	3.4
60	2 47	20 51	1 19	:::	1 15	.8	9 51	3.7
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	Δ	S _♄	δ _♄	Δ	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	281 18.7 78	15 47.4	-91		185 7.7 -20 24.1				149 35.4 -22 41.4			
2	310 12.4 80	15 29.1	-93		215 11.5 -20 24.3				179 39.8 -22 41.3			
4	339 6.4 81	15 10.5	-95		245 15.2 -20 24.5				209 44.1 -22 41.3			
6	8 .6 83	14 51.5	-97		275 19.0 -20 24.7				239 48.5 -22 41.3			
8	36 55.2 84	14 32.2	-98		305 22.7 -20 25.0				269 52.8 -22 41.3			
10	65 50.0 85	14 12.6	-100		335 26.5 -20 25.2				299 57.2 -22 41.3			
12	94 45.1 87	13 52.6	-101		5 30.2 -20 25.4				330 1.5 -22 41.2			
14	123 40.4 88	13 32.4	-103		35 34.0 -20 25.6				0 5.8 -22 41.2			
16	152 36.0 89	13 11.8	-104		65 37.8 -20 25.8				30 10.2 -22 41.2			
18	181 31.9 91	12 51.0	-106		95 41.5 -20 26.0				60 14.5 -22 41.2			
20	210 28.1 92	12 29.8	-107		125 45.3 -20 26.2				90 18.9 -22 41.1			
22	239 24.5 93	12 8.4	-108		155 49.0 -20 26.4				120 23.2 -22 41.1			
Δ					19	-1			22	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	11 54.6	- .9	16.2	T _m	5 27	2.2	59.4 16.2
12	11 44.0	T _m ☉	11 h 48.3 min	Starost	21.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 14	.1	153	-6.0	♄	11 38	.0	117	-1.3
♂	18 9	.1	20	- .5	♂	13 60	.0	82	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 53.4 -21 35.5		68 48.9	221 47.1 -9 50.8	87 56.0 -9 21.3		
2	212 52.9 -21 36.3		98 53.9	251 49.5 -9 51.0	117 58.0 -9 19.9		
4	242 52.5 -21 37.2		128 58.8	281 51.9 -9 51.1	147 60.0 -9 18.6		
6	272 52.0 -21 38.0		159 3.7	311 54.3 -9 51.3	178 2.0 -9 17.2		
8	302 51.6 -21 38.8		189 8.7	341 56.7 -9 51.5	208 3.9 -9 15.8		
10	332 51.1 -21 39.6		219 13.6	11 59.1 -9 51.6	238 5.9 -9 14.5		
12	2 50.7 -21 40.4		249 18.5	42 1.5 -9 51.8	268 7.9 -9 13.1		
14	32 50.2 -21 41.2		279 23.4	72 3.8 -9 52.0	298 9.9 -9 11.8		
16	62 49.7 -21 42.0		309 28.4	102 6.2 -9 52.2	328 11.9 -9 10.4		
18	92 49.3 -21 42.8		339 33.3	132 8.5 -9 52.4	358 13.8 -9 9.0		
20	122 48.8 -21 43.6		9 38.2	162 10.9 -9 52.6	28 15.8 -9 7.7		
22	152 48.4 -21 44.4		39 43.1	192 13.2 -9 52.8	58 17.8 -9 6.3		
Δ	-2	-4		12	-1	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 33	15 4	0 54	2 39	...	.0	13 39	.6
55	7 59	15 38	0 44	2 14	23 47	3.3	13 27	.8
50	7 35	16 2	0 37	1 57	23 60	3.1	13 18	1.1
45	7 17	16 20	0 33	1 45	...	.0	13 11	1.2
40	7 1	16 36	0 30	1 36	...	.0	13 5	1.4
35	6 49	16 49	0 28	1 29	...	.0	12 59	1.5
30	6 37	16 60	0 26	1 24	...	.0	12 55	1.6
20	6 18	17 19	0 24	1 18	...	.0	12 46	1.8
10	6 1	17 36	0 23	1 15	...	.0	12 39	1.9
0	5 45	17 52	0 22	1 14	0 7	2.1	12 32	2.1
10	5 29	18 8	0 23	1 17	0 16	2.0	12 25	2.2
20	5 11	18 26	0 24	1 23	0 25	1.8	12 18	2.4
30	4 51	18 46	0 27	1 34	0 36	1.6	12 9	2.6
35	4 39	18 58	0 29	1 44	0 42	1.5	12 4	2.7
40	4 26	19 12	0 32	1 58	0 49	1.4	11 58	2.8
45	4 10	19 28	0 36	2 22	0 57	1.3	11 52	3.0
50	3 49	19 49	0 42	3 33	1 7	1.1	11 44	3.2
55	3 23	20 15	0 53	:::	1 19	.9	11 34	3.4
60	2 45	20 54	1 21	:::	1 34	.6	11 20	3.7
S								

UT	MESEC				JUPITER				SATURN			
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	Δ	S _♄	δ _♄	Δ	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	268 21.2 95	11 46.8	-109		185 52.8 -20 26.6				150 27.6 -22 41.1			
2	297 18.1 96	11 24.9	-111		215 56.5 -20 26.8				180 31.9 -22 41.1			
4	326 15.3 97	11 2.8	-112		246 .3 -20 27.0				210 36.3 -22 41.0			
6	355 12.8 98	10 40.4	-113		276 4.1 -20 27.2				240 40.6 -22 41.0			
8	24 10.4 100	10 17.8	-114		306 7.8 -20 27.4				270 45.0 -22 41.0			
10	53 8.3 101	9 55.1	-115		336 11.6 -20 27.7				300 49.3 -22 41.0			
12	82 6.5 102	9 32.1	-116		6 15.3 -20 27.9				330 53.7 -22 41.0			
14	111 4.9 103	9 8.9	-117		36 19.1 -20 28.1				0 58.0 -22 40.9			
16	140 3.4 104	8 45.6	-117		66 22.8 -20 28.3				31 2.3 -22 40.9			
18	169 2.2 105	8 22.1	-118		96 26.6 -20 28.5				61 6.7 -22 40.9			
20	198 1.3 106	7 58.4	-119		126 30.4 -20 28.7				91 11.0 -22 40.9			
22	227 .5 107	7 34.6	-120		156 34.1 -20 28.9				121 15.4 -22 40.8			
Δ					19	-1			22	0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	11 33.4	- .9	16.2	T _m	6 20	2.1	59.0 16.1
12	11 22.5	T _m ☉	11 h 48.6 min	Starost	22.3 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 12	.1	153	-6.0	♄	11 35	.0	117	-1.3
♂	18 7	.1	19	- .5	♂	13 56	.0	82	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 47.9	-21 45.2	69 48.1	222 15.5	-9 53.0	88 19.8	-9 5.0
2	212 47.4	-21 46.0	99 53.0	252 17.8	-9 53.2	118 21.8	-9 3.6
4	242 47.0	-21 46.7	129 57.9	282 20.1	-9 53.4	148 23.8	-9 2.2
6	272 46.5	-21 47.5	160 2.9	312 22.4	-9 53.7	178 25.7	-9 .9
8	302 46.1	-21 48.3	190 7.8	342 24.7	-9 53.9	208 27.7	-8 59.5
10	332 45.6	-21 49.1	220 12.7	12 26.9	-9 54.1	238 29.7	-8 58.1
12	2 45.1	-21 49.8	250 17.6	42 29.2	-9 54.4	268 31.7	-8 56.8
14	32 44.6	-21 50.6	280 22.6	72 31.4	-9 54.6	298 33.6	-8 55.4
16	62 44.2	-21 51.4	310 27.5	102 33.7	-9 54.9	328 35.6	-8 54.0
18	92 43.7	-21 52.1	340 32.4	132 35.9	-9 55.2	358 37.6	-8 52.7
20	122 43.2	-21 52.9	10 37.4	162 38.1	-9 55.4	28 39.6	-8 51.3
22	152 42.8	-21 53.7	40 42.3	192 40.3	-9 55.7	58 41.6	-8 49.9
Δ	-2	-4		11	-1	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 35	15 3	0 54	2 40	0 8	3.6	13 53	.9
55	8 1	15 37	0 44	2 14	...	.0	13 48	1.1
50	7 37	16 1	0 37	1 57	...	.0	13 43	1.3
45	7 18	16 20	0 33	1 45	0 29	3.0	13 40	1.4
40	7 2	16 35	0 30	1 36	0 34	2.8	13 37	1.5
35	6 49	16 48	0 28	1 30	0 38	2.7	13 35	1.6
30	6 38	16 60	0 26	1 24	0 42	2.6	13 33	1.6
20	6 19	17 19	0 24	1 18	0 48	2.4	13 29	1.8
10	6 1	17 37	0 23	1 15	0 53	2.2	13 25	1.9
0	5 45	17 53	0 22	1 14	0 59	2.0	13 22	2.0
10	5 29	18 9	0 23	1 17	1 4	1.9	13 19	2.1
20	5 12	18 27	0 24	1 23	1 9	1.7	13 15	2.3
30	4 51	18 47	0 27	1 34	1 15	1.5	13 11	2.4
35	4 39	18 59	0 29	1 44	1 19	1.4	13 9	2.5
40	4 26	19 13	0 32	1 58	1 23	1.3	13 6	2.6
45	4 9	19 29	0 36	2 23	1 28	1.2	13 3	2.7
50	3 49	19 50	0 43	3 43	1 33	1.0	12 59	2.8
55	3 22	20 17	0 54	:::	1 40	.8	12 55	3.0
60	2 44	20 56	1 22	:::	1 49	.5	12 49	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	255 59.9	108	7 10.7	-120	186 37.9	-20 29.1	151 19.7	-22 40.8
2	284 59.5	109	6 46.6	-121	216 41.6	-20 29.3	181 24.1	-22 40.8
4	313 59.3	110	6 22.4	-121	246 45.4	-20 29.5	211 28.4	-22 40.8
6	342 59.2	111	5 58.2	-122	276 49.1	-20 29.7	241 32.7	-22 40.7
8	11 59.3	111	5 33.8	-122	306 52.9	-20 29.9	271 37.1	-22 40.7
10	40 59.6	112	5 9.3	-123	336 56.6	-20 30.1	301 41.4	-22 40.7
12	70 .1	113	4 44.7	-123	7 .4	-20 30.3	331 45.8	-22 40.7
14	99 .7	114	4 20.1	-123	37 4.2	-20 30.5	1 50.1	-22 40.6
16	128 1.5	114	3 55.4	-124	67 7.9	-20 30.7	31 54.5	-22 40.6
18	157 2.3	115	3 30.6	-124	97 11.7	-20 30.9	61 58.8	-22 40.6
20	186 3.4	116	3 5.9	-124	127 15.4	-20 31.1	92 3.1	-22 40.6
22	215 4.5	116	2 41.0	-124	157 19.2	-20 31.4	122 7.5	-22 40.5
Δ					19	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	11 11.6	-9	16.2	T _m	7 10	2.0	58.6	16.0	
12	11 .4			T _{m☉}	11 h 49.0 min	Starost 23.3 d	Faza ☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 10	.1	152	-5.9	♄	11 32	.0	117	-1.3
♂	18 5	.1	19	-5	♂	13 53	.0	82	.7

2. DECEMBAR

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 42.3	-21 54.4	70 47.2	222 42.5	-9 56.0	88 43.5	-8 48.6
2	212 41.8	-21 55.2	100 52.1	252 44.7	-9 56.3	118 45.5	-8 47.2
4	242 41.3	-21 55.9	130 57.1	282 46.9	-9 56.6	148 47.5	-8 45.8
6	272 40.9	-21 56.7	161 2.0	312 49.1	-9 56.9	178 49.5	-8 44.5
8	302 40.4	-21 57.4	191 6.9	342 51.2	-9 57.2	208 51.4	-8 43.1
10	332 39.9	-21 58.1	221 11.9	12 53.4	-9 57.5	238 53.4	-8 41.7
12	2 39.4	-21 58.9	251 16.8	42 55.5	-9 57.8	268 55.4	-8 40.4
14	32 38.9	-21 59.6	281 21.7	72 57.6	-9 58.1	298 57.4	-8 39.0
16	62 38.4	-22 .3	311 26.6	102 59.8	-9 58.4	328 59.3	-8 37.6
18	92 38.0	-22 1.1	341 31.6	133 1.9	-9 58.7	359 1.3	-8 36.3
20	122 37.5	-22 1.8	11 36.5	163 4.0	-9 59.1	29 3.3	-8 34.9
22	152 37.0	-22 2.5	41 41.4	193 6.1	-9 59.4	59 5.2	-8 33.5
Δ	-2	-4		11	-2	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 37	15 2	0 54	2 40	1 35	1.6	14 15	3.5
55	8 2	15 36	0 44	2 14	1 37	1.7	14 14	3.3
50	7 38	16 1	0 37	1 57	1 39	1.7	14 14	3.0
45	7 19	16 20	0 33	1 45	1 40	1.8	14 13	2.9
40	7 3	16 35	0 30	1 36	1 41	1.8	14 13	2.7
35	6 50	16 48	0 28	1 30	1 42	1.8	14 12	2.6
30	6 39	16 60	0 26	1 25	1 43	1.9	14 12	2.5
20	6 19	17 19	0 24	1 18	1 45	1.9	14 12	2.3
10	6 2	17 37	0 23	1 15	1 46	2.0	14 11	2.1
0	5 46	17 53	0 22	1 14	1 48	2.0	14 11	2.0
10	5 29	18 9	0 23	1 17	1 49	2.0	14 10	1.8
20	5 12	18 27	0 24	1 23	1 51	2.1	14 10	1.7
30	4 51	18 48	0 27	1 35	1 52	2.1	14 9	1.5
35	4 39	18 60	0 29	1 44	1 53	2.2	14 9	1.4
40	4 25	19 14	0 32	1 59	1 54	2.2	14 8	1.3
45	4 9	19 31	0 36	2 24	1 56	2.2	14 8	1.1
50	3 48	19 51	0 43	:::	1 57	2.3	14 7	1.0
55	3 21	20 18	0 54	:::	1 59	2.4	14 6	.8
60	2 42	20 58	1 23	:::	2 2	2.4	14 5	.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	244 5.8	117	2 16.2	-124	187 22.9	-20 31.6	152 11.8	-22 40.5
2	273 7.1	117	1 51.3	-124	217 26.7	-20 31.8	182 16.2	-22 40.5
4	302 8.6	118	1 26.4	-124	247 30.5	-20 32.0	212 20.5	-22 40.5
6	331 10.2	118	1 1.5	-124	277 34.2	-20 32.2	242 24.8	-22 40.4
8	0 11.8	119	0 36.7	-124	307 38.0	-20 32.4	272 29.2	-22 40.4
10	29 13.6	119	0 11.8	6	337 41.7	-20 32.6	302 33.5	-22 40.4
12	58 15.4	119	0 13.0	124	7 45.5	-20 32.8	332 37.8	-22 40.4
14	87 17.3	120	0 37.8	124	37 49.2	-20 33.0	2 42.2	-22 40.3
16	116 19.3	120	1 2.6	124	67 53.0	-20 33.2	32 46.5	-22 40.3
18	145 21.3	120	1 27.3	123	97 56.8	-20 33.4	62 50.9	-22 40.3
20	174 23.4	121	1 52.0	123	128 .5	-20 33.6	92 55.2	-22 40.3
22	203 25.5	121	2 16.6	123	158 4.3	-20 33.8	122 59.5	-22 40.2
Δ					19	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	10 49.1	-1.0	16.2	T _m	7 59	2.0	58.1	15.8	
12	10 37.6			T _{m☉}	11 h 49.4 min	Starost 24.3 d	Faza ☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	9 9	.1	152	-5.9	♄	11 29	.0	117	-1.3
♂	18 4	.1	18	-5	♂	13 49	.0	81	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	182	36.5	-22	3.2	71	46.4	223	8.2	-9	59.8	89	7.2	-8	32.1	
2	212	36.0	-22	4.0	101	51.3	253	10.3	-10	.1	119	9.2	-8	30.8	
4	242	35.5	-22	4.7	131	56.2	283	12.3	-10	.5	149	11.2	-8	29.4	
6	272	35.0	-22	5.4	162	1.1	313	14.4	-10	.8	179	13.1	-8	28.0	
8	302	34.5	-22	6.1	192	6.1	343	16.4	-10	1.2	209	15.1	-8	26.7	
10	332	34.0	-22	6.8	222	11.0	13	18.5	-10	1.6	239	17.1	-8	25.3	
12	2	33.6	-22	7.5	252	15.9	43	20.5	-10	2.0	269	19.0	-8	23.9	
14	32	33.1	-22	8.2	282	20.9	73	22.5	-10	2.3	299	21.0	-8	22.5	
16	62	32.6	-22	8.9	312	25.8	103	24.5	-10	2.7	329	23.0	-8	21.2	
18	92	32.1	-22	9.6	342	30.7	133	26.5	-10	3.1	359	25.0	-8	19.8	
20	122	31.6	-22	10.3	12	35.6	163	28.5	-10	3.5	29	26.9	-8	18.4	
22	152	31.1	-22	10.9	42	40.6	193	30.5	-10	3.9	59	28.9	-8	17.0	
Δ		-2		-3				10		-2			10		7

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 39	15 1	0 55	2 41	2 14	.5	15 40	3.5
55	8 4	15 35	0 44	2 15	2 18	.8	15 32	3.2
50	7 39	16 0	0 38	1 57	2 21	1.0	15 27	3.0
45	7 20	16 19	0 33	1 45	2 23	1.1	15 22	2.8
40	7 4	16 35	0 30	1 36	2 25	1.3	15 18	2.7
35	6 51	16 48	0 28	1 30	2 27	1.4	15 15	2.6
30	6 40	16 60	0 26	1 25	2 28	1.5	15 12	2.5
20	6 20	17 20	0 24	1 18	2 31	1.7	15 7	2.3
10	6 2	17 37	0 23	1 15	2 33	1.8	15 3	2.1
0	5 46	17 53	0 22	1 14	2 36	2.0	14 58	2.0
10	5 30	18 10	0 23	1 17	2 38	2.1	14 54	1.9
20	5 12	18 28	0 24	1 23	2 41	2.3	14 50	1.7
30	4 51	18 49	0 27	1 35	2 44	2.5	14 45	1.5
35	4 39	19 1	0 29	1 45	2 45	2.6	14 42	1.4
40	4 25	19 15	0 32	1 59	2 47	2.7	14 39	1.3
45	4 8	19 32	0 36	2 25	2 50	2.9	14 35	1.2
50	3 48	19 53	0 43	:::	2 52	3.0	14 30	1.0
55	3 20	20 20	0 55	:::	2 56	3.2	14 25	.8
60	2 41	20 60	1 25	:::	3 0	3.5	14 18	.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	232	27.6	121	2	41.1	122	188	8.0	-20	34.0	153	3.9	-22	40.2		
2	261	29.8	121	3	5.5	122	218	11.8	-20	34.2	183	8.2	-22	40.2		
4	290	32.0	121	3	29.9	121	248	15.5	-20	34.4	213	12.5	-22	40.2		
6	319	34.3	121	3	54.1	121	278	19.3	-20	34.6	243	16.9	-22	40.1		
8	348	36.5	121	4	18.2	120	308	23.0	-20	34.8	273	21.2	-22	40.1		
10	17	38.8	121	4	42.3	120	338	26.8	-20	35.0	303	25.6	-22	40.1		
12	46	41.0	121	5	6.2	119	8	30.6	-20	35.2	333	29.9	-22	40.1		
14	75	43.3	121	5	30.0	118	38	34.3	-20	35.4	3	34.2	-22	40.0		
16	104	45.5	121	5	53.6	117	68	38.1	-20	35.6	33	38.6	-22	40.0		
18	133	47.8	121	6	17.1	117	98	41.8	-20	35.8	63	42.9	-22	40.0		
20	162	50.0	121	6	40.4	116	128	45.6	-20	36.0	93	47.2	-22	40.0		
22	191	52.2	121	7	3.6	115	158	49.3	-20	36.2	123	51.6	-22	39.9		
Δ								19		-1			22		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	10 26.0	-1.0	16.3	T _m	8 47	2.0	57.7	15.7
12	10 14.1			T _{m☉}	11 h 49.8 min	Starost	25.3 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°	°	☾	h min	'	°	°
♂	9 7	.1	151	-5.9	♃	11 26	.0	116	-1.3
♂	18 2	.1	17	-5	♄	13 46	.0	81	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	182	30.6	-22	11.6	72	45.5	223	32.5	-10	4.3	89	30.9	-8	15.6	
2	212	30.1	-22	12.3	102	50.4	253	34.5	-10	4.8	119	32.8	-8	14.3	
4	242	29.6	-22	13.0	132	55.4	283	36.4	-10	5.2	149	34.8	-8	12.9	
6	272	29.1	-22	13.7	163	.3	313	38.4	-10	5.6	179	36.8	-8	11.5	
8	302	28.5	-22	14.3	193	5.2	343	40.3	-10	6.0	209	38.7	-8	10.1	
10	332	28.0	-22	15.0	223	10.1	13	42.3	-10	6.5	239	40.7	-8	8.8	
12	2	27.5	-22	15.7	253	15.1	43	44.2	-10	6.9	269	42.7	-8	7.4	
14	32	27.0	-22	16.3	283	20.0	73	46.1	-10	7.3	299	44.6	-8	6.0	
16	62	26.5	-22	17.0	313	24.9	103	48.0	-10	7.8	329	46.6	-8	4.6	
18	92	26.0	-22	17.6	343	29.8	133	49.9	-10	8.3	359	48.6	-8	3.2	
20	122	25.5	-22	18.3	13	34.8	163	51.8	-10	8.7	29	50.5	-8	1.9	
22	152	25.0	-22	18.9	43	39.7	193	53.7	-10	9.2	59	52.5	-8	.5	
Δ		-3		-3				10		-2			10		7

ϕ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 41	14 59	0 55	2 41	2 27	.6	17 4	3.4
55	8 5	15 35	0 44	2 15	2 37	.9	16 50	3.1
50	7 40	15 60	0 38	1 58	2 44	1.1	16 39	2.9
45	7 21	16 19	0 33	1 46	2 50	1.2	16 30	2.8
40	7 5	16 35	0 30	1 37	2 56	1.3	16 23	2.7
35	6 52	16 48	0 28	1 30	3 0	1.5	16 17	2.5
30	6 40	16 60	0 26	1 25	3 4	1.6	16 11	2.5
20	6 20	17 20	0 24	1 18	3 11	1.7	16 2	2.3
10	6 3	17 37	0 23	1 15	3 18	1.9	15 54	2.2
0	5 46	17 54	0 22	1 14	3 23	2.0	15 46	2.0
10	5 30	18 11	0 23	1 17	3 29	2.1	15 39	1.9
20	5 12	18 28	0 24	1 23	3 36	2.3	15 31	1.8
30	4 51	18 49	0 27	1 35	3 43	2.5	15 21	1.6
35	4 39	19 2	0 29	1 45	3 47	2.6	15 16	1.5
40	4 25	19 16	0 32	1 60	3 52	2.7	15 10	1.4
45	4 8	19 33	0 37	2 26	3 58	2.8	15 3	1.3
50	3 47	19 54	0 43	:::	4 5	3.0	14 55	1.1
55	3 19	20 22	0 55	:::	4 13	3.2	14 44	.9
60	2 40	21 2	1 27	:::	4 25	3.5	14 31	.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	220	54.4	121	7	26.6	114	188	53.1	-20	36.4	153	55.9	-22	39.9		
2	249	56.5	121	7	49.5	113	218	56.9	-20	36.6	184	.2	-22	39.9		
4	278	58.6	120	8	12.2	112	249	.6	-20	36.8	214	4.6	-22	39.9		
6	308	.6	120	8	34.6	111	279	4.4	-20	37.0	244	8.9	-22	39.8		
8	337	2.7	120	8	56.9	110	309	8.1	-20	37.2	274	13.2	-22	39.8		
10	6	4.6	120	9	19.0	109	339	11.9	-20	37.4	304	17.6	-22	39.8		
12	35	6.5	119	9	40.8	108	9	15.6	-20	37.6	334	21.9	-22	39.8		
14	64	8.4	119	10	2.5	107	39	19.4	-20	37.8	4	26.2	-22	39.7		
16	93	10.2	119	10	23.9	106	69	23.1	-20	38.0	34	30.6	-22	39.7		
18	122	11.9	118	10	45.1	105	99	26.9	-20	38.2	64	34.9	-22	39.7		
20	151	13.6	118	11	6.1	104	129	30.7	-20	38.4	94	39.2	-22	39.6		
22	180	15.2	118	11	26.8	102	159	34.4	-20	38.6	124	43.5	-22	39.6		
Δ								19		-1			22		0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	s	h min	min	'	'
00	10 2.3	-1.0	16.3	T _m			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 24.5 -22 19.6		73 44.6	223 55.6 -10 9.6	89 54.5 - 7 59.1		
2	212 24.0 -22 20.2		103 49.6	253 57.4 -10 10.1	119 56.4 - 7 57.7		
4	242 23.4 -22 20.9		133 54.5	283 59.3 -10 10.6	149 58.4 - 7 56.3		
6	272 22.9 -22 21.5		163 59.4	314 1.2 -10 11.1	180 .4 - 7 54.9		
8	302 22.4 -22 22.2		194 4.3	344 3.0 -10 11.6	210 2.3 - 7 53.6		
10	332 21.9 -22 22.8		224 9.3	14 4.8 -10 12.1	240 4.3 - 7 52.2		
12	2 21.4 -22 23.4		254 14.2	44 6.7 -10 12.6	270 6.2 - 7 50.8		
14	32 20.9 -22 24.0		284 19.1	74 8.5 -10 13.1	300 8.2 - 7 49.4		
16	62 20.3 -22 24.7		314 24.1	104 10.3 -10 13.6	330 10.2 - 7 48.0		
18	92 19.8 -22 25.3		344 29.0	134 12.1 -10 14.1	0 12.1 - 7 46.6		
20	122 19.3 -22 25.9		14 33.9	164 13.9 -10 14.6	30 14.1 - 7 45.3		
22	152 18.8 -22 26.5		44 38.8	194 15.7 -10 15.1	60 16.1 - 7 43.9		
Δ	-3	-3		9	-3	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 42	14 58	0 55	2 42	2 41	.7	18 26	3.3
55	8 7	15 34	0 44	2 15	2 57	1.0	18 5	3.0
50	7 42	15 59	0 38	1 58	3 10	1.2	17 49	2.8
45	7 22	16 19	0 33	1 46	3 20	1.3	17 37	2.7
40	7 6	16 35	0 30	1 37	3 28	1.5	17 27	2.6
35	6 53	16 48	0 28	1 30	3 35	1.6	17 18	2.5
30	6 41	16 60	0 26	1 25	3 42	1.6	17 10	2.4
20	6 21	17 20	0 24	1 18	3 53	1.8	16 57	2.3
10	6 3	17 38	0 23	1 15	4 2	1.9	16 46	2.2
0	5 47	17 54	0 22	1 15	4 12	2.0	16 35	2.1
10	5 30	18 11	0 23	1 17	4 21	2.2	16 24	2.0
20	5 12	18 29	0 24	1 23	4 31	2.3	16 13	1.8
30	4 51	18 50	0 27	1 35	4 42	2.4	15 60	1.7
35	4 39	19 2	0 29	1 45	4 49	2.5	15 52	1.6
40	4 25	19 17	0 32	2 0	4 57	2.6	15 44	1.5
45	4 8	19 34	0 37	2 26	5 5	2.7	15 34	1.4
50	3 47	19 55	0 43	:::	5 16	2.9	15 22	1.3
55	3 19	20 23	0 55	:::	5 30	3.1	15 7	1.1
60	2 38	21 4	1 28	:::	5 48	3.4	14 47	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	209 16.7 117	11 47.2	101	189 38.2 -20 38.8	154 47.9 -22 39.6			
2	238 18.1 117	12 7.4	100	219 41.9 -20 39.0	184 52.2 -22 39.6			
4	267 19.5 116	12 27.3	98	249 45.7 -20 39.2	214 56.5 -22 39.5			
6	296 20.8 116	12 47.0	97	279 49.4 -20 39.4	245 .9 -22 39.5			
8	325 22.0 116	13 6.4	95	309 53.2 -20 39.6	275 5.2 -22 39.5			
10	354 23.1 115	13 25.5	94	339 57.0 -20 39.8	305 9.5 -22 39.5			
12	23 24.2 115	13 44.3	93	10 .7 -20 40.0	335 13.9 -22 39.4			
14	52 25.1 114	14 2.8	91	40 4.5 -20 40.2	5 18.2 -22 39.4			
16	81 26.0 114	14 21.0	89	70 8.2 -20 40.4	35 22.5 -22 39.4			
18	110 26.8 113	14 38.9	88	100 12.0 -20 40.6	65 26.8 -22 39.3			
20	139 27.5 113	14 56.4	86	130 15.7 -20 40.8	95 31.2 -22 39.3			
22	168 28.1 113	15 13.7	85	160 19.5 -20 41.0	125 35.5 -22 39.3			
Δ				19	-1	22	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	9 37.9	-1.0	16.3	T _m	10 23	2.0	56.7 15.5		
12	9 25.4	T _{m☉}	11 h 50.6 min	Starost	27.3 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	9 4	.1	150	-5.8	♃	11 20	.0	116	-1.3
♂	17 59	.1	16	-4	♄	13 39	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 18.2 -22 27.1		74 43.8	224 17.4 -10 15.7	90 18.0 - 7 42.5		
2	212 17.7 -22 27.7		104 48.7	254 19.2 -10 16.2	120 20.0 - 7 41.1		
4	242 17.2 -22 28.3		134 53.6	284 21.0 -10 16.7	150 21.9 - 7 39.7		
6	272 16.7 -22 28.9		164 58.6	314 22.7 -10 17.3	180 23.9 - 7 38.3		
8	302 16.1 -22 29.5		195 3.5	344 24.5 -10 17.8	210 25.9 - 7 36.9		
10	332 15.6 -22 30.1		225 8.4	14 26.2 -10 18.4	240 27.8 - 7 35.5		
12	2 15.1 -22 30.7		255 13.3	44 27.9 -10 18.9	270 29.8 - 7 34.1		
14	32 14.5 -22 31.3		285 18.3	74 29.6 -10 19.5	300 31.7 - 7 32.8		
16	62 14.0 -22 31.9		315 23.2	104 31.3 -10 20.0	330 33.7 - 7 31.4		
18	92 13.5 -22 32.5		345 28.1	134 33.0 -10 20.6	0 35.6 - 7 30.0		
20	122 12.9 -22 33.1		15 33.1	164 34.7 -10 21.2	30 37.6 - 7 28.6		
22	152 12.4 -22 33.7		45 38.0	194 36.4 -10 21.8	60 39.6 - 7 27.2		
Δ	-3	-3		9	-3	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 44	14 58	0 56	2 42	2 59	1.0	19 45	3.0
55	8 8	15 33	0 44	2 15	3 21	1.2	19 18	2.8
50	7 43	15 59	0 38	1 58	3 38	1.4	18 58	2.7
45	7 23	16 19	0 33	1 46	3 52	1.5	18 42	2.6
40	7 7	16 35	0 30	1 37	4 3	1.6	18 29	2.5
35	6 54	16 48	0 28	1 30	4 12	1.7	18 18	2.4
30	6 42	16 60	0 26	1 25	4 21	1.8	18 8	2.4
20	6 22	17 20	0 24	1 18	4 36	1.9	17 52	2.3
10	6 4	17 38	0 23	1 15	4 46	2.0	17 38	2.2
0	5 47	17 55	0 22	1 15	5 1	2.1	17 24	2.1
10	5 30	18 12	0 23	1 17	5 13	2.2	17 11	2.0
20	5 12	18 30	0 24	1 23	5 26	2.3	16 57	1.9
30	4 51	18 51	0 27	1 35	5 41	2.4	16 40	1.8
35	4 39	19 3	0 29	1 45	5 50	2.5	16 31	1.8
40	4 25	19 18	0 32	2 0	6 00	2.5	16 20	1.7
45	4 7	19 35	0 37	2 27	6 11	2.6	16 8	1.6
50	3 46	19 56	0 43	:::	6 26	2.8	15 52	1.5
55	3 18	20 25	0 56	:::	6 44	2.9	15 33	1.3
60	2 37	21 6	1 30	:::	7 9	3.2	15 7	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	197 28.6 112	15 30.6	83	190 23.3 -20 41.2	155 39.8 -22 39.3			
2	226 29.1 112	15 47.2	81	220 27.0 -20 41.4	185 44.1 -22 39.2			
4	255 29.4 111	16 3.5	80	250 30.8 -20 41.6	215 48.5 -22 39.2			
6	284 29.7 111	16 19.4	78	280 34.5 -20 41.8	245 52.8 -22 39.2			
8	313 29.9 110	16 34.9	76	310 38.3 -20 42.0	275 57.1 -22 39.2			
10	342 30.0 110	16 50.2	74	340 42.0 -20 42.1	306 1.5 -22 39.1			
12	11 30.0 110	17 5.0	72	10 45.8 -20 42.3	336 5.8 -22 39.1			
14	40 29.9 109	17 19.5	71	40 49.5 -20 42.5	6 10.1 -22 39.1			
16	69 29.7 109	17 33.6	69	70 53.3 -20 42.7	36 14.4 -22 39.0			
18	98 29.5 109	17 47.4	67	100 57.1 -20 42.9	66 18.8 -22 39.0			
20	127 29.2 108	18 .7	65	131 .8 -20 43.1	96 23.1 -22 39.0			
22	156 28.9 108	18 13.7	63	161 4.6 -20 43.3	126 27.4 -22 39.0			
Δ				19	-1	22	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	9 13.0	-1.1	16.3	T _m	11 12	2.1	56.3 15.3		
12	9 .2	T _{m☉}	11 h 51.0 min	Starost	28.3 d	Faza ●			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	9 2	.1	150	-5.8	♃	11 17	.0	116	-1.3
♂	17 58	.1	16	-4	♄	13 35	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 11.9 -22 34.2		75 42.9	224 38.1 -10 22.3		90 41.5 - 7 25.8	
2	212 11.3 -22 34.8		105 47.8	254 39.8 -10 22.9		120 43.5 - 7 24.4	
4	242 10.8 -22 35.4		135 52.8	284 41.4 -10 23.5		150 45.4 - 7 23.0	
6	272 10.3 -22 35.9		165 57.7	314 43.1 -10 24.1		180 47.4 - 7 21.6	
8	302 9.7 -22 36.5		196 2.6	344 44.7 -10 24.7		210 49.3 - 7 20.2	
10	332 9.2 -22 37.1		226 7.6	14 46.4 -10 25.3		240 51.3 - 7 18.8	
12	2 8.6 -22 37.6		256 12.5	44 48.0 -10 25.9		270 53.3 - 7 17.5	
14	32 8.1 -22 38.2		286 17.4	74 49.6 -10 26.5		300 55.2 - 7 16.1	
16	62 7.5 -22 38.7		316 22.3	104 51.3 -10 27.1		330 57.2 - 7 14.7	
18	92 7.0 -22 39.3		346 27.3	134 52.9 -10 27.8		0 59.1 - 7 13.3	
20	122 6.5 -22 39.8		16 32.2	164 54.5 -10 28.4		31 1.1 - 7 11.9	
22	152 5.9 -22 40.3		46 37.1	194 56.1 -10 29.0		61 3.0 - 7 10.5	
Δ	-3	-3		8	-3	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 46	14 57	0 56	2 43	3 22	1.3	20 58	2.6
55	8 10	15 33	0 45	2 16	3 50	1.5	20 25	2.5
50	7 44	15 59	0 38	1 58	4 11	1.6	20 2	2.4
45	7 24	16 18	0 33	1 46	4 28	1.7	19 43	2.4
40	7 8	16 35	0 30	1 37	4 41	1.8	19 29	2.3
35	6 55	16 48	0 28	1 30	4 53	1.8	19 16	2.3
30	6 43	17 0	0 26	1 25	5 3	1.9	19 5	2.2
20	6 22	17 20	0 24	1 18	5 21	2.0	18 46	2.2
10	6 4	17 38	0 23	1 15	5 36	2.0	18 30	2.1
0	5 48	17 55	0 22	1 15	5 50	2.1	18 15	2.1
10	5 31	18 12	0 23	1 17	6 5	2.2	17 59	2.1
20	5 13	18 30	0 24	1 23	6 20	2.2	17 43	2.0
30	4 51	18 52	0 27	1 35	6 38	2.3	17 24	2.0
35	4 39	19 4	0 29	1 46	6 49	2.3	17 13	1.9
40	4 24	19 19	0 32	2 1	7 1	2.4	17 1	1.9
45	4 7	19 36	0 37	2 28	7 15	2.5	16 46	1.8
50	3 46	19 57	0 44	:::	7 32	2.5	16 28	1.8
55	3 18	20 26	0 56	:::	7 54	2.7	16 5	1.7
60	2 36	21 8	1 31	:::	8 25	2.8	15 34	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	185 28.4 107	18 26.3	61	191 8.3 -20 43.5		156 31.7 -22 38.9		
2	214 27.9 107	18 38.5	59	221 12.1 -20 43.7		186 36.1 -22 38.9		
4	243 27.3 107	18 50.4	57	251 15.8 -20 43.9		216 40.4 -22 38.9		
6	272 26.7 107	19 1.8	55	281 19.6 -20 44.1		246 44.7 -22 38.9		
8	301 26.0 106	19 12.8	53	311 23.4 -20 44.3		276 49.0 -22 38.8		
10	330 25.3 106	19 23.4	51	341 27.1 -20 44.5		306 53.4 -22 38.8		
12	359 24.5 106	19 33.6	49	11 30.9 -20 44.7		336 57.7 -22 38.8		
14	28 23.7 106	19 43.4	47	41 34.6 -20 44.9		7 2.0 -22 38.7		
16	57 22.8 105	19 52.8	45	71 38.4 -20 45.1		37 6.3 -22 38.7		
18	86 21.9 105	20 1.8	43	101 42.1 -20 45.3		67 10.6 -22 38.7		
20	115 21.0 105	20 10.4	41	131 45.9 -20 45.5		97 15.0 -22 38.7		
22	144 20.0 105	20 18.5	39	161 49.7 -20 45.6		127 19.3 -22 38.6		
Δ				19	-1	22	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	8 47.5	-1.1 16.3	T _m	12 2	2.1	55.8	15.2		
12	8 34.5	T _{m☉} 11 h 51.4 min	Starost 29.3 d	Faza ●					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	9 1	.1	149	-5.7	♃	11 14	.0	115	-1.3
♂	17 56	.1	15	-4	♄	13 32	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 5.4 -22 40.9		76 42.0	224 57.7 -10 29.6		91 5.0 - 7 9.1	
2	212 4.8 -22 41.4		106 47.0	254 59.2 -10 30.3		121 6.9 - 7 7.7	
4	242 4.3 -22 42.0		136 51.9	285 .8 -10 30.9		151 8.9 - 7 6.3	
6	272 3.7 -22 42.5		166 56.8	315 2.4 -10 31.6		181 10.8 - 7 4.9	
8	302 3.2 -22 43.0		197 1.8	345 3.9 -10 32.2		211 12.8 - 7 3.5	
10	332 2.6 -22 43.5		227 6.7	15 5.5 -10 32.9		241 14.7 - 7 2.1	
12	2 2.1 -22 44.0		257 11.6	45 7.0 -10 33.5		271 16.7 - 7 .7	
14	32 1.5 -22 44.6		287 16.5	75 8.5 -10 34.2		301 18.7 - 6 59.3	
16	62 1.0 -22 45.1		317 21.5	105 10.1 -10 34.9		331 20.6 - 6 57.9	
18	92 .4 -22 45.6		347 26.4	135 11.6 -10 35.5		1 22.6 - 6 56.5	
20	121 59.9 -22 46.1		17 31.3	165 13.1 -10 36.2		31 24.5 - 6 55.1	
22	151 59.3 -22 46.6		47 36.3	195 14.6 -10 36.9		61 26.5 - 6 53.7	
Δ	-3	-3		8	-3	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 48	14 56	0 56	2 43	3 53	1.7	22 1	2.1
55	8 11	15 33	0 45	2 16	4 26	1.8	21 25	2.1
50	7 45	15 58	0 38	1 58	4 50	1.9	20 60	2.1
45	7 25	16 18	0 34	1 46	5 9	1.9	20 40	2.1
40	7 9	16 35	0 30	1 37	5 24	2.0	20 24	2.1
35	6 55	16 48	0 28	1 30	5 37	2.0	20 11	2.1
30	6 43	17 0	0 26	1 25	5 48	2.0	19 59	2.1
20	6 23	17 21	0 24	1 18	6 8	2.0	19 39	2.1
10	6 5	17 39	0 23	1 15	6 25	2.1	19 21	2.1
0	5 48	17 56	0 22	1 15	6 41	2.1	19 5	2.1
10	5 31	18 13	0 23	1 17	6 57	2.1	18 49	2.1
20	5 13	18 31	0 24	1 23	7 14	2.1	18 31	2.1
30	4 52	18 52	0 27	1 36	7 33	2.2	18 11	2.1
35	4 39	19 5	0 29	1 46	7 45	2.2	17 59	2.1
40	4 24	19 20	0 33	2 1	7 58	2.2	17 46	2.1
45	4 7	19 37	0 37	2 29	8 14	2.2	17 30	2.0
50	3 46	19 59	0 44	:::	8 33	2.3	17 10	2.0
55	3 17	20 27	0 56	:::	8 58	2.3	16 45	2.0
60	2 35	21 9	1 33	:::	9 34	2.4	16 9	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	173 19.1 105	20 26.2	36	191 53.4 -20 45.8		157 23.6 -22 38.6		
2	202 18.1 105	20 33.5	34	221 57.2 -20 46.0		187 27.9 -22 38.6		
4	231 17.1 105	20 40.4	32	252 .9 -20 46.2		217 32.3 -22 38.5		
6	260 16.0 105	20 46.9	30	282 4.7 -20 46.4		247 36.6 -22 38.5		
8	289 15.0 105	20 52.9	28	312 8.4 -20 46.6		277 40.9 -22 38.5		
10	318 14.0 105	20 58.5	26	342 12.2 -20 46.8		307 45.2 -22 38.4		
12	347 13.0 105	21 3.7	24	12 16.0 -20 47.0		337 49.5 -22 38.4		
14	16 12.1 105	21 8.4	22	42 19.7 -20 47.2		7 53.9 -22 38.4		
16	45 11.1 105	21 12.7	19	72 23.5 -20 47.4		37 58.2 -22 38.4		
18	74 10.2 106	21 16.6	17	102 27.2 -20 47.6		68 2.5 -22 38.3		
20	103 9.3 106	21 20.0	15	132 31.0 -20 47.8		98 6.8 -22 38.3		
22	132 8.4 106	21 23.0	13	162 34.8 -20 48.0		128 11.1 -22 38.3		
Δ				19	-1	22	0	

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min s	s / ' / "	h min	h min	min	' / "	' / "		
00	8 21.5	-1.1 16.3	T _m	12 53	2.1	55.3	15.1		
12	8 8.2	T _{m☉} 11 h 51.9 min	Starost .7 d	Faza ●					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	8 60	.1	148	-5.7	♃	11 11	.0	115	-1.3
♂	17 55	.1	14	-4	♄	13 28	.0	81	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 58.8	-22 47.1	77 41.2	225 16.1	-10 37.6	91 28.4	-6 52.3
2	211 58.2	-22 47.6	107 46.1	255 17.6	-10 38.2	121 30.4	-6 50.9
4	241 57.6	-22 48.1	137 51.0	285 19.1	-10 38.9	151 32.3	-6 49.5
6	271 57.1	-22 48.6	167 56.0	315 20.5	-10 39.6	181 34.3	-6 48.1
8	301 56.5	-22 49.1	198 9	345 22.0	-10 40.3	211 36.2	-6 46.7
10	331 56.0	-22 49.6	228 5.8	15 23.5	-10 41.0	241 38.2	-6 45.3
12	1 55.4	-22 50.0	258 10.8	45 24.9	-10 41.7	271 40.1	-6 43.9
14	31 54.8	-22 50.5	288 15.7	75 26.4	-10 42.4	301 42.1	-6 42.5
16	61 54.3	-22 51.0	318 20.6	105 27.8	-10 43.2	331 44.0	-6 41.1
18	91 53.7	-22 51.5	348 25.5	135 29.2	-10 43.9	1 45.9	-6 39.7
20	121 53.1	-22 51.9	18 30.5	165 30.7	-10 44.6	31 47.9	-6 38.3
22	151 52.6	-22 52.4	48 35.4	195 32.1	-10 45.3	61 49.8	-6 36.9
Δ	-3	-2		7	-4	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 49	14 55	0 56	2 44	4 34	2.2	22 52	1.6
55	8 12	15 32	0 45	2 16	5 10	2.2	22 16	1.7
50	7 46	15 58	0 38	1 59	5 36	2.2	21 50	1.8
45	7 26	16 18	0 34	1 46	5 55	2.1	21 31	1.8
40	7 10	16 35	0 30	1 37	6 11	2.1	21 15	1.9
35	6 56	16 48	0 28	1 30	6 25	2.1	21 1	1.9
30	6 44	17 0	0 26	1 25	6 37	2.1	20 49	1.9
20	6 24	17 21	0 24	1 18	6 57	2.1	20 29	2.0
10	6 6	17 39	0 23	1 15	7 15	2.1	20 12	2.0
0	5 49	17 56	0 22	1 15	7 31	2.1	19 55	2.0
10	5 31	18 13	0 23	1 17	7 48	2.1	19 39	2.1
20	5 13	18 32	0 24	1 24	8 5	2.0	19 21	2.1
30	4 52	18 53	0 27	1 36	8 26	2.0	19 1	2.1
35	4 39	19 6	0 30	1 46	8 38	2.0	18 49	2.2
40	4 24	19 20	0 33	2 1	8 51	2.0	18 35	2.2
45	4 7	19 38	0 37	2 29	9 8	2.0	18 19	2.2
50	3 45	19 60	0 44	:::	9 28	1.9	17 59	2.3
55	3 17	20 29	0 56	:::	9 54	1.9	17 33	2.3
60	2 34	21 11	1 35	:::	10 30	1.8	16 56	2.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	161 7.6	106	21 25.6	11	192 38.5	-20 48.1	158 15.5	-22 38.2
2	190 6.9	106	21 27.8	9	222 42.3	-20 48.3	188 19.8	-22 38.2
4	219 6.2	107	21 29.5	7	252 46.0	-20 48.5	218 24.1	-22 38.2
6	248 5.5	107	21 30.8	4	282 49.8	-20 48.7	248 28.4	-22 38.2
8	277 4.9	107	21 31.7	2	312 53.5	-20 48.9	278 32.7	-22 38.1
10	306 4.4	108	21 32.2	0	342 57.3	-20 49.1	308 37.1	-22 38.1
12	335 4.0	108	21 32.2	-2	13 1.1	-20 49.3	338 41.4	-22 38.1
14	4 3.7	109	21 31.8	-4	43 4.8	-20 49.5	8 45.7	-22 38.0
16	33 3.4	109	21 31.0	-6	73 8.6	-20 49.7	38 50.0	-22 38.0
18	62 3.2	110	21 29.7	-8	103 12.3	-20 49.9	68 54.3	-22 38.0
20	91 3.2	110	21 28.1	-10	133 16.1	-20 50.0	98 58.6	-22 37.9
22	120 3.2	111	21 26.0	-12	163 19.9	-20 50.2	129 3.0	-22 37.9
Δ					19	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min min	' / "	' / "			
00	7 55.0	-1.1 16.3	T _m	13 43	2.1	54.9	15.0		
12	7 41.5	T _{m☉} 11 h 52.3 min		Starost 1.7 d	Faza ●				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 58	.1	148	-5.7	♄	11 8	.0	115	-1.3
	17 53	.1	14	-4	♅	13 25	.0	81	.7

10. DECEMBAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 52.0	-22 52.9	78 40.3	225 33.5	-10 46.0	91 51.8	-6 35.5
2	211 51.5	-22 53.3	108 45.3	255 34.9	-10 46.8	121 53.7	-6 34.1
4	241 50.9	-22 53.8	138 50.2	285 36.3	-10 47.5	151 55.7	-6 32.7
6	271 50.3	-22 54.2	168 55.1	315 37.7	-10 48.3	181 57.6	-6 31.3
8	301 49.8	-22 54.7	199 0	345 39.1	-10 49.0	211 59.6	-6 29.9
10	331 49.2	-22 55.1	229 5.0	15 40.4	-10 49.7	242 1.5	-6 28.5
12	1 48.6	-22 55.6	259 9.9	45 41.8	-10 50.5	272 3.5	-6 27.1
14	31 48.0	-22 56.0	289 14.8	75 43.2	-10 51.2	302 5.4	-6 25.7
16	61 47.5	-22 56.5	319 19.8	105 44.5	-10 52.0	332 7.4	-6 24.2
18	91 46.9	-22 56.9	349 24.7	135 45.9	-10 52.8	2 9.3	-6 22.8
20	121 46.3	-22 57.3	19 29.6	165 47.2	-10 53.5	32 11.2	-6 21.4
22	151 45.8	-22 57.7	49 34.5	195 48.5	-10 54.3	62 13.2	-6 20.0
Δ	-3	-2		7	-4	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 51	14 55	0 57	2 44	5 26	2.6	23 29	1.2
55	8 13	15 32	0 45	2 16	6 2	2.5	22 57	1.4
50	7 47	15 58	0 38	1 59	6 27	2.4	22 33	1.5
45	7 27	16 18	0 34	1 46	6 47	2.3	22 15	1.6
40	7 11	16 35	0 30	1 37	7 2	2.2	21 60	1.7
35	6 57	16 48	0 28	1 30	7 16	2.2	21 47	1.7
30	6 45	17 1	0 26	1 25	7 27	2.2	21 36	1.8
20	6 24	17 21	0 24	1 18	7 47	2.1	21 17	1.8
10	6 6	17 39	0 23	1 15	8 5	2.1	20 60	1.9
0	5 49	17 56	0 22	1 15	8 21	2.0	20 44	2.0
10	5 32	18 14	0 23	1 17	8 37	2.0	20 29	2.0
20	5 13	18 32	0 24	1 24	8 54	1.9	20 12	2.1
30	4 52	18 54	0 27	1 36	9 14	1.8	19 52	2.2
35	4 39	19 7	0 30	1 46	9 26	1.8	19 41	2.2
40	4 25	19 21	0 33	2 2	9 39	1.8	19 28	2.3
45	4 7	19 39	0 37	2 30	9 55	1.7	19 12	2.4
50	3 45	20 1	0 44	:::	10 14	1.6	18 53	2.4
55	3 16	20 30	0 57	:::	10 39	1.5	18 29	2.6
60	2 34	21 13	1 36	:::	11 14	1.3	17 54	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	149 3.3	111	21 23.6	-14	193 23.6	-20 50.4	159 7.3	-22 37.9
2	178 3.6	112	21 20.7	-16	223 27.4	-20 50.6	189 11.6	-22 37.9
4	207 4.0	112	21 17.4	-18	253 31.1	-20 50.8	219 15.9	-22 37.8
6	236 4.5	113	21 13.7	-21	283 34.9	-20 51.0	249 20.2	-22 37.8
8	265 5.1	114	21 9.6	-22	313 38.6	-20 51.2	279 24.5	-22 37.8
10	294 5.8	114	21 5.1	-24	343 42.4	-20 51.4	309 28.9	-22 37.7
12	323 6.7	115	21 .2	-26	13 46.2	-20 51.6	339 33.2	-22 37.7
14	352 7.7	116	20 54.9	-28	43 49.9	-20 51.7	9 37.5	-22 37.7
16	21 8.9	116	20 49.2	-30	73 53.7	-20 51.9	39 41.8	-22 37.6
18	50 10.2	117	20 43.2	-32	103 57.4	-20 52.1	69 46.1	-22 37.6
20	79 11.6	118	20 36.7	-34	134 1.2	-20 52.3	99 50.4	-22 37.6
22	108 13.2	119	20 29.9	-36	164 5.0	-20 52.5	129 54.8	-22 37.6
Δ					19	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min min	' / "	' / "			
00	7 28.1	-1.1 16.3	T _m	14 33	2.0	54.5	14.9		
12	7 14.4	T _{m☉} 11 h 52.8 min		Starost 2.7 d	Faza ●				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 57	.1	147	-5.6	♄	11 5	.0	115	-1.3
	17 51	.1	13	-3	♅	13 22	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 45.2 -22 58.2		79 39.5	225 49.9 -10 55.1	92 15.1 - 6 18.6		
2	211 44.6 -22 58.6		109 44.4	255 51.2 -10 55.8	122 17.1 - 6 17.2		
4	241 44.0 -22 59.0		139 49.3	285 52.5 -10 56.6	152 19.0 - 6 15.8		
6	271 43.5 -22 59.4		169 54.3	315 53.8 -10 57.4	182 21.0 - 6 14.4		
8	301 42.9 -22 59.8		199 59.2	345 55.1 -10 58.2	212 22.9 - 6 13.0		
10	331 42.3 -23 .3		230 4.1	15 56.4 -10 59.0	242 24.9 - 6 11.6		
12	1 41.7 -23 .7		260 9.0	45 57.7 -10 59.8	272 26.8 - 6 10.2		
14	31 41.2 -23 1.1		290 14.0	75 59.0 -11 .6	302 28.7 - 6 8.8		
16	61 40.6 -23 1.5		320 18.9	106 .2 -11 1.4	332 30.7 - 6 7.3		
18	91 40.0 -23 1.9		350 23.8	136 1.5 -11 2.2	2 32.6 - 6 5.9		
20	121 39.4 -23 2.3		20 28.7	166 2.8 -11 3.0	32 34.6 - 6 4.5		
22	151 38.8 -23 2.6		50 33.7	196 4.0 -11 3.8	62 36.5 - 6 3.1		
Δ	-3	-2		6	-4	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 52	14 54	0 57	2 44	6 29	2.9	23 57	.9
55	8 15	15 32	0 45	2 17	7 1	2.7	23 29	1.1
50	7 48	15 58	0 38	1 59	7 24	2.5	23 9	1.2
45	7 28	16 18	0 34	1 46	7 42	2.4	22 53	1.4
40	7 12	16 35	0 30	1 37	7 56	2.3	22 39	1.5
35	6 58	16 49	0 28	1 30	8 9	2.3	22 28	1.5
30	6 46	17 1	0 26	1 25	8 20	2.2	22 18	1.6
20	6 25	17 22	0 24	1 18	8 38	2.1	22 1	1.7
10	6 7	17 40	0 23	1 15	8 54	2.0	21 46	1.8
0	5 49	17 57	0 22	1 15	9 9	1.9	21 32	1.9
10	5 32	18 14	0 23	1 17	9 24	1.9	21 18	2.0
20	5 14	18 33	0 24	1 24	9 40	1.8	21 2	2.1
30	4 52	18 55	0 27	1 36	9 58	1.7	20 45	2.2
35	4 39	19 7	0 30	1 46	10 9	1.6	20 35	2.3
40	4 25	19 22	0 33	2 2	10 21	1.6	20 23	2.4
45	4 7	19 40	0 37	2 30	10 36	1.5	20 9	2.4
50	3 45	20 2	0 44	:::	10 53	1.4	19 52	2.6
55	3 16	20 31	0 57	:::	11 16	1.2	19 30	2.7
60	2 33	21 14	1 38	:::	11 46	1.0	19 0	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	137 14.9 119	20 22.7	-38		194 8.7 -20 52.7	159 59.1 -22 37.5		
2	166 16.8 120	20 15.1	-40		224 12.5 -20 52.9	190 3.4 -22 37.5		
4	195 18.9 121	20 7.2	-42		254 16.2 -20 53.1	220 7.7 -22 37.5		
6	224 21.1 122	19 58.9	-43		284 20.0 -20 53.2	250 12.0 -22 37.4		
8	253 23.4 123	19 50.2	-45		314 23.8 -20 53.4	280 16.3 -22 37.4		
10	282 25.9 123	19 41.2	-47		344 27.5 -20 53.6	310 20.6 -22 37.4		
12	311 28.6 124	19 31.8	-49		14 31.3 -20 53.8	340 24.9 -22 37.3		
14	340 31.4 125	19 22.1	-50		44 35.0 -20 54.0	10 29.3 -22 37.3		
16	9 34.5 126	19 12.1	-52		74 38.8 -20 54.2	40 33.6 -22 37.3		
18	38 37.6 127	19 1.7	-54		104 42.6 -20 54.4	70 37.9 -22 37.2		
20	67 40.9 127	18 50.9	-55		134 46.3 -20 54.5	100 42.2 -22 37.2		
22	96 44.4 128	18 39.9	-57		164 50.1 -20 54.7	130 46.5 -22 37.2		
Δ					19	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	7 .8	-1.2	16.3	T _m	15 20	2.0	54.3 14.8		
12	6 46.9	T _{m☉}	11 h 53.2 min	Starost	3.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 56	.1	146	-5.6	♃	11 2	.0	114	-1.3
♂	17 50	.1	13	-3	♄	13 18	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 38.3 -23 3.0		80 38.6	226 5.3 -11 4.6	92 38.4 - 6 1.7		
2	211 37.7 -23 3.4		110 43.5	256 6.5 -11 5.4	122 40.4 - 6 .3		
4	241 37.1 -23 3.8		140 48.5	286 7.7 -11 6.2	152 42.3 - 5 58.9		
6	271 36.5 -23 4.2		170 53.4	316 8.9 -11 7.1	182 44.3 - 5 57.5		
8	301 35.9 -23 4.5		200 58.3	346 10.2 -11 7.9	212 46.2 - 5 56.1		
10	331 35.3 -23 4.9		231 3.2	16 11.4 -11 8.7	242 48.1 - 5 54.6		
12	1 34.8 -23 5.3		261 8.2	46 12.6 -11 9.5	272 50.1 - 5 53.2		
14	31 34.2 -23 5.7		291 13.1	76 13.8 -11 10.4	302 52.0 - 5 51.8		
16	61 33.6 -23 6.0		321 18.0	106 15.0 -11 11.2	332 54.0 - 5 50.4		
18	91 33.0 -23 6.4		351 23.0	136 16.2 -11 12.1	2 55.9 - 5 49.0		
20	121 32.4 -23 6.7		21 27.9	166 17.3 -11 12.9	32 57.8 - 5 47.6		
22	151 31.8 -23 7.1		51 32.8	196 18.5 -11 13.7	62 59.8 - 5 46.2		
Δ	-3	-2		6	-4	10	7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 53	14 54	0 57	2 45	7 38	3.0	. . . .	.0
55	8 16	15 32	0 45	2 17	8 4	2.8	23 55	.9
50	7 49	15 58	0 38	1 59	8 24	2.6	23 39	1.1
45	7 29	16 18	0 34	1 47	8 40	2.5	23 25	1.2
40	7 12	16 35	0 30	1 37	8 52	2.4	23 14	1.3
35	6 58	16 49	0 28	1 31	9 3	2.3	23 5	1.4
30	6 46	17 1	0 26	1 25	9 12	2.2	22 57	1.5
20	6 25	17 22	0 24	1 19	9 28	2.1	22 42	1.6
10	6 7	17 40	0 23	1 15	9 43	2.0	22 30	1.7
0	5 50	17 57	0 22	1 15	9 56	1.9	22 18	1.8
10	5 33	18 15	0 23	1 18	10 9	1.8	22 6	2.0
20	5 14	18 33	0 25	1 24	10 23	1.7	21 53	2.1
30	4 52	18 55	0 27	1 36	10 39	1.5	21 38	2.2
35	4 40	19 8	0 30	1 46	10 48	1.5	21 29	2.3
40	4 25	19 23	0 33	2 2	10 58	1.4	21 19	2.4
45	4 7	19 41	0 37	2 31	11 11	1.3	21 8	2.5
50	3 45	20 3	0 44	:::	11 26	1.2	20 54	2.6
55	3 16	20 32	0 57	:::	11 45	1.0	20 36	2.8
60	2 32	21 16	1 39	:::	12 10	.7	20 12	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	125 48.1 129	18 28.5	-59		194 53.8 -20 54.9	160 50.8 -22 37.2		
2	154 51.9 130	18 16.8	-60		224 57.6 -20 55.1	190 55.1 -22 37.1		
4	183 55.9 131	18 4.8	-62		255 1.4 -20 55.3	220 59.5 -22 37.1		
6	213 .0 132	17 52.4	-63		285 5.1 -20 55.5	251 3.8 -22 37.1		
8	242 4.3 132	17 39.8	-65		315 8.9 -20 55.6	281 8.1 -22 37.0		
10	271 8.8 133	17 26.8	-66		345 12.7 -20 55.8	311 12.4 -22 37.0		
12	300 13.4 134	17 13.6	-68		15 16.4 -20 56.0	341 16.7 -22 37.0		
14	329 18.2 135	17 .0	-69		45 20.2 -20 56.2	11 21.0 -22 36.9		
16	358 23.1 135	16 46.2	-71		75 23.9 -20 56.4	41 25.3 -22 36.9		
18	27 28.2 136	16 32.0	-72		105 27.7 -20 56.6	71 29.6 -22 36.9		
20	56 33.4 137	16 17.6	-73		135 31.5 -20 56.8	101 33.9 -22 36.8		
22	85 38.8 138	16 3.0	-75		165 35.2 -20 56.9	131 38.3 -22 36.8		
Δ					19	-1	22	0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s	'	h min	min	'	'		
00	6 33.0	-1.2	16.3	T _m	16 7	1.8	54.1 14.8		
12	6 19.0	T _{m☉}	11 h 53.7 min	Starost	4.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 55	.1	145	-5.6	♃	10 59	.0	114	-1.3
♂	17 48	.1	12	-3	♄	13 15	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	181	31.2	-23	7.4	81	37.7	226	19.7	-11	14.6	93	1.7	-5	44.8	
2	211	30.7	-23	7.8	111	42.7	256	20.8	-11	15.5	123	3.7	-5	43.3	
4	241	30.1	-23	8.1	141	47.6	286	22.0	-11	16.3	153	5.6	-5	41.9	
6	271	29.5	-23	8.5	171	52.5	316	23.1	-11	17.2	183	7.5	-5	40.5	
8	301	28.9	-23	8.8	201	57.5	346	24.3	-11	18.0	213	9.5	-5	39.1	
10	331	28.3	-23	9.1	232	2.4	16	25.4	-11	18.9	243	11.4	-5	37.7	
12	1	27.7	-23	9.5	262	7.3	46	26.5	-11	19.8	273	13.3	-5	36.3	
14	31	27.1	-23	9.8	292	12.2	76	27.7	-11	20.6	303	15.3	-5	34.8	
16	61	26.5	-23	10.1	322	17.2	106	28.8	-11	21.5	333	17.2	-5	33.4	
18	91	25.9	-23	10.4	352	22.1	136	29.9	-11	22.4	3	19.2	-5	32.0	
20	121	25.3	-23	10.7	22	27.0	166	31.0	-11	23.3	33	21.1	-5	30.6	
22	151	24.7	-23	11.1	52	32.0	196	32.1	-11	24.2	63	23.0	-5	29.2	
Δ		-3		-2			6			-4		10			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 55	14 53	0 57	2 45	8 50	3.1	0 18	.7
55	8 17	15 31	0 45	2 17	9 11	2.8	...	.0
50	7 50	15 58	0 38	1 59	9 27	2.7	...	.0
45	7 30	16 19	0 34	1 47	9 39	2.5	23 54	1.1
40	7 13	16 35	0 30	1 37	9 49	2.4	23 46	1.2
35	6 59	16 49	0 28	1 31	9 58	2.3	23 39	1.3
30	6 47	17 1	0 26	1 25	10 5	2.2	23 32	1.4
20	6 26	17 22	0 24	1 19	10 18	2.1	23 21	1.5
10	6 8	17 41	0 23	1 15	10 30	1.9	23 11	1.7
0	5 50	17 58	0 22	1 15	10 41	1.8	23 2	1.8
10	5 33	18 15	0 23	1 18	10 51	1.7	22 53	1.9
20	5 14	18 34	0 25	1 24	11 3	1.6	22 42	2.1
30	4 53	18 56	0 27	1 36	11 16	1.4	22 31	2.2
35	4 40	19 9	0 30	1 47	11 23	1.4	22 24	2.3
40	4 25	19 24	0 33	2 3	11 32	1.3	22 17	2.4
45	4 7	19 41	0 37	2 32	11 42	1.1	22 8	2.5
50	3 45	20 4	0 44	:::	11 53	1.0	21 57	2.7
55	3 15	20 33	0 57	:::	12 8	.8	21 43	2.9
60	2 32	21 17	1 40	:::	12 28	.6	21 25	3.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	114	44.3	138	15	48.0	-76	195	39.0	-20	57.1	161	42.6	-22	36.8		
2	143	50.0	139	15	32.8	-77	225	42.8	-20	57.3	191	46.9	-22	36.7		
4	172	55.8	140	15	17.3	-79	255	46.5	-20	57.5	221	51.2	-22	36.7		
6	202	1.7	140	15	1.5	-80	285	50.3	-20	57.7	251	55.5	-22	36.7		
8	231	7.8	141	14	45.5	-81	315	54.0	-20	57.8	281	59.8	-22	36.6		
10	260	14.0	142	14	29.2	-83	345	57.8	-20	58.0	312	4.1	-22	36.6		
12	289	20.3	142	14	12.7	-84	16	1.6	-20	58.2	342	8.4	-22	36.6		
14	318	26.8	143	13	56.0	-85	46	5.3	-20	58.4	12	12.7	-22	36.5		
16	347	33.4	143	13	39.0	-86	76	9.1	-20	58.6	42	17.0	-22	36.5		
18	16	40.1	144	13	21.8	-87	106	12.9	-20	58.8	72	21.4	-22	36.5		
20	45	46.9	145	13	4.3	-88	136	16.6	-20	58.9	102	25.7	-22	36.4		
22	74	53.8	145	12	46.6	-89	166	20.4	-20	59.1	132	30.0	-22	36.4		
Δ							19			-1		22			0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	6 50.0	-1.2	16.3	T _m	16 51	1.8	54.1	14.7
12	5 50.8	T _{m☉}	11 h 54.2 min	Starost	5.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 54	.1	145	-5.5	♄	10 56	.0	114	-1.3
♂	17 47	.1	11	-3	♂	13 11	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	181	24.2	-23	11.4	82	36.9	226	33.2	-11	25.0	93	25.0	-5	27.8	
2	211	23.6	-23	11.7	112	41.8	256	34.3	-11	25.9	123	26.9	-5	26.3	
4	241	23.0	-23	12.0	142	46.7	286	35.3	-11	26.8	153	28.8	-5	24.9	
6	271	22.4	-23	12.3	172	51.7	316	36.4	-11	27.7	183	30.8	-5	23.5	
8	301	21.8	-23	12.6	202	56.6	346	37.5	-11	28.6	213	32.7	-5	22.1	
10	331	21.2	-23	12.9	233	1.5	16	38.5	-11	29.5	243	34.6	-5	20.7	
12	1	20.6	-23	13.2	263	6.5	46	39.6	-11	30.4	273	36.6	-5	19.2	
14	31	20.0	-23	13.5	293	11.4	76	40.6	-11	31.3	303	38.5	-5	17.8	
16	61	19.4	-23	13.7	323	16.3	106	41.7	-11	32.2	333	40.4	-5	16.4	
18	91	18.8	-23	14.0	353	21.2	136	42.7	-11	33.2	3	42.4	-5	15.0	
20	121	18.2	-23	14.3	23	26.2	166	43.7	-11	34.1	33	44.3	-5	13.6	
22	151	17.6	-23	14.6	53	31.1	196	44.8	-11	35.0	63	46.2	-5	12.1	
Δ		-3		-1			5			-5		10			7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 56	14 53	0 57	2 45	10 4	3.1	0 34	.5
55	8 18	15 31	0 45	2 17	10 19	2.9	0 17	.8
50	7 51	15 58	0 38	1 59	10 30	2.7	0 5	1.0
45	7 30	16 19	0 34	1 47	10 39	2.5	...	.0
40	7 14	16 35	0 31	1 37	10 46	2.4	...	.0
35	6 60	16 49	0 28	1 31	10 53	2.3	...	.0
30	6 48	17 2	0 26	1 25	10 58	2.2	...	.0
20	6 27	17 23	0 24	1 19	11 8	2.1	23 58	1.5
10	6 8	17 41	0 23	1 15	11 16	1.9	23 51	1.7
0	5 51	17 58	0 23	1 15	11 24	1.8	23 45	1.8
10	5 33	18 16	0 23	1 18	11 32	1.7	23 39	1.9
20	5 15	18 35	0 25	1 24	11 41	1.5	23 32	2.1
30	4 53	18 57	0 27	1 36	11 50	1.4	23 24	2.2
35	4 40	19 9	0 30	1 47	11 56	1.3	23 20	2.3
40	4 25	19 24	0 33	2 3	12 2	1.2	23 14	2.4
45	4 7	19 42	0 37	2 32	12 9	1.1	23 8	2.6
50	3 45	20 5	0 44	:::	12 18	.9	23 1	2.7
55	3 15	20 34	0 58	:::	12 28	.7	22 52	2.9
60	2 32	21 18	1 42	:::	12 42	.5	22 40	3.2

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	104	.8	146	12	28.7	-91	196	24.1	-20	59.3	162	34.3	-22	36.4		
2	133	7.9	146	12	10.6	-92	226	27.9	-20	59.5	192	38.6	-22	36.3		
4	162	15.1	146	11	52.3	-93	256	31.7	-20	59.7	222	42.9	-22	36.3		
6	191	22.3	147	11	33.8	-94	286	35.4	-20	59.8	252	47.2	-22	36.3		
8	220	29.7	147	11	15.0	-95	316	39.2	-21	.0	282	51.5	-22	36.2		
10	249	37.1	148	10	56.1	-96	346	43.0	-21	.2	312	55.8	-22	36.2		
12	278	44.7	148	10	37.0	-97	16	46.7	-21	.4	343	.1	-22	36.2		
14	307	52.2	148	10	17.6	-98	46	50.5	-21	.6	13	4.4	-22	36.1		
16	336	59.9	148	9	58.1	-98	76	54.3	-21	.7	43	8.7	-22	36.1		
18	6	7.6	149	9	38.4	-99	106	58.0	-21	.9	73	13.1	-22	36.1		
20	35	15.3	149	9	18.5	-100	137	1.8	-21	1.1	103	17.4	-22	36.0		
22	64	23.1	149	8	58.5	-101	167	5.6	-21	1.3	133	21.7	-22	36.0		
Δ							19			-1		22			0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	5 36.6	-1.2	16.3	T<			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	181	17.0	-23	14.9	83	36.0	226	45.8	-11	35.9	93	48.2	-5	10.7
2	211	16.4	-23	15.1	113	41.0	256	46.8	-11	36.8	123	50.1	-5	9.3
4	241	15.8	-23	15.4	143	45.9	286	47.8	-11	37.8	153	52.0	-5	7.9
6	271	15.2	-23	15.6	173	50.8	316	48.8	-11	38.7	183	54.0	-5	6.5
8	301	14.6	-23	15.9	203	55.7	346	49.8	-11	39.6	213	55.9	-5	5.0
10	331	14.0	-23	16.2	234	7	16	50.8	-11	40.6	243	57.8	-5	3.6
12	1	13.4	-23	16.4	264	5.6	46	51.7	-11	41.5	273	59.8	-5	2.2
14	31	12.8	-23	16.7	294	10.5	76	52.7	-11	42.4	304	1.7	-5	8
16	61	12.2	-23	16.9	324	15.4	106	53.7	-11	43.4	334	3.6	-4	59.4
18	91	11.6	-23	17.2	354	20.4	136	54.6	-11	44.3	4	5.6	-4	57.9
20	121	11.0	-23	17.4	24	25.3	166	55.6	-11	45.3	34	7.5	-4	56.5
22	151	10.4	-23	17.6	54	30.2	196	56.5	-11	46.2	64	9.4	-4	55.1
Δ		-3		-1				5		-5		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 57	14 53	0 57	2 45	11 20	3.2	0 47	.5
55	8 19	15 31	0 45	2 17	11 28	2.9	0 36	.7
50	7 52	15 58	0 38	1 59	11 35	2.7	0 28	.9
45	7 31	16 19	0 34	1 47	11 40	2.6	0 21	1.0
40	7 15	16 36	0 31	1 38	11 45	2.5	0 15	1.2
35	7 0	16 50	0 28	1 31	11 48	2.3	0 10	1.3
30	6 48	17 2	0 26	1 25	11 52	2.3	0 6	1.4
20	6 27	17 23	0 24	1 19	11 58	2.1	...	.0
10	6 9	17 42	0 23	1 15	12 3	1.9	...	.0
0	5 51	17 59	0 23	1 15	12 7	1.8	...	.0
10	5 34	18 16	0 23	1 18	12 12	1.7	...	.0
20	5 15	18 35	0 25	1 24	12 17	1.5	...	.0
30	4 53	18 57	0 27	1 36	12 23	1.3	...	.0
35	4 40	19 10	0 30	1 47	12 26	1.3	...	.0
40	4 25	19 25	0 33	2 3	12 30	1.1	...	.0
45	4 7	19 43	0 37	2 32	12 34	1.0	...	.0
50	3 45	20 5	0 44	:::	12 39	.9	...	.0
55	3 15	20 35	0 58	:::	12 46	.7	...	.0
60	2 31	21 19	1 43	:::	12 54	.5	23 56	3.0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	93	30.9	149	8	38.3	-102	197	9.3	-21	1.5	163	26.0	-22	36.0
2	122	38.8	149	8	17.9	-103	227	13.1	-21	1.6	193	30.3	-22	35.9
4	151	46.7	150	7	57.3	-104	257	16.8	-21	1.8	223	34.6	-22	35.9
6	180	54.6	150	7	36.6	-104	287	20.6	-21	2.0	253	38.9	-22	35.9
8	210	2.5	150	7	15.8	-105	317	24.4	-21	2.2	283	43.2	-22	35.8
10	239	10.5	150	6	54.8	-106	347	28.1	-21	2.4	313	47.5	-22	35.8
12	268	18.4	150	6	33.6	-106	17	31.9	-21	2.5	343	51.8	-22	35.8
14	297	26.3	150	6	12.4	-107	47	35.7	-21	2.7	13	56.1	-22	35.7
16	326	34.2	149	5	50.9	-108	77	39.4	-21	2.9	44	.4	-22	35.7
18	355	42.1	149	5	29.4	-108	107	43.2	-21	3.1	74	4.7	-22	35.7
20	24	50.0	149	5	7.7	-109	137	47.0	-21	3.2	104	9.0	-22	35.6
22	53	57.8	149	4	45.9	-110	167	50.7	-21	3.4	134	13.3	-22	35.6
Δ								19		-1		22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	5	8.0	-1.2	16.3	T _m	18 18	1.8	54.6	14.9
12	4	53.5	T _m ☉	11 h 55.1 min	Starost	7.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	Vel.	♃	h min	'	°	Vel.
♂	8 53	.1	143	-5.5	♃	10 50	.0	114	-1.3
♂	17 44	.1	10	-3	♄	13 4	.0	80	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	181	9.8	-23	17.9	84	35.2	226	57.5	-11	47.2	94	11.3	-4	53.7
2	211	9.2	-23	18.1	114	40.1	256	58.4	-11	48.1	124	13.3	-4	52.2
4	241	8.6	-23	18.3	144	45.0	286	59.4	-11	49.1	154	15.2	-4	50.8
6	271	7.9	-23	18.5	174	49.9	317	.3	-11	50.0	184	17.1	-4	49.4
8	301	7.3	-23	18.8	204	54.9	347	1.2	-11	51.0	214	19.1	-4	48.0
10	331	6.7	-23	19.0	234	59.8	17	2.1	-11	52.0	244	21.0	-4	46.5
12	1	6.1	-23	19.2	265	4.7	47	3.0	-11	52.9	274	22.9	-4	45.1
14	31	5.5	-23	19.4	295	9.7	77	3.9	-11	53.9	304	24.9	-4	43.7
16	61	4.9	-23	19.6	325	14.6	107	4.8	-11	54.9	334	26.8	-4	42.3
18	91	4.3	-23	19.8	355	19.5	137	5.7	-11	55.8	4	28.7	-4	40.8
20	121	3.7	-23	20.0	25	24.4	167	6.6	-11	56.8	34	30.6	-4	39.4
22	151	3.1	-23	20.2	55	29.4	197	7.5	-11	57.8	64	32.6	-4	38.0
Δ		-3		-1				5		-5		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 58	14 53	0 58	2 46	12 36	1.7	0 58	.6
55	8 20	15 32	0 45	2 17	12 39	1.7	0 53	.8
50	7 53	15 59	0 38	1 59	12 41	1.7	0 49	1.0
45	7 32	16 19	0 34	1 47	12 42	1.7	0 46	1.1
40	7 15	16 36	0 31	1 38	12 44	1.7	0 43	1.2
35	7 1	16 50	0 28	1 31	12 45	1.8	0 40	1.3
30	6 49	17 2	0 26	1 25	12 46	1.8	0 38	1.4
20	6 28	17 23	0 24	1 19	12 47	1.8	0 34	1.6
10	6 9	17 42	0 23	1 15	12 49	1.8	0 31	1.7
0	5 52	17 59	0 23	1 15	12 50	1.8	0 28	1.8
10	5 34	18 17	0 23	1 18	12 52	1.9	0 25	1.9
20	5 15	18 36	0 25	1 24	12 54	1.9	0 22	2.1
30	4 54	18 58	0 27	1 36	12 55	1.9	0 18	2.2
35	4 41	19 11	0 30	1 47	12 56	1.9	0 15	2.3
40	4 26	19 26	0 33	2 3	12 57	1.9	0 13	2.4
45	4 8	19 44	0 37	2 33	12 59	2.0	0 10	2.5
50	3 45	20 6	0 45	:::	13 0	2.0	0 6	2.6
55	3 15	20 36	0 58	:::	13 2	2.0	0 2	2.8
60	2 31	21 20	1 44	:::	13 5	2.1	...	.0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	83	5.6	149	4	24.0	-110	197	54.5	-21	3.6	164	17.6	-22	35.6
2	112	13.4	148	4	2.0	-111	227	58.3	-21	3.8	194	21.9	-22	35.5
4	141	21.1	148	3	39.8	-111	258	2.0	-21	3.9	224	26.3	-22	35.5
6	170	28.7	148	3	17.6	-112	288	5.8	-21	4.1	254	30.6	-22	35.5
8	199	36.3	147	2	55.2	-112	318	9.6	-21	4.3	284	34.9	-22	35.4
10	228	43.8	147	2	32.8	-113	348	13.3	-21	4.5	314	39.2	-22	35.4
12	257	51.2	147	2	10.3	-113	18	17.1	-21	4.7	344	43.5	-22	35.4
14	286	58.5	146	1	47.7	-113	48	20.9	-21	4.8	14	47.8	-22	35.3
16	316	5.7	146	1	25.0	-114	78	24.6	-21	5.0	44	52.1	-22	35.3
18	345	12.8	145	1	2.3	-114	108	28.4	-21	5.2	74	56.4	-22	35.3
20	14	19.9	144	0	39.4	-114	138	32.2	-21	5.4	105	.7	-22	35.2
22	43	26.7	144	0	16.6	-114	168	36.0	-21	5.5	135	5.0	-22	35.2
Δ								19		-1		22		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	4	39.1	-1.2	16.3	T _m	19 1	1.8	55.1	15.0
12	4	24.5	T _m ☉	11 h 55.6 min	Starost	8.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀									

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	181	2.5	-23	20.4	85	34.3	227	8.4	-11	58.8	94	34.5	-4	36.6
2	211	1.9	-23	20.6	115	39.2	257	9.2	-11	59.8	124	36.4	-4	35.1
4	241	1.3	-23	20.8	145	44.2	287	10.1	-12	7	154	38.3	-4	33.7
6	271	.7	-23	21.0	175	49.1	317	10.9	-12	1.7	184	40.3	-4	32.3
8	301	.0	-23	21.2	205	54.0	347	11.8	-12	2.7	214	42.2	-4	30.9
10	330	59.4	-23	21.3	235	58.9	17	12.6	-12	3.7	244	44.1	-4	29.4
12	0	58.8	-23	21.5	266	3.9	47	13.5	-12	4.7	274	46.1	-4	28.0
14	30	58.2	-23	21.7	296	8.8	77	14.3	-12	5.7	304	48.0	-4	26.6
16	60	57.6	-23	21.9	326	13.7	107	15.1	-12	6.7	334	49.9	-4	25.2
18	90	57.0	-23	22.0	356	18.7	137	16.0	-12	7.7	4	51.8	-4	23.7
20	120	56.4	-23	22.2	26	23.6	167	16.8	-12	8.7	34	53.8	-4	22.3
22	150	55.8	-23	22.3	56	28.5	197	17.6	-12	9.7	64	55.7	-4	20.9
Δ		-3		-1				4		-5		10		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	72	33.5	143	0	6.4	115	198	39.7	-21	5.7	165	9.3	-22	35.2		
2	101	40.1	142	0	29.4	115	228	43.5	-21	5.9	195	13.6	-22	35.1		
4	130	46.6	142	0	52.4	115	258	47.3	-21	6.1	225	17.9	-22	35.1		
6	159	53.0	141	1	15.5	116	288	51.0	-21	6.2	255	22.2	-22	35.1		
8	188	59.1	140	1	38.6	116	318	54.8	-21	6.4	285	26.5	-22	35.0		
10	218	5.2	139	2	1.7	116	348	58.6	-21	6.6	315	30.8	-22	35.0		
12	247	11.0	138	2	24.9	116	19	2.3	-21	6.7	345	35.1	-22	35.0		
14	276	16.7	137	2	48.0	116	49	6.1	-21	6.9	15	39.4	-22	34.9		
16	305	22.1	136	3	11.2	116	79	9.9	-21	7.1	45	43.7	-22	34.9		
18	334	27.4	135	3	34.4	116	109	13.6	-21	7.3	75	48.0	-22	34.8		
20	3	32.5	134	3	57.6	116	139	17.4	-21	7.4	105	52.3	-22	34.8		
22	32	37.4	133	4	20.7	116	169	21.2	-21	7.6	135	56.6	-22	34.8		
Δ							19		-1		22			0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 59	14 53	0 58	2 46	13 16	.5	1 14	3.3
55	8 20	15 32	0 46	2 18	13 19	.8	1 13	3.1
50	7 53	15 59	0 38	1 59	13 22	.9	1 13	2.9
45	7 33	16 19	0 34	1 47	13 24	1.1	1 13	2.7
40	7 16	16 36	0 31	1 38	13 25	1.2	1 13	2.6
35	7 2	16 50	0 28	1 31	13 27	1.3	1 12	2.5
30	6 49	17 3	0 26	1 26	13 28	1.4	1 12	2.3
20	6 28	17 24	0 24	1 19	13 31	1.6	1 12	2.2
10	6 10	17 42	0 23	1 15	13 33	1.8	1 12	2.0
0	5 52	17 60	0 23	1 15	13 35	1.9	1 11	1.9
10	5 35	18 17	0 23	1 18	13 37	2.1	1 11	1.7
20	5 16	18 36	0 25	1 24	13 39	2.2	1 11	1.6
30	4 54	18 58	0 27	1 37	13 41	2.4	1 11	1.4
35	4 41	19 11	0 30	1 47	13 43	2.5	1 10	1.3
40	4 26	19 26	0 33	2 3	13 44	2.6	1 10	1.2
45	4 8	19 44	0 37	2 33	13 46	2.8	1 10	1.1
50	3 45	20 7	0 45	:::	13 48	2.9	1 10	.9
55	3 16	20 37	0 58	:::	13 51	3.1	1 9	.7
60	2 31	21 21	1 45	:::	13 55	3.4	1 9	.5
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	4	9.9	-1.2	16.3	T _m	19 45	2.0	55.8	15.2
12	3	55.3	T _m ☉	11 h 56.1 min	Starost	9.7 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	8 51	.1	142	-5.4	♃	10 44	.0	113	-1.3
♂	17 41	.1	9	-2	♄	12 58	.0	80	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	55.2	-23	22.5	86	33.4	227	18.4	-12	10.7	94	57.6	-4	19.4
2	210	54.5	-23	22.6	116	38.4	257	19.2	-12	11.7	124	59.5	-4	18.0
4	240	53.9	-23	22.8	146	43.3	287	20.0	-12	12.7	155	1.5	-4	16.6
6	270	53.3	-23	22.9	176	48.2	317	20.8	-12	13.7	185	3.4	-4	15.2
8	300	52.7	-23	23.1	206	53.2	347	21.6	-12	14.8	215	5.3	-4	13.7
10	330	52.1	-23	23.2	236	58.1	17	22.3	-12	15.8	245	7.2	-4	12.3
12	0	51.5	-23	23.4	267	3.0	47	23.1	-12	16.8	275	9.2	-4	10.9
14	30	50.9	-23	23.5	297	7.9	77	23.9	-12	17.8	305	11.1	-4	9.4
16	60	50.3	-23	23.6	327	12.9	107	24.6	-12	18.8	335	13.0	-4	8.0
18	90	49.6	-23	23.7	357	17.8	137	25.4	-12	19.9	5	14.9	-4	6.6
20	120	49.0	-23	23.9	27	22.7	167	26.1	-12	20.9	35	16.9	-4	5.2
22	150	48.4	-23	24.0	57	27.6	197	26.9	-12	21.9	65	18.8	-4	3.7
Δ		-3		-1				4		-5		10		7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	61	42.0	132	4	43.9	116	199	25.0	-21	7.8	166	.9	-22	34.7		
2	90	46.4	131	5	7.0	115	229	28.7	-21	8.0	196	5.2	-22	34.7		
4	119	50.6	130	5	30.1	115	259	32.5	-21	8.1	226	9.5	-22	34.7		
6	148	54.6	128	5	53.1	115	289	36.3	-21	8.3	256	13.8	-22	34.6		
8	177	58.3	127	6	16.1	115	319	40.0	-21	8.5	286	18.1	-22	34.6		
10	207	1.7	126	6	39.1	114	349	43.8	-21	8.6	316	22.4	-22	34.6		
12	236	4.9	125	7	1.9	114	19	47.6	-21	8.8	346	26.7	-22	34.5		
14	265	7.8	123	7	24.7	114	49	51.4	-21	9.0	16	31.0	-22	34.5		
16	294	10.4	122	7	47.5	113	79	55.1	-21	9.2	46	35.3	-22	34.5		
18	323	12.8	120	8	10.1	113	109	58.9	-21	9.3	76	39.6	-22	34.4		
20	352	14.8	119	8	32.6	112	140	2.7	-21	9.5	106	43.9	-22	34.4		
22	21	16.6	117	8	55.1	112	170	6.4	-21	9.7	136	48.2	-22	34.3		
Δ							19		-1		22			0		

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	8 60	14 53	0 58	2 46	13 28	.6	2 34	3.5
55	8 21	15 32	0 46	2 18	13 37	.9	2 27	3.2
50	7 54	15 59	0 38	1 60	13 44	1.1	2 22	3.0
45	7 33	16 20	0 34	1 47	13 50	1.2	2 18	2.8
40	7 17	16 37	0 31	1 38	13 55	1.4	2 14	2.7
35	7 2	16 51	0 28	1 31	13 59	1.5	2 11	2.6
30	6 50	17 3	0 26	1 26	14 3	1.6	2 9	2.5
20	6 29	17 24	0 24	1 19	14 9	1.7	2 4	2.3
10	6 10	17 43	0 23	1 15	14 15	1.9	2 0	2.1
0	5 53	18 0	0 23	1 15	14 21	2.0	1 56	2.0
10	5 35	18 18	0 23	1 18	14 26	2.2	1 53	1.8
20	5 16	18 37	0 25	1 24	14 32	2.3	1 49	1.7
30	4 54	18 59	0 27	1 37	14 39	2.5	1 44	1.5
35	4 41	19 12	0 30	1 47	14 43	2.6	1 42	1.4
40	4 26	19 27	0 33	2 3	14 47	2.7	1 39	1.3
45	4 8	19 45	0 37	2 33	14 52	2.9	1 35	1.1
50	3 46	20 8	0 45	:::	14 59	3.0	1 31	1.0
55	3 16	20 38	0 58	:::	15 6	3.3	1 26	.8
60	2 31	21 22	1 46	:::	15 17	3.6	1 20	.5
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	47.8	-23	24.1	87	32.6	227	27.6	-12	23.0	95	20.7	-4	2.3
2	210	47.2	-23	24.2	117	37.5	257	28.4	-12	24.0	125	22.6	-4	.9
4	240	46.6	-23	24.3	147	42.4	287	29.1	-12	25.0	155	24.5	-3	59.4
6	270	45.9	-23	24.4	177	47.4	317	29.8	-12	26.1	185	26.5	-3	58.0
8	300	45.3	-23	24.5	207	52.3	347	30.5	-12	27.1	215	28.4	-3	56.6
10	330	44.7	-23	24.6	237	57.2	17	31.2	-12	28.1	245	30.3	-3	55.1
12	0	44.1	-23	24.7	268	2.1	47	32.0	-12	29.2	275	32.2	-3	53.7
14	30	43.5	-23	24.8	298	7.1	77	32.7	-12	30.2	305	34.2	-3	52.3
16	60	42.9	-23	24.9	328	12.0	107	33.3	-12	31.3	335	36.1	-3	50.8
18	90	42.3	-23	25.0	358	16.9	137	34.0	-12	32.3	5	38.0	-3	49.4
20	120	41.6	-23	25.1	28	21.9	167	34.7	-12	33.4	35	39.9	-3	48.0
22	150	41.0	-23	25.2	58	26.8	197	35.4	-12	34.4	65	41.8	-3	46.6
Δ		-3		0				4		-5		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	14 53	0 58	2 46	13 43	.8	3 57	3.6
55	8 22	15 32	0 46	2 18	13 58	1.1	3 44	3.3
50	7 55	15 59	0 39	1 60	14 10	1.3	3 33	3.1
45	7 34	16 20	0 34	1 47	14 20	1.4	3 25	2.9
40	7 17	16 37	0 31	1 38	14 28	1.6	3 18	2.8
35	7 3	16 51	0 28	1 31	14 35	1.7	3 13	2.7
30	6 51	17 4	0 26	1 26	14 41	1.8	3 7	2.6
20	6 29	17 25	0 24	1 19	14 51	1.9	2 59	2.4
10	6 11	17 43	0 23	1 15	15 1	2.1	2 51	2.3
0	5 53	18 1	0 23	1 15	15 10	2.2	2 44	2.1
10	5 36	18 18	0 23	1 18	15 19	2.3	2 36	2.0
20	5 17	18 37	0 25	1 24	15 28	2.5	2 29	1.8
30	4 55	18 59	0 27	1 37	15 39	2.6	2 20	1.7
35	4 42	19 12	0 30	1 47	15 46	2.7	2 15	1.6
40	4 27	19 28	0 33	2 3	15 53	2.8	2 9	1.4
45	4 9	19 46	0 37	2 33	16 1	3.0	2 3	1.3
50	3 46	20 8	0 45	:::	16 12	3.1	1 55	1.2
55	3 16	20 38	0 58	:::	16 25	3.4	1 46	.9
60	2 31	21 23	1 46	:::	16 42	3.7	1 33	.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	50	18.0	116	9	17.4	111	200	10.2	-21	9.8	166	52.5	-22	34.3		
2	79	19.2	114	9	39.6	110	230	14.0	-21	10.0	196	56.8	-22	34.3		
4	108	20.0	112	10	1.6	110	260	17.8	-21	10.2	227	1.1	-22	34.2		
6	137	20.5	111	10	23.5	109	290	21.5	-21	10.4	257	5.4	-22	34.2		
8	166	20.6	109	10	45.3	108	320	25.3	-21	10.5	287	9.7	-22	34.2		
10	195	20.5	107	11	6.9	107	350	29.1	-21	10.7	317	14.0	-22	34.1		
12	224	19.9	106	11	28.3	106	20	32.8	-21	10.9	347	18.3	-22	34.1		
14	253	19.1	104	11	49.5	105	50	36.6	-21	11.0	17	22.6	-22	34.1		
16	282	17.9	102	12	10.6	104	80	40.4	-21	11.2	47	26.9	-22	34.0		
18	311	16.3	100	12	31.4	103	110	44.2	-21	11.4	77	31.2	-22	34.0		
20	340	14.3	98	12	52.0	102	140	47.9	-21	11.5	107	35.5	-22	33.9		
22	9	12.0	97	13	12.4	101	170	51.7	-21	11.7	137	39.8	-22	33.9		
Δ								19		-1		21		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	s	h min	min	'	'		
00	3 11.2	-1.2	16.3	T _m	21 22	2.2	57.4	15.7	
12	2 56.4			T _{m☉}	11 h 57.1 min	Starost	11.7 d	Faza ☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☉	h min	'	°	°	☉	h min	'	°	°
♂	8 50	.1	140	-5.4	♃	10 38	.0	113	-1.3
♂	17 37	.1	8	-2	♄	12 51	.0	79	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	40.4	-23	25.2	88	31.7	227	36.1	-12	35.5	95	43.8	-3	45.1
2	210	39.8	-23	25.3	118	36.6	257	36.7	-12	36.5	125	45.7	-3	43.7
4	240	39.2	-23	25.4	148	41.6	287	37.4	-12	37.6	155	47.6	-3	42.3
6	270	38.5	-23	25.5	178	46.5	317	38.1	-12	38.7	185	49.5	-3	40.8
8	300	37.9	-23	25.5	208	51.4	347	38.7	-12	39.7	215	51.4	-3	39.4
10	330	37.3	-23	25.6	238	56.4	17	39.4	-12	40.8	245	53.4	-3	38.0
12	0	36.7	-23	25.6	269	1.3	47	40.0	-12	41.8	275	55.3	-3	36.5
14	30	36.1	-23	25.7	299	6.2	77	40.6	-12	42.9	305	57.2	-3	35.1
16	60	35.5	-23	25.8	329	11.1	107	41.3	-12	44.0	335	59.1	-3	33.7
18	90	34.8	-23	25.8	359	16.1	137	41.9	-12	45.0	6	1.0	-3	32.2
20	120	34.2	-23	25.8	29	21.0	167	42.5	-12	46.1	36	3.0	-3	30.8
22	150	33.6	-23	25.9	59	25.9	197	43.1	-12	47.2	66	4.9	-3	29.4
Δ		-3		0				3		-5		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 1	14 54	0 58	2 46	14 2	1.1	5 24	3.7
55	8 22	15 33	0 46	2 18	14 24	1.4	5 3	3.4
50	7 55	15 60	0 39	1 60	14 41	1.6	4 48	3.2
45	7 34	16 21	0 34	1 47	14 54	1.7	4 35	3.0
40	7 18	16 37	0 31	1 38	15 5	1.8	4 25	2.9
35	7 3	16 52	0 28	1 31	15 15	1.9	4 17	2.8
30	6 51	17 4	0 26	1 26	15 23	2.0	4 9	2.7
20	6 30	17 25	0 24	1 19	15 38	2.1	3 56	2.5
10	6 11	17 44	0 23	1 15	15 50	2.3	3 45	2.4
0	5 54	18 1	0 23	1 15	16 2	2.4	3 34	2.3
10	5 36	18 19	0 23	1 18	16 15	2.5	3 24	2.2
20	5 17	18 38	0 25	1 24	16 28	2.6	3 13	2.0
30	4 55	19 0	0 27	1 37	16 42	2.7	2 60	1.9
35	4 42	19 13	0 30	1 47	16 51	2.8	2 52	1.8
40	4 27	19 28	0 33	2 3	17 1	2.9	2 44	1.7
45	4 9	19 46	0 37	2 33	17 13	3.0	2 34	1.6
50	3 46	20 9	0 45	:::	17 27	3.2	2 23	1.4
55	3 16	20 39	0 58	:::	17 46	3.4	2 8	1.2
60	2 32	21 24	1 47	:::	18 10	3.6	1 49	.9
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	38	9.4	95	13	32.6	100	200	55.5	-21	11.9	167	44.1	-22	33.9		
2	67	6.3	93	13	52.5	98	230	59.3	-21	12.0	197	48.4	-22	33.8		
4	96	2.9	91	14	12.1	97	261	3.0	-21	12.2	227	52.7	-22	33.8		
6	124	59.1	89	14	31.5	95	291	6.8	-21	12.4	257	57.0	-22	33.8		
8	153	54.9	87	14	50.6	94	321	10.6	-21	12.6	288	1.3	-22	33.7		
10	182	50.3	85	15	9.4	92	351	14.4	-21	12.7	318	5.6	-22	33.7		
12	211	45.4	83	15	27.9	91	21	18.1	-21	12.9	348	9.9	-22	33.6		
14	240	40.0	81	15	46.1	89	51	21.9	-21	13.1	18	14.2	-22	33.6		
16	269	34.3	79	16	3.9	87	81	25.7	-21	13.2	48	18.5	-22	33.6		
18	298	28.1	77	16	21.4	86	111	29.5	-21	13.4	78	22.8	-22	33.5		
20	327	21.6	76	16	38.5	84	141	33.2	-21	13.6	108	27.1	-22	33.5		
22	356	14.7	74	16	55.3	82	171	37.0	-21	13.7	138	31.4	-22	33.5		
Δ								19		-1		21		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	33.0	-23	25.9	89	30.9	227	43.7	-12	48.3	96	6.8	-3	27.9	
2	210	32.4	-23	26.0	119	35.8	257	44.4	-12	49.3	126	8.7	-3	26.5	
4	240	31.7	-23	26.0	149	40.7	287	45.0	-12	50.4	156	10.6	-3	25.1	
6	270	31.1	-23	26.0	179	45.6	317	45.5	-12	51.5	186	12.5	-3	23.6	
8	300	30.5	-23	26.0	209	50.6	347	46.1	-12	52.6	216	14.5	-3	22.2	
10	330	29.9	-23	26.1	239	55.5	17	46.7	-12	53.7	246	16.4	-3	20.8	
12	0	29.3	-23	26.1	270	.4	47	47.3	-12	54.7	276	18.3	-3	19.3	
14	30	28.6	-23	26.1	300	5.4	77	47.9	-12	55.8	306	20.2	-3	17.9	
16	60	28.0	-23	26.1	330	10.3	107	48.4	-12	56.9	336	22.1	-3	16.4	
18	90	27.4	-23	26.1	0	15.2	137	49.0	-12	58.0	6	24.0	-3	15.0	
20	120	26.8	-23	26.1	30	20.1	167	49.6	-12	59.1	36	26.0	-3	13.6	
22	150	26.2	-23	26.1	60	25.1	197	50.1	-13	.2	66	27.9	-3	12.1	
Δ		-3		0				3		-5			10		7

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	9 2	14 54	0 58	2 46	14 28	1.6	6 51	3.5		
55	8 23	15 33	0 46	2 18	14 57	1.9	6 24	3.3		
50	7 56	16 0	0 39	1 60	15 18	2.0	6 3	3.1		
45	7 35	16 21	0 34	1 47	15 35	2.1	5 47	3.0		
40	7 18	16 38	0 31	1 38	15 49	2.2	5 34	2.9		
35	7 4	16 52	0 28	1 31	16 1	2.2	5 23	2.8		
30	6 52	17 5	0 26	1 26	16 11	2.3	5 14	2.7		
20	6 30	17 26	0 24	1 19	16 29	2.4	4 57	2.6		
10	6 12	17 44	0 23	1 15	16 45	2.5	4 43	2.5		
0	5 54	18 2	0 23	1 15	16 59	2.5	4 29	2.4		
10	5 37	18 19	0 23	1 18	17 14	2.6	4 16	2.4		
20	5 18	18 38	0 25	1 24	17 30	2.7	4 1	2.3		
30	4 56	19 1	0 27	1 37	17 48	2.7	3 45	2.1		
35	4 43	19 14	0 30	1 47	17 59	2.8	3 35	2.1		
40	4 27	19 29	0 33	2 3	18 11	2.8	3 24	2.0		
45	4 9	19 47	0 37	2 33	18 25	2.9	3 12	1.9		
50	3 47	20 9	0 45	:::	18 43	3.0	2 56	1.8		
55	3 17	20 39	0 58	:::	19 6	3.1	2 37	1.6		
60	2 32	21 24	1 47	:::	19 38	3.3	2 11	1.3		

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	25	7.5	72	17	11.7	80	201	40.8	-21	13.9	168	35.7	-22	33.4	
2	53	59.8	70	17	27.7	78	231	44.6	-21	14.1	198	40.0	-22	33.4	
4	82	51.7	68	17	43.3	76	261	48.4	-21	14.2	228	44.3	-22	33.4	
6	111	43.3	66	17	58.5	74	291	52.1	-21	14.4	258	48.6	-22	33.3	
8	140	34.5	64	18	13.2	72	321	55.9	-21	14.6	288	52.9	-22	33.3	
10	169	25.4	62	18	27.6	69	351	59.7	-21	14.7	318	57.2	-22	33.2	
12	198	15.8	61	18	41.4	67	22	3.5	-21	14.9	349	1.5	-22	33.2	
14	227	5.9	59	18	54.8	65	52	7.2	-21	15.0	19	5.8	-22	33.2	
16	255	55.7	57	19	7.8	62	82	11.0	-21	15.2	49	10.1	-22	33.1	
18	284	45.1	55	19	20.2	60	112	14.8	-21	15.4	79	14.4	-22	33.1	
20	313	34.2	54	19	32.2	57	142	18.6	-21	15.5	109	18.7	-22	33.0	
22	342	22.9	52	19	43.6	55	172	22.4	-21	15.7	139	23.0	-22	33.0	
Δ								19		-1			21		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	2 11.9	-1.2	16.3	T _m	23 13	2.5	59.2	16.1
12	1 57.1	T _{m☉}	11 h 58.0 min	Starost	13.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	8 49	.1	138	-5.3	♃	10 32	.0	112	-1.3
♂	17 34	.1	7	-2	♄	12 44	.0	79	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	25.5	-23	26.1	90	30.0	227	50.7	-13	1.3	96	29.8	-3	10.7	
2	210	24.9	-23	26.1	120	34.9	257	51.2	-13	2.4	126	31.7	-3	9.3	
4	240	24.3	-23	26.1	150	39.9	287	51.7	-13	3.5	156	33.6	-3	7.8	
6	270	23.7	-23	26.1	180	44.8	317	52.3	-13	4.6	186	35.5	-3	6.4	
8	300	23.1	-23	26.1	210	49.7	347	52.8	-13	5.7	216	37.5	-3	5.0	
10	330	22.4	-23	26.1	240	54.6	17	53.3	-13	6.8	246	39.4	-3	3.5	
12	0	21.8	-23	26.0	270	59.6	47	53.8	-13	7.9	276	41.3	-3	2.1	
14	30	21.2	-23	26.0	301	4.5	77	54.4	-13	9.0	306	43.2	-3	.7	
16	60	20.6	-23	26.0	331	9.4	107	54.9	-13	10.1	336	45.1	-2	59.2	
18	90	20.0	-23	26.0	1	14.3	137	55.4	-13	11.2	6	47.0	-2	57.8	
20	120	19.3	-23	25.9	31	19.3	167	55.9	-13	12.3	36	49.0	-2	56.3	
22	150	18.7	-23	25.9	61	24.2	197	56.4	-13	13.4	66	50.9	-2	54.9	
Δ		-3		0				3		-6			10		7

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	9 2	14 55	0 58	2 46	15 7	2.4	8 16	3.0		
55	8 23	15 34	0 46	2 18	15 42	2.4	7 42	2.9		
50	7 56	16 1	0 39	1 60	16 6	2.5	7 17	2.9		
45	7 36	16 22	0 34	1 47	16 26	2.5	6 59	2.8		
40	7 19	16 38	0 31	1 38	16 41	2.5	6 43	2.8		
35	7 4	16 53	0 28	1 31	16 55	2.5	6 31	2.7		
30	6 52	17 5	0 26	1 26	17 6	2.6	6 19	2.7		
20	6 31	17 26	0 24	1 19	17 26	2.6	6 0	2.7		
10	6 12	17 45	0 23	1 15	17 43	2.6	5 43	2.6		
0	5 55	18 2	0 23	1 15	17 60	2.6	5 28	2.6		
10	5 37	18 20	0 23	1 18	18 16	2.6	5 12	2.5		
20	5 18	18 39	0 25	1 24	18 34	2.6	4 55	2.5		
30	4 56	19 1	0 27	1 37	18 54	2.6	4 36	2.4		
35	4 43	19 14	0 30	1 47	19 6	2.6	4 25	2.4		
40	4 28	19 29	0 33	2 3	19 19	2.7	4 12	2.3		
45	4 10	19 47	0 37	2 33	19 35	2.7	3 57	2.3		
50	3 47	20 10	0 45	:::	19 55	2.7	3 39	2.2		
55	3 17	20 40	0 58	:::	20 21	2.7	3 15	2.1		
60	2 32	21 25	1 47	:::	20 58	2.7	2 42	1.9		

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	11	11.4	51	19	54.5	52	202	26.1	-21	15.9	169	27.3	-22	33.0	
2	39	59.5	49	20	4.9	49	232	29.9	-21	16.0	199	31.6	-22	32.9	
4	68	47.3	48	20	14.8	47	262	33.7	-21	16.2	229	35.9	-22	32.9	
6	97	34.8	46	20	24.1	44	292	37.5	-21	16.4	259	40.2	-22	32.9	
8	126	22.1	45	20	32.9	41	322	41.2	-21	16.5	289	44.5	-22	32.8	
10	155	9.1	44	20	41.1	38	352	45.0	-21	16.7	319	48.8	-22	32.8	
12	183	55.8	42	20	48.7	35	22	48.8	-21	16.9	349	53.1	-22	32.7	
14	212	42.3	41	20	55.7	32	52	52.6	-21	17.0	19	57.3	-22	32.7	
16	241	28.5	40	21	2.2	29	82	56.4	-21	17.2	50	1.6	-22	32.7	
18	270	14.6	39	21	8.0	26	113	.1	-21	17.3	80	5.9	-22	32.6	
20	299	.5	38	21	13.3	23	143	3.9	-21	17.5	110	10.2	-22	32.6	
22	327	46.1	38	21	17.9	20	173	7.7	-21	17.7	140	14.5	-22	32.5	
Δ								19		-1			21		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	s	h min	min	'	'	
00	1 42.2	-1.2	16.3	T _m	...	1.0	59.9	16.3
12	1 27.3	T _{m☉}						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	18.1	-23	25.9	91	29.1	227	56.8	-13	14.5	96	52.8	-2	53.5
2	210	17.5	-23	25.8	121	34.1	257	57.3	-13	15.6	126	54.7	-2	52.0
4	240	16.9	-23	25.7	151	39.0	287	57.8	-13	16.7	156	56.6	-2	50.6
6	270	16.2	-23	25.7	181	43.9	317	58.3	-13	17.8	186	58.5	-2	49.2
8	300	15.6	-23	25.7	211	48.8	347	58.8	-13	18.9	217	.4	-2	47.7
10	330	15.0	-23	25.6	241	53.8	17	59.2	-13	20.0	247	2.3	-2	46.3
12	0	14.4	-23	25.5	271	58.7	47	59.7	-13	21.2	277	4.3	-2	44.8
14	30	13.8	-23	25.5	302	3.6	78	.1	-13	22.3	307	6.2	-2	43.4
16	60	13.1	-23	25.4	332	8.6	108	.6	-13	23.4	337	8.1	-2	42.0
18	90	12.5	-23	25.3	2	13.5	138	1.0	-13	24.5	7	10.0	-2	40.5
20	120	11.9	-23	25.3	32	18.4	168	1.5	-13	25.6	37	11.9	-2	39.1
22	150	11.3	-23	25.2	62	23.3	198	1.9	-13	26.8	67	13.8	-2	37.7
Δ		-3		0				2		-6		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 55	0 58	2 46	16 4	3.1	9 28	2.3
55	8 24	15 34	0 46	2 18	16 40	3.0	8 52	2.4
50	7 57	16 1	0 39	1 60	17 6	2.9	8 26	2.5
45	7 36	16 22	0 34	1 47	17 26	2.9	8 6	2.5
40	7 19	16 39	0 31	1 38	17 42	2.8	7 50	2.5
35	7 5	16 53	0 28	1 31	17 56	2.8	7 36	2.5
30	6 53	17 6	0 26	1 26	18 7	2.7	7 24	2.5
20	6 31	17 27	0 24	1 19	18 28	2.7	7 4	2.6
10	6 13	17 45	0 23	1 15	18 46	2.6	6 46	2.6
0	5 55	18 3	0 23	1 15	19 2	2.6	6 29	2.6
10	5 38	18 20	0 23	1 18	19 19	2.6	6 13	2.6
20	5 19	18 39	0 25	1 24	19 37	2.5	5 55	2.6
30	4 57	19 1	0 27	1 37	19 57	2.4	5 34	2.7
35	4 44	19 14	0 30	1 47	20 9	2.4	5 22	2.7
40	4 28	19 30	0 33	2 3	20 23	2.4	5 9	2.7
45	4 10	19 48	0 37	2 33	20 39	2.3	4 52	2.7
50	3 48	20 10	0 45	:::	20 59	2.2	4 32	2.7
55	3 18	20 40	0 58	:::	21 25	2.1	4 6	2.7
60	2 33	21 25	1 46	:::	22 2	1.9	3 29	2.7
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	356	31.6	37	21	22.0	17	203	11.5	-21	17.8	170	18.8	-22	32.5
2	25	17.0	36	21	25.4	14	233	15.3	-21	18.0	200	23.1	-22	32.5
4	54	2.2	35	21	28.2	11	263	19.1	-21	18.2	230	27.4	-22	32.4
6	82	47.3	35	21	30.3	8	293	22.8	-21	18.3	260	31.7	-22	32.4
8	111	32.3	35	21	31.9	4	323	26.6	-21	18.5	290	36.0	-22	32.4
10	140	17.2	34	21	32.8	1	353	30.4	-21	18.6	320	40.3	-22	32.3
12	169	2.0	34	21	33.0	-2	23	34.2	-21	18.8	350	44.6	-22	32.3
14	197	46.8	34	21	32.7	-5	53	38.0	-21	19.0	20	48.9	-22	32.2
16	226	31.6	34	21	31.7	-8	83	41.7	-21	19.1	50	53.2	-22	32.2
18	255	16.3	34	21	30.0	-11	113	45.5	-21	19.3	80	57.5	-22	32.2
20	284	1.1	34	21	27.7	-15	143	49.3	-21	19.4	111	1.8	-22	32.1
22	312	45.8	34	21	24.8	-18	173	53.1	-21	19.6	141	6.1	-22	32.1
Δ								19		-1		21		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	1 12.4	-1.2	16.3	T _m	0 14	2.6	60.4 16.5		
12	0 57.5	T _{m☉}	11 h 59.0 min	Starost	15.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	8 48	.1	136	-5.2	♄	10 26	.0	112	-1.3
♂	17 31	.1	5	-1	♄	12 37	.0	79	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	10.7	-23	25.1	92	28.3	228	2.3	-13	27.9	97	15.7	-2	36.2
2	210	10.0	-23	25.0	122	33.2	258	2.7	-13	29.0	127	17.6	-2	34.8
4	240	9.4	-23	24.9	152	38.1	288	3.2	-13	30.1	157	19.6	-2	33.3
6	270	8.8	-23	24.9	182	43.1	318	3.6	-13	31.3	187	21.5	-2	31.9
8	300	8.2	-23	24.8	212	48.0	348	4.0	-13	32.4	217	23.4	-2	30.5
10	330	7.6	-23	24.7	242	52.9	18	4.4	-13	33.5	247	25.3	-2	29.0
12	0	6.9	-23	24.6	272	57.8	48	4.8	-13	34.6	277	27.2	-2	27.6
14	30	6.3	-23	24.5	303	2.8	78	5.2	-13	35.8	307	29.1	-2	26.2
16	60	5.7	-23	24.4	333	7.7	108	5.6	-13	36.9	337	31.0	-2	24.7
18	90	5.1	-23	24.3	3	12.6	138	5.9	-13	38.0	7	32.9	-2	23.3
20	120	4.5	-23	24.1	33	17.6	168	6.3	-13	39.2	37	34.8	-2	21.8
22	150	3.9	-23	24.0	63	22.5	198	6.7	-13	40.3	67	36.8	-2	20.4
Δ		-3		1				2		-6		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 56	0 58	2 46	17 18	3.6	10 23	1.6
55	8 24	15 35	0 46	2 18	17 52	3.4	9 49	1.8
50	7 57	16 2	0 39	1 60	18 16	3.2	9 25	2.0
45	7 36	16 23	0 34	1 47	18 34	3.1	9 6	2.1
40	7 20	16 40	0 31	1 38	18 50	3.0	8 50	2.2
35	7 5	16 54	0 28	1 31	19 2	2.9	8 37	2.3
30	6 53	17 6	0 26	1 26	19 13	2.8	8 25	2.3
20	6 32	17 27	0 24	1 19	19 33	2.7	8 6	2.4
10	6 13	17 46	0 23	1 15	19 49	2.6	7 48	2.5
0	5 56	18 3	0 23	1 15	20 5	2.5	7 32	2.6
10	5 38	18 21	0 23	1 18	20 20	2.4	7 16	2.6
20	5 19	18 40	0 25	1 24	20 37	2.3	6 58	2.7
30	4 57	19 2	0 27	1 37	20 56	2.2	6 38	2.8
35	4 44	19 15	0 30	1 47	21 7	2.1	6 26	2.9
40	4 29	19 30	0 33	2 3	21 19	2.0	6 13	2.9
45	4 11	19 48	0 37	2 33	21 34	1.9	5 57	3.0
50	3 48	20 11	0 45	:::	21 53	1.8	5 37	3.1
55	3 18	20 41	0 58	:::	22 16	1.6	5 11	3.2
60	2 34	21 25	1 46	:::	22 48	1.3	4 35	3.4
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	341	30.6	34	21	21.2	-21	203	56.9	-21	19.8	171	10.4	-22	32.0
2	10	15.5	35	21	17.0	-24	234	.7	-21	19.9	201	14.7	-22	32.0
4	39	.4	35	21	12.2	-27	264	4.4	-21	20.1	231	19.0	-22	32.0
6	67	45.4	36	21	6.8	-30	294	8.2	-21	20.2	261	23.2	-22	31.9
8	96	30.5	36	21	.7	-33	324	12.0	-21	20.4	291	27.5	-22	31.9
10	125	15.7	37	20	54.0	-37	354	15.8	-21	20.6	321	31.8	-22	31.8
12	154	1.1	38	20	46.7	-40	24	19.6	-21	20.7	351	36.1	-22	31.8
14	182	46.6	38	20	38.8	-43	54	23.4	-21	20.9	21	40.4	-22	31.8
16	211	32.2	39	20	30.3	-46	84	27.2	-21	21.0	51	44.7	-22	31.7
18	240	18.1	40	20	21.2	-48	114	30.9	-21	21.2	81	49.0	-22	31.7
20	269	4.1	41	20	11.5	-51	144	34.7	-21	21.4	111	53.3	-22	31.6
22	297	50.3	42	20	1.2	-54	174	38.5	-21	21.5	141	57.6	-22	31.6
Δ								19		-1		21		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	0 42.						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	3.2	-23	23.9	93	27.4	228	7.1	-13	41.4	97	38.7	-2	19.0
2	210	2.6	-23	23.8	123	32.3	258	7.4	-13	42.6	127	40.6	-2	17.5
4	240	2.0	-23	23.7	153	37.3	288	7.8	-13	43.7	157	42.5	-2	16.1
6	270	1.4	-23	23.5	183	42.2	318	8.2	-13	44.8	187	44.4	-2	14.6
8	300	.8	-23	23.4	213	47.1	348	8.5	-13	46.0	217	46.3	-2	13.2
10	330	.1	-23	23.3	243	52.1	18	8.9	-13	47.1	247	48.2	-2	11.8
12	359	59.5	-23	23.1	273	57.0	48	9.2	-13	48.3	277	50.1	-2	10.3
14	29	58.9	-23	23.0	304	1.9	78	9.5	-13	49.4	307	52.0	-2	8.9
16	59	58.3	-23	22.8	334	6.8	108	9.9	-13	50.5	337	53.9	-2	7.5
18	89	57.7	-23	22.7	4	11.8	138	10.2	-13	51.7	7	55.8	-2	6.0
20	119	57.0	-23	22.5	34	16.7	168	10.5	-13	52.8	37	57.8	-2	4.6
22	149	56.4	-23	22.4	64	21.6	198	10.8	-13	54.0	67	59.7	-2	3.1
Δ		-3		1				2		-6		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 57	0 58	2 46	18 46	3.8	11 2	1.1
55	8 25	15 36	0 46	2 18	19 13	3.5	10 34	1.4
50	7 58	16 3	0 38	1 60	19 33	3.3	10 13	1.6
45	7 37	16 23	0 34	1 47	19 48	3.1	9 56	1.8
40	7 20	16 40	0 31	1 38	20 1	3.0	9 43	1.9
35	7 6	16 54	0 28	1 31	20 12	2.9	9 31	2.0
30	6 53	17 7	0 26	1 26	20 21	2.8	9 21	2.1
20	6 32	17 28	0 24	1 19	20 38	2.6	9 3	2.2
10	6 14	17 46	0 23	1 15	20 52	2.5	8 48	2.3
0	5 56	18 4	0 23	1 15	21 5	2.4	8 34	2.4
10	5 39	18 21	0 23	1 18	21 18	2.2	8 19	2.6
20	5 20	18 40	0 25	1 24	21 32	2.1	8 4	2.7
30	4 58	19 2	0 27	1 37	21 48	1.9	7 46	2.8
35	4 45	19 15	0 30	1 47	21 57	1.8	7 35	2.9
40	4 30	19 30	0 33	2 3	22 8	1.7	7 23	3.0
45	4 12	19 48	0 37	2 33	22 20	1.6	7 9	3.1
50	3 49	20 11	0 45	:::	22 35	1.4	6 51	3.3
55	3 19	20 41	0 58	:::	22 54	1.2	6 29	3.5
60	2 34	21 25	1 48	:::	23 19	.9	5 58	3.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	326	36.8	43	19	50.4	-57	204	42.3	-21	21.7	172	1.9	-22	31.6		
2	355	23.5	45	19	38.9	-60	234	46.1	-21	21.8	202	6.2	-22	31.5		
4	24	10.4	46	19	27.0	-63	264	49.9	-21	22.0	232	10.5	-22	31.5		
6	52	57.5	47	19	14.5	-65	294	53.7	-21	22.1	262	14.8	-22	31.4		
8	81	45.0	48	19	1.4	-68	324	57.5	-21	22.3	292	19.1	-22	31.4		
10	110	32.7	50	18	47.9	-70	355	1.2	-21	22.5	322	23.4	-22	31.4		
12	139	20.6	51	18	33.8	-73	25	5.0	-21	22.6	352	27.7	-22	31.3		
14	168	8.9	53	18	19.2	-75	55	8.8	-21	22.8	22	31.9	-22	31.3		
16	196	57.4	54	18	4.1	-78	85	12.6	-21	22.9	52	36.2	-22	31.2		
18	225	46.3	56	17	48.5	-80	115	16.4	-21	23.1	82	40.5	-22	31.2		
20	254	35.4	57	17	32.5	-82	145	20.2	-21	23.2	112	44.8	-22	31.2		
22	283	24.9	59	17	16.0	-85	175	24.0	-21	23.4	142	49.1	-22	31.1		
Δ								19		-1		21		0		

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r		
h	min	s	'	h min	min	'	'		
00	0 12.9	-1.2	16.3	T _m	2 19	2.5	60.7	16.5	
12	- 0 1.9	T _{m☉}	12 h .0 min	Starost	17.7 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	8 47	.1	135	-5.2	♃	10 20	.0	111	-1.3
♂	17 28	.1	4	-1	♄	12 30	.0	79	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	55.8	-23	22.2	94	26.5	228	11.1	-13	55.1	98	1.6	-2	1.7
2	209	55.2	-23	22.1	124	31.5	258	11.5	-13	56.3	128	3.5	-2	.3
4	239	54.6	-23	21.9	154	36.4	288	11.8	-13	57.4	158	5.4	-1	58.8
6	269	54.0	-23	21.7	184	41.3	318	12.1	-13	58.5	188	7.3	-1	57.4
8	299	53.3	-23	21.6	214	46.3	348	12.4	-13	59.7	218	9.2	-1	55.9
10	329	52.7	-23	21.4	244	51.2	18	12.6	-14	.8	248	11.1	-1	54.5
12	359	52.1	-23	21.2	274	56.1	48	12.9	-14	2.0	278	13.0	-1	53.1
14	29	51.5	-23	21.0	305	1.0	78	13.2	-14	3.1	308	14.9	-1	51.6
16	59	50.9	-23	20.8	335	6.0	108	13.5	-14	4.3	338	16.8	-1	50.2
18	89	50.3	-23	20.7	5	10.9	138	13.8	-14	5.4	8	18.7	-1	48.7
20	119	49.6	-23	20.5	35	15.8	168	14.0	-14	6.6	38	20.6	-1	47.3
22	149	49.0	-23	20.3	65	20.8	198	14.3	-14	7.7	68	22.5	-1	45.9
Δ		-3		1				1		-6		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 58	0 58	2 46	20 18	3.8	11 28	.8
55	8 25	15 36	0 46	2 18	20 38	3.5	11 7	1.1
50	7 58	16 3	0 38	1 59	20 52	3.3	10 51	1.3
45	7 37	16 24	0 34	1 47	21 4	3.1	10 38	1.5
40	7 20	16 41	0 31	1 38	21 13	3.0	10 28	1.6
35	7 6	16 55	0 28	1 31	21 22	2.8	10 18	1.7
30	6 54	17 7	0 26	1 25	21 29	2.7	10 10	1.8
20	6 33	17 28	0 24	1 19	21 41	2.5	9 56	2.0
10	6 14	17 47	0 23	1 15	21 52	2.4	9 44	2.2
0	5 57	18 4	0 23	1 15	22 2	2.2	9 32	2.3
10	5 39	18 22	0 23	1 18	22 12	2.1	9 21	2.4
20	5 20	18 41	0 25	1 24	22 22	1.9	9 8	2.6
30	4 58	19 3	0 27	1 36	22 35	1.7	8 54	2.8
35	4 45	19 16	0 30	1 47	22 42	1.6	8 45	2.9
40	4 30	19 31	0 33	2 3	22 49	1.5	8 35	3.0
45	4 12	19 49	0 37	2 33	22 59	1.4	8 24	3.1
50	3 50	20 11	0 45	:::	23 10	1.2	8 10	3.3
55	3 20	20 41	0 58	:::	23 23	2.2	7 53	3.5
60	2 35	21 25	1 44	:::	23 41	2.2	7 29	3.9
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	312	14.7	61	16	59.1	-87	205	27.8	-21	23.6	172	53.4	-22	31.1		
2	341	4.8	62	16	41.7	-89	235	31.5	-21	23.7	202	57.7	-22	31.0		
4	9	55.2	64	16	23.9	-91	265	35.3	-21	23.9	233	2.0	-22	31.0		
6	38	45.9	65	16	5.7	-93	295	39.1	-21	24.0	263	6.3	-22	31.0		
8	67	37.0	67	15	47.1	-95	325	42.9	-21	24.2	293	10.6	-22	30.9		
10	96	28.4	69	15	28.1	-97	355	46.7	-21	24.3	323	14.9	-22	30.9		
12	125	20.2	70	15	8.7	-99	25	50.5	-21	24.5	353	19.2	-22	30.8		
14	154	12.2	72	14	48.9	-100	55	54.3	-21	24.6	23	23.5	-22	30.8		
16	183	4.7	74	14	28.9	-102	85	58.1	-21	24.8	53	27.8	-22	30.8		
18	211	57.4	75	14	8.4	-104	116	1.9	-21	25.0	83	32.0	-22	30.7		
20	240	50.5	77	13	47.7	-105	146	5.7	-21	25.1	113	36.3	-22	30.7		
22	269	43.9	79	13	26.6	-107	176	9.5	-21	25.3	143	40.6	-22	30.6		
Δ								19		-1		21		0		

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	179	48.4	-23	20.1	228	14.5	-14	8.9	98	24.4	-1	44.4
2	209	47.8	-23	19.9	258	14.8	-14	10.1	128	26.3	-1	43.0
4	239	47.2	-23	19.7	288	15.0	-14	11.2	158	28.3	-1	41.5
6	269	46.6	-23	19.5	318	15.3	-14	12.4	188	30.2	-1	40.1
8	299	46.0	-23	19.3	348	15.5	-14	13.5	218	32.1	-1	38.7
10	329	45.3	-23	19.0	378	15.8	-14	14.7	248	34.0	-1	37.2
12	359	44.7	-23	18.8	408	16.0	-14	15.8	278	35.9	-1	35.8
14	29	44.1	-23	18.6	438	16.2	-14	17.0	308	37.8	-1	34.3
16	59	43.5	-23	18.4	468	16.4	-14	18.1	338	39.7	-1	32.9
18	89	42.9	-23	18.2	498	16.7	-14	19.3	368	41.6	-1	31.5
20	119	42.3	-23	17.9	528	16.9	-14	20.5	398	43.5	-1	30.0
22	149	41.7	-23	17.7	558	17.1	-14	21.6	428	45.4	-1	28.6
Δ		-3		1		1		-6		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 4	14 59	0 58	2 46	21 50	3.7	11 48	.6
55	8 25	15 37	0 45	2 17	22 2	3.4	11 34	.9
50	7 58	16 4	0 38	1 59	22 11	3.2	11 23	1.1
45	7 37	16 25	0 34	1 47	22 18	3.0	11 14	1.3
40	7 21	16 41	0 31	1 38	22 24	2.9	11 6	1.4
35	7 7	16 56	0 28	1 31	22 30	2.7	11 0	1.6
30	6 54	17 8	0 26	1 25	22 34	2.6	10 54	1.7
20	6 33	17 29	0 24	1 19	22 42	2.4	10 45	1.8
10	6 15	17 47	0 23	1 15	22 49	2.3	10 36	2.0
0	5 57	18 5	0 23	1 15	22 55	2.1	10 28	2.2
10	5 40	18 22	0 23	1 18	23 2	1.9	10 19	2.3
20	5 21	18 41	0 25	1 24	23 8	1.8	10 10	2.5
30	4 59	19 3	0 27	1 36	23 16	2.1	10 0	2.7
35	4 46	19 16	0 30	1 47	23 21	2.1	9 54	2.8
40	4 31	19 31	0 33	2 3	23 26	2.1	9 47	2.9
45	4 13	19 49	0 37	2 32	23 31	2.1	9 39	3.1
50	3 51	20 11	0 44	:::	23 38	2.1	9 30	3.3
55	3 21	20 41	0 58	:::	..	.0	9 18	3.5
60	2 36	21 25	1 43	:::	..	.0	9 2	3.8

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	298	37.6	80	13	5.3	-108	206	13.3	-21	25.4	173	44.9	-22	30.6
2	327	31.7	82	12	43.7	-110	236	17.0	-21	25.6	203	49.2	-22	30.5
4	356	26.1	84	12	21.7	-111	266	20.8	-21	25.7	233	53.5	-22	30.5
6	25	20.8	85	11	59.6	-112	296	24.6	-21	25.9	263	57.8	-22	30.5
8	54	15.8	87	11	37.1	-113	326	28.4	-21	26.0	294	2.1	-22	30.4
10	83	11.1	88	11	14.5	-114	356	32.2	-21	26.2	324	6.4	-22	30.4
12	112	6.8	90	10	51.6	-116	26	36.0	-21	26.3	354	10.7	-22	30.3
14	141	2.7	91	10	28.5	-117	56	39.8	-21	26.5	24	15.0	-22	30.3
16	169	59.0	93	10	5.2	-118	86	43.6	-21	26.6	54	19.3	-22	30.3
18	198	55.5	94	9	41.6	-118	116	47.4	-21	26.8	84	23.6	-22	30.2
20	227	52.4	96	9	18.0	-119	146	51.2	-21	26.9	114	27.8	-22	30.2
22	256	49.5	97	8	54.1	-120	176	55.0	-21	27.1	144	32.1	-22	30.1
Δ							19			-1	21			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 0 46.3	-1.2	16.3	T _m	4 15	2.2	59.9	16.3
12	- 1 1.1	T _{m☉}	12 h 1.0 min	Starost	19.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	8 47	.1	133	-5.1	♂	10 14	.0	111	-1.3
♂	17 25	.1	3	-1	♂	12 23	.0	78	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	179	41.1	-23	17.5	228	17.3	-14	22.8	98	47.3	-1	27.1
2	209	40.4	-23	17.2	258	17.5	-14	23.9	128	49.2	-1	25.7
4	239	39.8	-23	17.0	288	17.7	-14	25.1	158	51.1	-1	24.2
6	269	39.2	-23	16.7	318	17.9	-14	26.3	188	53.0	-1	22.8
8	299	38.6	-23	16.5	348	18.1	-14	27.4	218	54.9	-1	21.4
10	329	38.0	-23	16.2	378	18.2	-14	28.6	248	56.8	-1	19.9
12	359	37.4	-23	16.0	408	18.4	-14	29.7	278	58.7	-1	18.5
14	29	36.8	-23	15.7	438	18.6	-14	30.9	309	.6	-1	17.0
16	59	36.2	-23	15.5	468	18.8	-14	32.1	339	2.5	-1	15.6
18	89	35.6	-23	15.2	498	18.9	-14	33.2	369	4.4	-1	14.2
20	119	34.9	-23	14.9	528	19.1	-14	34.4	399	6.3	-1	12.7
22	149	34.3	-23	14.7	558	19.2	-14	35.5	429	8.2	-1	11.3
Δ		-3		1		1		-6		10		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	14 60	0 57	2 46	23 19	2.0	12 3	.5
55	8 25	15 38	0 45	2 17	23 24	2.0	11 55	.8
50	7 58	16 5	0 38	1 59	23 28	2.0	11 49	1.0
45	7 38	16 25	0 34	1 47	23 31	2.0	11 45	1.2
40	7 21	16 42	0 31	1 38	23 33	2.0	11 41	1.3
35	7 7	16 56	0 28	1 31	23 35	2.0	11 37	1.4
30	6 55	17 8	0 26	1 25	23 37	2.0	11 34	1.5
20	6 34	17 30	0 24	1 19	23 40	2.0	11 29	1.7
10	6 15	17 48	0 23	1 15	23 43	2.0	11 24	1.9
0	5 58	18 5	0 23	1 15	23 46	2.0	11 20	2.1
10	5 40	18 23	0 23	1 18	23 48	2.0	11 15	2.2
20	5 21	18 42	0 25	1 24	23 51	2.0	11 10	2.4
30	4 59	19 3	0 27	1 36	..	..	11 4	2.6
35	4 47	19 16	0 30	1 47	..	..	11 1	2.7
40	4 32	19 31	0 33	2 3	..	..	10 57	2.8
45	4 14	19 49	0 37	2 32	..	..	10 53	3.0
50	3 51	20 11	0 44	:::	..	..	10 48	3.2
55	3 22	20 41	0 58	:::	0 13	.8	10 41	3.4
60	2 37	21 25	1 42	:::	0 -1	.5	10 33	3.7

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	285	46.9	98	8	30.1	-121	206	58.8	-21	27.2	174	36.4	-22	30.1
2	314	44.6	100	8	6.0	-121	237	2.6	-21	27.4	204	40.7	-22	30.0
4	343	42.5	101	7	41.7	-122	267	6.4	-21	27.6	234	45.0	-22	30.0
6	12	40.7	102	7	17.3	-123	297	10.2	-21	27.7	264	49.3	-22	30.0
8	41	39.1	103	6	52.7	-123	327	14.0	-21	27.9	294	53.6	-22	29.9
10	70	37.8	105	6	28.1	-124	357	17.8	-21	28.0	324	57.9	-22	29.9
12	99	36.8	106	6	3.4	-124	27	21.6	-21	28.2	355	2.2	-22	29.8
14	128	35.9	107	5	38.6	-124	57	25.4	-21	28.3	25	6.5	-22	29.8
16	157	35.3	108	5	13.7	-125	87	29.2	-21	28.5	55	10.8	-22	29.8
18	186	34.9	109	4	48.7	-125	117	33.0	-21	28.6	85	15.1	-22	29.7
20	215	34.7	110	4	23.8	-125	147	36.8	-21	28.8	115	19.3	-22	29.7
22	244	34.8	111	3	58.7	-125	177	40.5	-21	28.9	145	23.6	-22	29.6
Δ							19			-1	21			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 1 15.8	-1.2	16.3	T _m	5 7	2.1	59.3	16.2
12	- 1 30.4	T _{m☉}	12 h 1.5 min	Starost	20.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	8 47	.1	132	-5.1	♂	10 11	.0	111	-1.3
♂	17 24	.1	2	.0	♂	12 20	.0	78	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	179	33.7	-23	14.4	228	19.4	-14	36.7	99	10.1	-1	9.8
2	209	33.1	-23	14.1	258	19.5	-14	37.9	129	12.0	-1	8.4
4	239	32.5	-23	13.8	288	19.7	-14	39.0	159	13.9	-1	7.0
6	269	31.9	-23	13.5	318	19.8	-14	40.2	189	15.8	-1	5.5
8	299	31.3	-23	13.2	348	19.9	-14	41.4	219	17.7	-1	4.1
10	329	30.7	-23	13.0	378	20.1	-14	42.5	249	19.6	-1	2.6
12	359	30.1	-23	12.7	408	20.2	-14	43.7	279	21.5	-1	1.2
14	29	29.5	-23	12.4	438	20.3	-14	44.9	309	23.4	-0	59.8
16	59	28.9	-23	12.1	468	20.4	-14	46.0	339	25.3	-0	58.3
18	89	28.3	-23	11.8	498	20.5	-14	47.2	369	27.2	-0	56.9
20	119	27.7	-23	11.5	528	20.7	-14	48.3	399	29.1	-0	55.4
22	149	27.0	-23	11.1	558	20.8	-14	49.5	429	31.0	-0	54.0
Δ		-3		1		1		-6		9		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 1	0 57	2 45	...	.0	12 16	3.0
55	8 25	15 39	0 45	2 17	...	.0	12 15	2.8
50	7 58	16 6	0 38	1 59	...	.0	12 14	2.6
45	7 38	16 26	0 34	1 47	...	.0	12 13	2.5
40	7 21	16 43	0 31	1 37	...	.0	12 12	2.5
35	7 7	16 57	0 28	1 31	...	.0	12 12	2.4
30	6 55	17 9	0 26	1 25	...	.0	12 11	2.3
20	6 34	17 30	0 24	1 19	...	.0	12 11	2.2
10	6 16	17 48	0 23	1 15	...	.0	12 10	2.1
0	5 58	18 6	0 23	1 15	...	.0	12 9	2.0
10	5 41	18 23	0 23	1 18	...	.0	12 8	1.9
20	5 22	18 42	0 25	1 24	...	.0	12 7	1.8
30	5 0	19 4	0 27	1 36	0 -7	1.9	12 7	1.7
35	4 47	19 17	0 30	1 47	0 -5	1.8	12 6	1.6
40	4 32	19 32	0 33	2 17	0 -3	1.8	12 5	1.6
45	4 14	19 49	0 37	2 31	0 -1	1.7	12 5	1.5
50	3 52	20 12	0 44	:::	0 2	1.7	12 4	1.4
55	3 22	20 41	0 57	:::	0 6	1.6	12 2	1.3
60	2 39	21 25	1 40	:::	0 11	1.5	12 1	1.1

UT	MESEC				JUPITER		SATURN								
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	273	35.0	112	3	33.6	-125	207	44.3	-21	29.1	175	27.9	-22	29.6	
2	302	35.4	113	3	8.5	-126	237	48.1	-21	29.2	205	32.2	-22	29.5	
4	331	36.0	114	2	43.4	-126	267	51.9	-21	29.4	235	36.5	-22	29.5	
6	0	36.7	115	2	18.3	-126	297	55.7	-21	29.5	265	40.8	-22	29.5	
8	29	37.7	115	1	53.2	-126	327	59.5	-21	29.7	295	45.1	-22	29.4	
10	58	38.8	116	1	28.1	-125	358	3.3	-21	29.8	325	49.4	-22	29.4	
12	87	40.0	117	1	3.0	-125	388	7.1	-21	29.9	355	53.7	-22	29.3	
14	116	41.4	118	0	37.9	-125	418	10.9	-21	30.1	385	58.0	-22	29.3	
16	145	42.9	118	0	12.9	-4	448	14.7	-21	30.2	415	62.3	-22	29.2	
18	174	44.5	119	0	12.1	125	478	18.5	-21	30.4	445	66.5	-22	29.2	
20	203	46.3	119	0	37.0	124	508	22.4	-21	30.5	475	70.8	-22	29.2	
22	232	48.2	120	1	1.8	124	538	26.2	-21	30.7	505	75.1	-22	29.1	
Δ								19		-1		21			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 1 45.1	-1.2	16.3	T _m	5 57	2.0	58.6	16.0
12	- 1 59.7	T _{m☉}	12 h 2.0 min	Starost	21.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 47	.1	131	-5.1	♄	10 8	.0	110	-1.3
♁	17 22	.1	2	.0	♅	12 16	.0	78	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	179	26.4	-23	10.8	228	20.9	-14	50.7	99	32.9	-0	52.6
2	209	25.8	-23	10.5	258	20.9	-14	51.8	129	34.8	-0	51.1
4	239	25.2	-23	10.2	288	21.0	-14	53.0	159	36.7	-0	49.7
6	269	24.6	-23	9.9	318	21.1	-14	54.2	189	38.6	-0	48.2
8	299	24.0	-23	9.5	348	21.2	-14	55.3	219	40.5	-0	46.8
10	329	23.4	-23	9.2	378	21.3	-14	56.5	249	42.4	-0	45.3
12	359	22.8	-23	8.9	408	21.4	-14	57.7	279	44.3	-0	43.9
14	29	22.2	-23	8.5	438	21.4	-14	58.8	309	46.2	-0	42.5
16	59	21.6	-23	8.2	468	21.5	-15	.0	339	48.1	-0	41.0
18	89	21.0	-23	7.9	498	21.6	-15	1.2	369	50.0	-0	39.6
20	119	20.4	-23	7.5	528	21.6	-15	2.3	399	51.9	-0	38.1
22	149	19.8	-23	7.2	558	21.7	-15	3.5	429	53.8	-0	36.7
Δ		-3		2		0		-6		9		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 2	0 57	2 45	0 24	.5	13 26	3.5
55	8 25	15 40	0 45	2 17	0 26	.8	13 21	3.2
50	7 58	16 7	0 38	1 59	0 27	1.0	13 17	3.0
45	7 38	16 27	0 34	1 47	0 28	1.1	13 14	2.8
40	7 21	16 44	0 30	1 37	0 29	1.3	13 11	2.7
35	7 7	16 58	0 28	1 31	0 30	1.4	13 9	2.6
30	6 55	17 10	0 26	1 25	0 31	1.5	13 7	2.5
20	6 34	17 31	0 24	1 19	0 32	1.7	13 3	2.3
10	6 16	17 49	0 23	1 15	0 33	1.8	12 60	2.1
0	5 59	18 6	0 22	1 15	0 34	2.0	12 57	2.0
10	5 41	18 24	0 23	1 18	0 35	2.1	12 54	1.8
20	5 23	18 42	0 25	1 24	0 37	2.3	12 51	1.7
30	5 1	19 4	0 27	1 36	0 38	2.5	12 47	1.5
35	4 48	19 17	0 30	1 46	0 39	2.6	12 45	1.4
40	4 33	19 32	0 33	2 2	0 40	2.7	12 43	1.3
45	4 15	19 49	0 37	2 31	0 41	2.9	12 40	1.1
50	3 53	20 12	0 44	:::	0 43	3.0	12 37	1.0
55	3 23	20 41	0 57	:::	0 44	3.2	12 33	.8
60	2 40	21 25	1 39	:::	0 47	3.5	12 28	.5

UT	MESEC				JUPITER		SATURN								
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	261	50.2	120	1	26.6	124	208	30.0	-21	30.8	176	19.4	-22	29.1	
2	290	52.2	121	1	51.4	123	238	33.8	-21	31.0	206	23.7	-22	29.0	
4	319	54.4	121	2	16.0	123	268	37.6	-21	31.1	236	28.0	-22	29.0	
6	348	56.7	122	2	40.5	122	298	41.4	-21	31.3	266	32.3	-22	28.9	
8	17	59.0	122	3	5.0	122	328	45.2	-21	31.4	296	36.6	-22	28.9	
10	47	1.4	122	3	29.3	121	358	49.0	-21	31.6	326	40.9	-22	28.9	
12	76	3.9	123	3	53.5	120	388	52.8	-21	31.7	356	45.2	-22	28.8	
14	105	6.4	123	4	17.6	120	418	56.6	-21	31.9	386	49.5	-22	28.8	
16	134	9.0	123	4	41.6	119	448	60.4	-21	32.0	416	53.7	-22	28.7	
18	163	11.6	123	5	5.4	118	478	64.2	-21	32.2	446	58.0	-22	28.7	
20	192	14.3	123	5	29.1	118	508	68.0	-21	32.3	476	62.3	-22	28.6	
22	221	16.9	124	5	52.7	117	538	71.8	-21	32.4	506	66.6	-22	28.6	
Δ								19		-1		21			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r	
h	min	s	'	h min	min	'	'	
00	- 2 14.2	-1.2	16.3	T _m	6 46	2.0	57.9	15.8
12	- 2 28.7	T _{m☉}	12 h 2.5 min	Starost	22.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	8 47	.1	130	-5.0	♄	10 5	.0	110	-1.3
♁	17 21	.1	1	.0	♅	12 13	.0	78	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	19.2	-23	6.8	99	22.2	228	21.7	-15	4.7	99	55.6	-0	35.3	
2	209	18.6	-23	6.5	129	27.2	258	21.8	-15	5.8	129	57.5	-0	33.8	
4	239	18.0	-23	6.1	159	32.1	288	21.8	-15	7.0	159	59.4	-0	32.4	
6	269	17.4	-23	5.7	189	37.0	318	21.8	-15	8.2	190	1.3	-0	30.9	
8	299	16.8	-23	5.4	219	42.0	348	21.9	-15	9.3	220	3.2	-0	29.5	
10	329	16.2	-23	5.0	249	46.9	18	21.9	-15	10.5	250	5.1	-0	28.1	
12	359	15.6	-23	4.6	279	51.8	48	21.9	-15	11.7	280	7.0	-0	26.6	
14	29	15.0	-23	4.3	309	56.7	78	21.9	-15	12.8	310	8.9	-0	25.2	
16	59	14.4	-23	3.9	340	1.7	108	21.9	-15	14.0	340	10.8	-0	23.7	
18	89	13.8	-23	3.5	10	6.6	138	22.0	-15	15.2	10	12.7	-0	22.3	
20	119	13.2	-23	3.1	40	11.5	168	22.0	-15	16.3	40	14.6	-0	20.9	
22	149	12.6	-23	2.7	70	16.5	198	22.0	-15	17.5	70	16.5	-0	19.4	
Δ		-3		2				0		-6			9		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 3	15 3	0 57	2 45	0 37	.6	14 50	3.4
55	8 25	15 41	0 45	2 17	0 44	.8	14 38	3.1
50	7 59	16 8	0 38	1 59	0 50	1.0	14 29	2.9
45	7 38	16 28	0 34	1 47	0 55	1.2	14 22	2.8
40	7 22	16 44	0 30	1 37	0 60	1.3	14 16	2.6
35	7 8	16 58	0 28	1 30	1 3	1.4	14 10	2.5
30	6 56	17 10	0 26	1 25	1 6	1.5	14 6	2.4
20	6 35	17 31	0 24	1 19	1 12	1.7	13 58	2.3
10	6 16	17 50	0 23	1 15	1 17	1.8	13 51	2.1
0	5 59	18 7	0 22	1 15	1 22	2.0	13 44	2.0
10	5 42	18 24	0 23	1 17	1 27	2.1	13 38	1.8
20	5 23	18 43	0 24	1 24	1 32	2.3	13 31	1.7
30	5 1	19 4	0 27	1 36	1 38	2.4	13 23	1.5
35	4 49	19 17	0 30	1 46	1 41	2.5	13 19	1.4
40	4 34	19 32	0 33	2 2	1 45	2.7	13 13	1.3
45	4 16	19 50	0 37	2 30	1 50	2.8	13 8	1.2
50	3 54	20 12	0 44	:::	1 55	3.0	13 1	1.1
55	3 25	20 41	0 57	:::	2 2	3.2	12 52	.9
60	2 41	21 24	1 37	:::	2 11	3.4	12 41	.6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	250	19.6	124	6	16.1	116	209	15.6	-21	32.6	177	10.9	-22	28.5		
2	279	22.4	124	6	39.3	115	239	19.4	-21	32.7	207	15.2	-22	28.5		
4	308	25.1	124	7	2.3	114	269	23.2	-21	32.9	237	19.5	-22	28.5		
6	337	27.8	124	7	25.2	113	299	27.0	-21	33.0	267	23.8	-22	28.4		
8	6	30.6	124	7	47.9	113	329	30.8	-21	33.2	297	28.1	-22	28.4		
10	35	33.3	124	8	10.4	112	359	34.6	-21	33.3	327	32.4	-22	28.3		
12	64	36.1	124	8	32.7	111	29	38.4	-21	33.5	357	36.7	-22	28.3		
14	93	38.8	123	8	54.8	109	59	42.3	-21	33.6	27	40.9	-22	28.2		
16	122	41.4	123	9	16.7	108	89	46.1	-21	33.7	57	45.2	-22	28.2		
18	151	44.1	123	9	38.4	107	119	49.9	-21	33.9	87	49.5	-22	28.2		
20	180	46.7	123	9	59.9	106	149	53.7	-21	34.0	117	53.8	-22	28.1		
22	209	49.3	123	10	21.1	105	179	57.5	-21	34.2	147	58.1	-22	28.1		
Δ								19		-1			21		0	

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	s	h min	min	'	'	
00	- 2 43.1	-1.2	16.3	T _m	7 33	2.0	57.3	15.6
12	- 2 57.5	T _{m☉}	12 h 3.0 min	Starost	23.7 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	8 47	.1	129	-5.0	♂	10 2	.0	110	-1.3
♂	17 19	.1	1	.0	♂	12 10	.0	78	.7

1. JANUAR

UTORAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	12.0	-23	2.3	100	21.4	228	22.0	-15	18.7	100	18.4	-0	18.0	
2	209	11.5	-23	1.9	130	26.3	258	22.0	-15	19.8	130	20.3	-0	16.5	
4	239	10.9	-23	1.5	160	31.2	288	21.9	-15	21.0	160	22.1	-0	15.1	
6	269	10.3	-23	1.1	190	36.2	318	21.9	-15	22.1	190	24.0	-0	13.6	
8	299	9.7	-23	.7	220	41.1	348	21.9	-15	23.3	220	25.9	-0	12.2	
10	329	9.1	-23	.3	250	46.0	18	21.9	-15	24.5	250	27.8	-0	10.8	
12	359	8.5	-22	59.9	280	51.0	48	21.9	-15	25.6	280	29.7	-0	9.3	
14	29	7.9	-22	59.5	310	55.9	78	21.8	-15	26.8	310	31.6	-0	7.9	
16	59	7.3	-22	59.1	341	.8	108	21.8	-15	28.0	340	33.5	-0	6.4	
18	89	6.7	-22	58.7	11	5.7	138	21.8	-15	29.1	10	35.4	-0	5.0	
20	119	6.1	-22	58.3	41	10.7	168	21.7	-15	30.3	40	37.3	-0	3.6	
22	149	5.5	-22	57.8	71	15.6	198	21.7	-15	31.5	70	39.2	-0	2.1	
Δ		-3		2				0		-6			9		7

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
N	h min	h min	h min	h min	h min	min	h min	min
60	9 2	15 5	0 57	2 44	0 50	.7	16 12	3.3
55	8 25	15 42	0 45	2 17	1 4	.9	15 53	3.0
50	7 59	16 9	0 38	1 59	1 15	1.1	15 39	2.8
45	7 38	16 29	0 34	1 46	1 23	1.3	15 28	2.7
40	7 22	16 45	0 30	1 37	1 31	1.4	15 19	2.6
35	7 8	16 59	0 28	1 30	1 37	1.5	15 11	2.5
30	6 56	17 11	0 26	1 25	1 43	1.6	15 4	2.4
20	6 35	17 32	0 24	1 18	1 52	1.7	14 52	2.3
10	6 17	17 50	0 23	1 15	2 1	1.9	14 42	2.1
0	5 60	18 7	0 22	1 15	2 9	2.0	14 32	2.0
10	5 42	18 24	0 23	1 17	2 17	2.1	14 22	1.9
20	5 24	18 43	0 24	1 24	2 26	2.3	14 12	1.8
30	5 2	19 5	0 27	1 36	2 36	2.4	14 0	1.6
35	4 49	19 17	0 30	1 46	2 42	2.5	13 53	1.5
40	4 35	19 32	0 33	2 2	2 49	2.6	13 46	1.5
45	4 17	19 50	0 37	2 30	2 57	2.7	13 37	1.3
50	3 55	20 12	0 44	:::	3 6	2.9	13 26	1.2
55	3 26	20 41	0 57	:::	3 18	3.1	13 13	1.0
60	2 43	21 23	1 36	:::	3 34	3.4	12 55	.7

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	238	51.9	123	10	42.1	104	210	1.3	-21	34.3	178	2.4	-22	28.0		
2	267	54.4	122	11	2.9	103	240	5.1	-21	34.5	208	6.7	-22	28.0		
4	296	56.8	122	11	23.4	101	270	8.9	-21	34.6	238	11.0	-22	27.9		
6	325	59.2	122	11	43.6	100	300	12.7	-21	34.7	268	15.3	-22	27.9		
8	355	1.6	121	12	3.6	99	330	16.5	-21	34.9	298	19.6	-22	27.8		
10	24	3.9	121	12	23.4	97	0	20.3	-21	35.0	328	23.8	-22	27.8		
12	53	6.1	121	12	42.9	96	30	24.2	-21	35.2	358	28.1	-22	27.7		
14	82	8.3	120	13	2.1	95	60	28.0	-21	35.3	28	32.4	-22	27.7		
16	111	10.4	120	13	21.0	93	90	31.8	-21	35.5	58	36.7	-22	27.7		
18	140	12.4	120	13	39.6	92	120	35.6	-21	35.6	88	41.0	-22	27.6		
20	169	14.3	119	13	58.0	90	150	39.4	-21	35.7	118	45.3	-22	27.6		
22	198	16.2	119	14	16.0	89	180	43.2	-21	35.9	148	49.6	-22	27.5		
Δ								19		-1			21		0	



Efemeride

NAUTIČKIH ZVEZDA

SUREKTASCENZIJE NAUČIČKIH ZVEZDA

za 1. u mesecu

R. b.	Ime zvezde	360°-α	2018 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2019 JAN
1	ALPHERATZ	357	40.3	40.4	40.5	40.5	40.4	40.1	39.9	39.7	39.5	39.4	39.4	39.5	39.6
2	CAPH	357	27.8	28.1	28.2	28.2	28.0	27.7	27.3	27.0	26.7	26.7	26.7	26.9	27.1
3	DIPHDA	348	52.8	52.9	53.0	53.0	52.9	52.7	52.5	52.2	52.1	52.0	52.0	52.0	52.1
4	ACHERNAR	335	24.4	24.7	24.9	25.0	24.9	24.8	24.4	24.1	23.8	23.6	23.5	23.6	23.8
5	HAMAL	327	57.1	57.2	57.3	57.4	57.4	57.2	57.0	56.8	56.6	56.4	56.3	56.3	56.4
6	POLARIS	316	5.7	18.9	32.1	43.1	46.3	41.4	30.7	16.2	1.2	48.9	41.4	41.2	48.7
7	MIRFAK	308	35.5	35.7	35.9	36.1	36.1	36.0	35.8	35.4	35.1	34.8	34.6	34.5	34.6
8	ALDEBARAN	290	45.5	45.6	45.7	45.9	45.9	45.9	45.8	45.6	45.3	45.1	44.9	44.8	44.7
9	RIGEL	281	8.8	8.8	8.9	9.1	9.2	9.2	9.1	8.9	8.7	8.5	8.3	8.2	8.1
10	CAPELLA	280	29.4	29.5	29.6	29.8	30.0	30.0	29.8	29.6	29.3	29.0	28.7	28.5	28.4
11	BELLATRIX	278	28.4	28.4	28.5	28.7	28.8	28.8	28.7	28.5	28.3	28.1	27.9	27.7	27.6
12	EL NATH	278	8.4	8.4	8.5	8.7	8.8	8.8	8.7	8.5	8.2	8.0	7.7	7.6	7.5
13	ALNILAM	275	42.9	42.9	43.0	43.2	43.3	43.3	43.2	43.1	42.9	42.7	42.5	42.3	42.2
14	BETELGEUSE	270	57.6	57.6	57.7	57.9	58.0	58.0	57.9	57.8	57.6	57.4	57.2	57.0	56.9
15	CANOPUS	263	54.2	54.3	54.5	54.8	55.0	55.2	55.2	55.1	54.8	54.5	54.2	54.0	53.9
16	SIRIUS	258	30.7	30.7	30.8	30.9	31.0	31.1	31.1	31.0	30.8	30.6	30.4	30.2	30.1
17	ADHARA	255	9.7	9.7	9.8	10.0	10.1	10.2	10.2	10.1	10.0	9.8	9.5	9.3	9.2
18	PROCYON	244	56.2	56.1	56.2	56.3	56.4	56.5	56.5	56.4	56.3	56.1	55.9	55.6	55.5
19	POLLUX	243	23.6	23.6	23.6	23.7	23.9	24.0	24.0	23.9	23.7	23.5	23.2	23.0	22.8
20	AVIOR	234	16.1	16.0	16.2	16.4	16.7	17.0	17.2	17.2	17.1	16.8	16.5	16.1	15.9
21	AL SUHAIL	222	49.8	49.6	49.7	49.8	50.0	50.2	50.3	50.3	50.2	50.1	49.8	49.5	49.3
22	MIAPLACIDUS	221	38.1	38.0	38.1	38.4	38.9	39.3	39.7	39.8	39.8	39.5	39.0	38.5	38.1
23	ALPHARD	217	52.8	52.7	52.6	52.7	52.8	52.9	53.0	52.9	52.8	52.8	52.6	52.4	52.1
24	REGULUS	207	40.1	39.9	39.8	39.9	39.9	40.0	40.1	40.1	40.1	40.0	39.8	39.6	39.3
25	DUBHE	193	47.8	47.4	47.2	47.2	47.4	47.7	47.9	48.0	48.1	48.0	47.7	47.3	46.8
26	DENEbola	182	30.5	30.2	30.1	30.1	30.1	30.2	30.3	30.3	30.4	30.4	30.2	30.0	29.8
27	ACRUX	173	5.7	5.3	5.1	5.0	5.0	5.2	5.4	5.7	5.9	6.0	5.8	5.5	5.0
28	GACRUX	171	57.4	57.0	56.8	56.7	56.7	56.8	57.0	57.3	57.4	57.5	57.3	57.0	56.6
29	MINOSA	167	48.2	47.8	47.6	47.5	47.5	47.6	47.8	48.1	48.3	48.3	48.2	47.9	47.5
30	ALIOTh	166	18.1	17.7	17.5	17.3	17.4	17.5	17.7	17.9	18.1	18.1	18.0	17.8	17.4
31	MIZAR	158	50.7	50.3	50.0	49.9	49.9	50.0	50.2	50.4	50.6	50.7	50.6	50.4	50.1
32	SPICA	158	28.1	27.8	27.6	27.5	27.5	27.5	27.6	27.7	27.8	27.8	27.7	27.6	27.3
33	ALKAID	152	56.7	56.4	56.1	55.9	55.9	55.9	56.1	56.3	56.4	56.6	56.5	56.4	56.1
34	MENKENT	148	4.1	3.8	3.5	3.4	3.3	3.3	3.4	3.5	3.6	3.7	3.7	3.5	3.3
35	ARCTURUS	145	53.1	52.8	52.6	52.5	52.4	52.4	52.5	52.6	52.7	52.8	52.8	52.7	52.5
36	RIGEL KENTAURUS	139	47.9	47.5	47.1	46.8	46.7	46.7	46.8	47.1	47.3	47.5	47.6	47.4	47.0
37	KOHAB	137	20.9	20.3	19.7	19.2	19.0	19.2	19.5	20.1	20.6	21.1	21.3	21.3	20.8
38	ALPHECCA	126	8.7	8.4	8.2	8.0	7.9	7.8	7.9	8.0	8.1	8.2	8.3	8.2	8.1
39	DSCHUBBA	119	39.5	39.2	39.0	38.8	38.6	38.5	38.5	38.5	38.7	38.8	38.9	38.8	38.6
40	ANTARES	112	22.8	22.6	22.3	22.1	21.9	21.8	21.7	21.8	21.9	22.1	22.1	22.1	22.0
41	ATRIA	107	22.3	21.8	21.3	20.7	20.3	20.0	19.9	20.1	20.5	20.9	21.1	21.2	20.9
42	SHAULA	96	18.1	17.9	17.7	17.4	17.2	17.0	16.9	16.9	17.0	17.2	17.3	17.3	17.2
43	RASALHAGUE	96	3.9	3.8	3.6	3.4	3.2	3.0	2.9	3.0	3.1	3.2	3.3	3.4	3.3
44	ELTANIN	90	45.3	45.1	44.8	44.5	44.3	44.1	44.0	44.1	44.3	44.6	44.8	44.9	44.9
45	KAUS AUSTRALIS	83	40.2	40.0	39.8	39.5	39.2	39.0	38.9	38.9	38.9	39.1	39.2	39.3	39.2
46	VEGA	80	37.3	37.2	37.0	36.7	36.5	36.3	36.2	36.2	36.4	36.5	36.7	36.8	36.8
47	NUNKI	75	54.9	54.8	54.6	54.3	54.1	53.9	53.7	53.7	53.7	53.9	54.0	54.1	54.0
48	ALTAIR	62	5.6	5.5	5.4	5.2	5.0	4.7	4.6	4.5	4.5	4.7	4.8	4.9	4.9
49	PEACOCK	53	15.0	14.9	14.8	14.4	14.1	13.7	13.4	13.2	13.2	13.4	13.6	13.8	13.9
50	DENEB	49	29.8	29.8	29.7	29.5	29.2	28.9	28.7	28.6	28.7	28.8	29.0	29.2	29.3
51	ENIF	33	44.3	44.3	44.3	44.2	44.0	43.7	43.5	43.4	43.3	43.4	43.5	43.6	43.7
52	AL NA IR	27	40.3	40.3	40.2	40.1	39.8	39.5	39.2	39.0	38.9	38.9	39.0	39.2	39.3
53	FOMALHAUT	15	20.8	20.9	20.8	20.8	20.6	20.3	20.1	19.9	19.7	19.7	19.8	19.9	20.0
54	MARKAB	13	35.4	35.5	35.5	35.4	35.2	35.0	34.8	34.6	34.5	34.5	34.5	34.6	34.7

DEKLINACIJE NAUTIČKIH ZVEZDA

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R.b.	Zvezda–Sazvežđe	δ	2018 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2019 JAN
1	α Andromedae	29	11.4	11.4	11.3	11.2	11.2	11.2	11.3	11.4	11.6	11.7	11.7	11.8	11.8
2	β Cassiopeae	59	15.1	15.1	15.0	14.8	14.7	14.7	14.7	14.9	15.0	15.2	15.3	15.4	15.4
3	β Ceti	-17	53.5	53.5	53.5	53.4	53.3	53.2	53.1	53.0	53.0	53.0	53.1	53.2	53.2
4	α Eridani	-57	9.2	9.1	9.1	8.9	8.7	8.6	8.4	8.4	8.4	8.5	8.6	8.8	8.9
5	α Arietis	23	32.8	32.8	32.7	32.7	32.6	32.7	32.7	32.8	32.9	33.0	33.0	33.1	33.1
6	α Ursae Minoris	89	20.5	20.6	20.6	20.5	20.3	20.2	20.1	20.1	20.2	20.3	20.5	20.6	20.8
7	α Persei	49	55.5	55.5	55.5	55.4	55.3	55.3	55.2	55.2	55.3	55.4	55.5	55.6	55.7
8	α Tauri	16	32.5	32.5	32.5	32.5	32.5	32.5	32.5	32.6	32.6	32.7	32.7	32.7	32.7
9	β Orionis	- 8	11.1	11.2	11.2	11.2	11.1	11.1	11.0	10.9	10.8	10.8	10.8	10.9	11.0
10	α Aurigae	46	0.8	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.9
11	γ Orionis	6	21.7	21.7	21.7	21.7	21.7	21.7	21.8	21.9	21.9	21.9	21.9	21.9	21.8
12	β Tauri	28	37.2	37.2	37.2	37.2	37.2	37.1	37.1	37.1	37.2	37.2	37.2	37.2	37.2
13	ε Orionis	- 1	11.7	11.7	11.7	11.7	11.7	11.7	11.6	11.5	11.4	11.4	11.5	11.5	11.6
14	α Orionis	7	24.4	24.4	24.4	24.4	24.4	24.4	24.5	24.5	24.6	24.6	24.5	24.5	24.4
15	α Carinae	-52	42.5	42.7	42.8	42.8	42.7	42.6	42.4	42.3	42.2	42.1	42.2	42.3	42.5
16	α Canis Majoris	-16	44.6	44.8	44.8	44.8	44.8	44.7	44.6	44.5	44.4	44.4	44.5	44.6	44.7
17	ε Canis Majoris	-28	60.0	0.1	0.2	0.2	0.2	0.1	60.0	59.8	59.7	59.7	59.7	59.9	0.0
18	α Canis Minoris	5	10.5	10.5	10.5	10.5	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.5	10.4
19	β Geminorum	27	58.7	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.8	58.7	58.7	58.6	58.6
20	ε Carinae	-59	34.0	34.2	34.4	34.5	34.5	34.4	34.3	34.2	34.0	33.9	33.9	34.0	34.2
21	λ Velorum	-43	30.3	30.4	30.6	30.7	30.7	30.7	30.6	30.5	30.3	30.2	30.2	30.3	30.5
22	β Carinae	-69	47.3	47.5	47.7	47.8	47.9	47.9	47.8	47.7	47.5	47.4	47.3	47.4	47.5
23	α Hydrae	- 8	44.3	44.4	44.4	44.5	44.5	44.4	44.4	44.3	44.3	44.2	44.3	44.4	44.5
24	α Leonis	11	52.6	52.6	52.6	52.6	52.6	52.7	52.7	52.7	52.7	52.6	52.6	52.5	52.4
25	α Ursae Majoris	61	39.0	39.0	39.1	39.2	39.4	39.4	39.4	39.3	39.1	39.0	38.8	38.7	38.7
26	β Leonis	14	28.2	28.2	28.1	28.2	28.2	28.3	28.3	28.3	28.3	28.2	28.1	28.0	27.9
27	α Crucis	-63	11.5	11.7	11.8	12.0	12.1	12.2	12.3	12.2	12.1	12.0	11.9	11.8	11.8
28	γ Crucis	-57	12.5	12.6	12.7	12.9	13.0	13.1	13.2	13.1	13.0	12.9	12.8	12.7	12.8
29	β Crucis	-59	46.8	46.9	47.1	47.2	47.4	47.5	47.5	47.5	47.4	47.3	47.2	47.1	47.1
30	ε Ursae Majoris	55	51.5	51.5	51.6	51.7	51.8	51.9	52.0	52.0	51.9	51.7	51.5	51.4	51.2
31	ζ Ursae Majoris	54	49.7	49.7	49.7	49.8	50.0	50.1	50.2	50.1	50.1	49.9	49.7	49.6	49.4
32	α Virginis	-11	15.1	15.2	15.3	15.4	15.4	15.4	15.4	15.3	15.3	15.3	15.3	15.3	15.4
33	η Ursae Majoris	49	13.3	13.2	13.2	13.3	13.5	13.6	13.7	13.7	13.6	13.5	13.3	13.1	13.0
34	θ Centauri	-36	27.2	27.3	27.3	27.5	27.5	27.6	27.6	27.6	27.6	27.5	27.5	27.4	27.5
35	α Bootis	19	5.4	5.3	5.2	5.2	5.3	5.4	5.5	5.5	5.5	5.4	5.3	5.2	5.0
36	α Centauri	-60	54.1	54.2	54.3	54.4	54.5	54.7	54.7	54.8	54.7	54.6	54.5	54.4	54.4
37	β Ursae Minoris	74	4.8	4.7	4.7	4.8	4.9	5.1	5.2	5.2	5.2	5.1	4.9	4.7	4.5
38	α Coronae Borealis	26	39.3	39.2	39.1	39.2	39.3	39.4	39.5	39.5	39.5	39.5	39.4	39.2	39.1
39	δ Scorpii	-22	40.1	40.1	40.2	40.2	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3	40.3
40	α Scorpii	-26	28.0	28.1	28.1	28.1	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2	28.2
41	α Trianguli Australi	-69	3.2	3.1	3.1	3.2	3.3	3.4	3.5	3.7	3.7	3.7	3.6	3.5	3.3
42	λ Scorpii	-37	6.7	6.7	6.7	6.7	6.8	6.8	6.9	6.9	6.9	6.9	6.9	6.9	6.8
43	α Ophiuchi	12	33.0	32.9	32.8	32.8	32.8	32.9	33.0	33.1	33.1	33.1	33.1	33.0	32.9
44	γ Draconis	51	29.3	29.1	29.0	29.0	29.1	29.2	29.4	29.5	29.6	29.6	29.6	29.4	29.3
45	ε Sagittarii	-34	22.4	22.3	22.3	22.3	22.3	22.3	22.3	22.4	22.4	22.4	22.4	22.4	22.4
46	α Lyrae	38	48.2	48.0	47.9	47.9	47.9	48.1	48.2	48.4	48.4	48.5	48.4	48.3	48.2
47	σ Sagittarii	-26	16.3	16.3	16.3	16.3	16.2	16.2	16.2	16.2	16.3	16.3	16.3	16.3	16.3
48	α Aquilae	8	55.1	55.0	54.9	54.9	55.0	55.1	55.2	55.2	55.3	55.3	55.3	55.3	55.2
49	α Pavonis	-56	40.6	40.5	40.4	40.3	40.3	40.2	40.3	40.4	40.5	40.6	40.6	40.6	40.5
50	α Cygni	45	20.9	20.7	20.6	20.5	20.5	20.6	20.7	20.9	21.1	21.2	21.2	21.2	21.0
51	ε Pegasi	9	57.5	57.4	57.4	57.4	57.4	57.5	57.6	57.7	57.8	57.8	57.8	57.8	57.7
52	α Gruis	-46	52.6	52.5	52.4	52.3	52.2	52.1	52.1	52.1	52.2	52.3	52.4	52.4	52.4
53	α Piscis Austrini	-29	31.8	31.8	31.7	31.6	31.5	31.4	31.3	31.3	31.3	31.4	31.5	31.5	31.5
54	α Pegasi	15	18.2	18.1	18.0	18.0	18.0	18.1	18.2	18.3	18.4	18.5	18.5	18.5	18.4

VREMENA GORNJIH PROLAZA NAUTIČKIH ZVEZDA

kroz meridijan u Griniču

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R.b.	Ime zvezde	2018 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2019 JAN
		h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min	h min
1	ALPHERATZ	17 27	15 25	13 34	11 32	9 34	7 32	5 33	3 31	1 29	23 31	21 28	19 30	17 28
2	CAPH	17 28	15 26	13 35	11 33	9 35	7 32	5 34	3 32	1 30	23 32	21 29	19 31	17 29
3	DIPHDA	18 2	15 60	14 9	12 7	10 9	8 7	6 9	4 6	2 4	0 6	22 4	20 5	18 3
4	ACHERNAR	18 56	16 54	15 3	13 1	11 3	9 1	7 2	5 0	2 58	0 60	22 58	20 59	18 57
5	HAMAL	19 26	17 24	15 33	13 31	11 33	9 30	7 32	5 30	3 28	1 30	23 27	21 29	19 27
6	POLARIS	20 13	18 10	16 19	14 16	12 17	10 16	8 18	6 17	4 16	2 18	0 16	22 18	20 15
7	MIRFAK	20 43	18 41	16 51	14 48	12 50	10 48	8 50	6 47	4 45	2 47	0 45	22 46	20 44
8	ALDEBARAN	21 55	19 52	18 2	15 60	14 1	11 59	10 1	7 59	5 57	3 58	1 56	23 58	21 56
9	RIGEL	22 33	20 31	18 40	16 38	14 40	12 38	10 39	8 37	6 35	4 37	2 35	0 36	22 34
10	CAPELLA	22 36	20 33	18 43	16 41	14 43	12 40	10 42	8 40	6 38	4 39	2 37	0 39	22 37
11	BELLATRIX	22 44	20 41	18 51	16 49	14 51	12 48	10 50	8 48	6 46	4 47	2 45	0 47	22 45
12	EL NATH	22 45	20 43	18 52	16 50	14 52	12 50	10 51	8 49	6 47	4 49	2 47	0 48	22 46
13	ALNILAM	22 55	20 53	19 2	16 60	15 2	12 59	11 1	8 59	6 57	4 58	2 56	0 58	22 56
14	BETELGEUSE	23 14	21 12	19 21	17 19	15 21	13 18	11 20	9 18	7 16	5 17	3 15	1 17	23 15
15	CANOPUS	23 42	21 40	19 49	17 47	15 49	13 47	11 48	9 46	7 44	5 46	3 43	1 45	23 43
16	SIRIUS	0 4	22 1	20 11	18 9	16 10	14 8	12 10	10 8	8 6	6 7	4 5	2 7	0 5
17	ADHARA	0 17	22 15	20 24	18 22	16 24	14 22	12 23	10 21	8 19	6 21	4 18	2 20	0 18
18	PROCYON	0 58	22 56	21 5	19 3	17 5	15 3	13 4	11 2	8 60	7 2	4 59	3 1	0 59
19	POLLUX	1 4	23 2	21 11	19 9	17 11	15 9	13 10	11 8	9 6	7 8	5 6	3 7	1 5
20	AVIOR	1 41	23 38	21 48	19 46	17 47	15 45	13 47	11 45	9 42	7 44	5 42	3 44	1 42
21	AL SUHAIL	2 26	0 24	22 34	20 31	18 33	16 31	14 33	12 30	10 28	8 30	6 28	4 29	2 27
22	MIAPLACIDUS	2 31	0 29	22 38	20 36	18 38	16 36	14 37	12 35	10 33	8 35	6 32	4 34	2 32
23	ALPHARD	2 46	0 44	22 53	20 51	18 53	16 51	14 52	12 50	10 48	8 50	6 48	4 49	2 47
24	REGULUS	3 27	1 25	23 34	21 32	19 34	17 32	15 33	13 31	11 29	9 31	7 28	5 30	3 28
25	DUBHE	4 22	2 20	0 30	22 28	20 29	18 27	16 29	14 27	12 24	10 26	8 24	6 26	4 23
26	DENEbola	5 8	3 5	1 15	23 13	21 14	19 12	17 14	15 12	13 10	11 11	9 9	7 11	5 9
27	ACRUX	5 45	3 43	1 53	23 50	21 52	19 50	17 52	15 49	13 47	11 49	9 47	7 48	5 46
28	GACRUX	5 50	3 48	1 57	23 55	21 57	19 54	17 56	15 54	13 52	11 53	9 51	7 53	5 51
29	MINOSA	6 6	4 4	2 14	0 12	22 13	20 11	18 13	16 11	14 8	12 10	10 8	8 10	6 7
30	ALIOTh	6 12	4 10	2 20	0 18	22 19	20 17	18 19	16 17	14 14	12 16	10 14	8 16	6 13
31	MIZAR	6 42	4 40	2 50	0 47	22 49	20 47	18 49	16 46	14 44	12 46	10 44	8 45	6 43
32	SPICA	6 44	4 42	2 51	0 49	22 51	20 48	18 50	16 48	14 46	12 47	10 45	8 47	6 45
33	ALKAID	7 6	5 4	3 13	1 11	23 13	21 11	19 12	17 10	15 8	13 10	11 7	9 9	7 7
34	MENKENT	7 25	5 23	3 33	1 31	23 32	21 30	19 32	17 30	15 27	13 29	11 27	9 29	7 26
35	ARCTURUS	7 34	5 32	3 41	1 39	23 41	21 39	19 41	17 38	15 36	13 38	11 36	9 37	7 35
36	RIGEL KENTAURUS	7 58	5 56	4 6	2 4	0 5	22 3	20 5	18 3	16 0	14 2	11 60	10 2	7 59
37	KOHAB	8 8	6 6	4 16	2 14	0 15	22 13	20 15	18 12	16 10	14 12	12 10	10 11	8 9
38	ALPHECCA	8 53	6 51	5 0	2 58	0 60	22 58	20 59	18 57	16 55	14 57	12 55	10 56	8 54
39	DSCHUBBA	9 19	7 17	5 26	3 24	1 26	23 24	21 25	19 23	17 21	15 23	13 20	11 22	9 20
40	ANTARES	9 48	7 46	5 56	3 53	1 55	23 53	21 55	19 52	17 50	15 52	13 50	11 51	9 49
41	ATRIA	10 8	8 6	6 16	4 13	2 15	0 13	22 15	20 12	18 10	16 12	14 10	12 11	10 9
42	SHAULA	10 52	8 50	6 60	4 58	2 59	0 57	22 59	20 57	18 54	16 56	14 54	12 56	10 53
43	RASALHAGUE	10 53	8 51	7 1	4 59	3 0	0 58	22 60	20 58	18 55	16 57	14 55	12 57	10 54
44	ELTANIN	11 15	9 12	7 22	5 20	3 22	1 19	23 21	21 19	19 17	17 18	15 16	13 18	11 16
45	KAUS AUSTRALIS	11 43	9 41	7 50	5 48	3 50	1 48	23 49	21 47	19 45	17 47	15 44	13 46	11 44
46	VEGA	11 55	9 53	8 3	6 0	4 2	1 60	0 2	21 59	19 57	17 59	15 57	13 58	11 56
47	NUNKI	12 14	10 12	8 21	6 19	4 21	2 19	0 20	22 18	20 16	18 18	16 15	14 17	12 15
48	ALTAIR	13 9	11 7	9 17	7 14	5 16	3 14	1 16	23 13	21 11	19 13	17 11	15 12	13 10
49	PEACOCK	13 45	11 42	9 52	7 50	5 52	3 49	1 51	23 49	21 47	19 48	17 46	15 48	13 46
50	DENEB	13 60	11 57	10 7	8 5	6 7	4 4	2 6	0 4	22 2	20 3	18 1	16 3	14 1
51	ENIF	15 3	13 0	11 10	9 8	7 10	5 7	3 9	1 7	23 5	21 6	19 4	17 6	15 4
52	AL NA IR	15 27	13 25	11 34	9 32	7 34	5 32	3 33	1 31	23 29	21 31	19 28	17 30	15 28
53	FOMALHAUT	16 16	14 14	12 24	10 21	8 23	6 21	4 23	2 20	0 18	22 20	20 18	18 19	16 17
54	MARKAB	16 23	14 21	12 31	10 28	8 30	6 28	4 30	2 27	0 25	22 27	20 25	18 26	16 24

POPRAVKA ZA DATUM uvek se oduzima

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.
h min																														
0 00	0 04	0 08	0 12	0 16	0 20	0 24	0 28	0 31	0 35	0 39	0 43	0 47	0 51	0 55	0 59	1 03	1 07	1 11	1 15	1 19	1 23	1 27	1 30	1 34	1 38	1 42	1 46	1 50	1 54	1 58

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Tablice

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*ODREĐIVANJE GEOGRAFSKE ŠIRINE
POMOĆU VISINE I AZIMUTA SEVERNJAČE*

TABLICA I

S _γ	Popravka	S_{γ}	Popravka	S_{γ}	Popravka	S_{γ}	Popravka	S_{γ}	Popravka	S_{γ}	Popravka
0	-29.1	60	-37.8	120	-8.8	180	29.1	240	37.8	300	8.8
1	-29.5	61	-37.6	121	-8.1	181	29.5	241	37.6	301	8.1
2	-30.0	62	-37.4	122	-7.4	182	30.0	242	37.4	302	7.4
3	-30.4	63	-37.2	123	-6.7	183	30.4	243	37.2	303	6.7
4	-30.9	64	-36.9	124	-6.0	184	30.9	244	36.9	304	6.0
5	-31.3	65	-36.7	125	-5.4	185	31.3	245	36.7	305	5.4
6	-31.7	66	-36.4	126	-4.7	186	31.7	246	36.4	306	4.7
7	-32.1	67	-36.1	127	-4.0	187	32.1	247	36.1	307	4.0
8	-32.5	68	-35.8	128	-3.3	188	32.5	248	35.8	308	3.3
9	-32.9	69	-35.5	129	-2.6	189	32.9	249	35.5	309	2.6
10	-33.3	70	-35.2	130	-1.9	190	33.3	250	35.2	310	1.9
11	-33.7	71	-34.9	131	-1.2	191	33.7	251	34.9	311	1.2
12	-34.0	72	-34.6	132	-0.5	192	34.0	252	34.6	312	0.5
13	-34.4	73	-34.2	133	0.2	193	34.4	253	34.2	313	-0.2
14	-34.7	74	-33.9	134	0.8	194	34.7	254	33.9	314	-0.8
15	-35.0	75	-33.5	135	1.5	195	35.0	255	33.5	315	-1.5
16	-35.4	76	-33.1	136	2.2	196	35.4	256	33.1	316	-2.2
17	-35.7	77	-32.7	137	2.9	197	35.7	257	32.7	317	-2.9
18	-36.0	78	-32.3	138	3.6	198	36.0	258	32.3	318	-3.6
19	-36.2	79	-31.9	139	4.3	199	36.2	259	31.9	319	-4.3
20	-36.5	80	-31.5	140	5.0	200	36.5	260	31.5	320	-5.0
21	-36.8	81	-31.1	141	5.7	201	36.8	261	31.1	321	-5.7
22	-37.0	82	-30.7	142	6.3	202	37.0	262	30.7	322	-6.3
23	-37.3	83	-30.2	143	7.0	203	37.3	263	30.2	323	-7.0
24	-37.5	84	-29.8	144	7.7	204	37.5	264	29.8	324	-7.7
25	-37.7	85	-29.3	145	8.4	205	37.7	265	29.3	325	-8.4
26	-37.9	86	-28.9	146	9.1	206	37.9	266	28.9	326	-9.1
27	-38.1	87	-28.4	147	9.7	207	38.1	267	28.4	327	-9.7
28	-38.3	88	-27.9	148	10.4	208	38.3	268	27.9	328	-10.4
29	-38.5	89	-27.4	149	11.1	209	38.5	269	27.4	329	-11.1
30	-38.6	90	-26.9	150	11.7	210	38.6	270	26.9	330	-11.7
31	-38.8	91	-26.4	151	12.4	211	38.8	271	26.4	331	-12.4
32	-38.9	92	-25.9	152	13.0	212	38.9	272	25.9	332	-13.0
33	-39.0	93	-25.3	153	13.7	213	39.0	273	25.3	333	-13.7
34	-39.1	94	-24.8	154	14.3	214	39.1	274	24.8	334	-14.3
35	-39.2	95	-24.3	155	15.0	215	39.2	275	24.3	335	-15.0
36	-39.3	96	-23.7	156	15.6	216	39.3	276	23.7	336	-15.6
37	-39.4	97	-23.2	157	16.2	217	39.4	277	23.2	337	-16.2
38	-39.5	98	-22.6	158	16.9	218	39.5	278	22.6	338	-16.9
39	-39.5	99	-22.0	159	17.5	219	39.5	279	22.0	339	-17.5
40	-39.6	100	-21.4	160	18.1	220	39.6	280	21.4	340	-18.1
41	-39.6	101	-20.9	161	18.7	221	39.6	281	20.9	341	-18.7
42	-39.6	102	-20.3	162	19.3	222	39.6	282	20.3	342	-19.3
43	-39.6	103	-19.7	163	19.9	223	39.6	283	19.7	343	-19.9
44	-39.6	104	-19.1	164	20.5	224	39.6	284	19.1	344	-20.5
45	-39.6	105	-18.5	165	21.1	225	39.6	285	18.5	345	-21.1
46	-39.5	106	-17.8	166	21.7	226	39.5	286	17.8	346	-21.7
47	-39.5	107	-17.2	167	22.3	227	39.5	287	17.2	347	-22.3
48	-39.4	108	-16.6	168	22.8	228	39.4	288	16.6	348	-22.8
49	-39.4	109	-16.0	169	23.4	229	39.4	289	16.0	349	-23.4
50	-39.3	110	-15.3	170	24.0	230	39.3	290	15.3	350	-24.0
51	-39.2	111	-14.7	171	24.5	231	39.2	291	14.7	351	-24.5
52	-39.1	112	-14.0	172	25.0	232	39.1	292	14.0	352	-25.0
53	-39.0	113	-13.4	173	25.6	233	39.0	293	13.4	353	-25.6
54	-38.8	114	-12.7	174	26.1	234	38.8	294	12.7	354	-26.1
55	-38.7	115	-12.1	175	26.6	235	38.7	295	12.1	355	-26.6
56	-38.5	116	-11.4	176	27.1	236	38.5	296	11.4	356	-27.1
57	-38.4	117	-10.8	177	27.6	237	38.4	297	10.8	357	-27.6
58	-38.2	118	-10.1	178	28.1	238	38.2	298	10.1	358	-28.1
59	-38.0	119	-9.4	179	28.6	239	38.0	299	9.4	359	-28.6
60	-37.8	120	-8.8	180	29.1	240	37.8	300	8.8	360	-29.1

TABLICA II

ϕ S _γ		ϕ															ϕ S _γ	
		0°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	62°	64°	66°		
h	°	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	°	h
1	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	15	1
2	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30	2
3	45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45	3
4	60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60	4
5	75	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	75	5
6	90	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	90	6
7	105	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	105	7
8	120	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	120	8
9	135	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	135	9
10	150	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	150	10
11	165	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	165	11
12	180	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	180	12
13	195	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	195	13
14	210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	210	14
15	225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	225	15
16	240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	240	16
17	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	255	17
18	270	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	270	18
19	285	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	285	19
20	300	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	300	20
21	315	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.5	0.5	315	21
22	330	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	330	22
23	345	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	345	23
24	360	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	360	24

TABLICA III

Datum S _γ		2015													2016		Datum S _γ	
		1. JAN	1. FEB	1. MAR	1. APR	1. MAJ	1. JUN	1. JUL	1. AVG	1. SEP	1. OKT	1. NOV	1. DEC	1. JAN				
h	°	/	/	/	/	/	/	/	/	/	/	/	/	/	°	h		
1	15	- .1	- .2	- .2	- .1	.0	.1	.2	.3	.2	.1	.0	- .1	- .3	15	1		
2	30	- .1	- .2	- .2	- .1	.1	.2	.3	.3	.2	.1	- .1	- .2	- .4	30	2		
3	45	- .1	- .2	- .2	- .1	.1	.2	.3	.3	.2	.1	- .1	- .2	- .4	45	3		
4	60	- .1	- .2	- .2	- .1	.1	.2	.3	.3	.2	.1	- .1	- .2	- .4	60	4		
5	75	- .1	- .2	- .1	.0	.1	.2	.3	.3	.2	.0	- .1	- .2	- .4	75	5		
6	90	- .1	- .1	- .1	.0	.1	.2	.2	.2	.1	.0	- .1	- .2	- .3	90	6		
7	105	- .1	- .1	.0	.0	.1	.2	.2	.2	.1	.0	- .1	- .2	- .3	105	7		
8	120	.0	.0	.0	.1	.1	.1	.1	.1	.0	.0	- .1	- .1	- .2	120	8		
9	135	.0	.0	.1	.1	.1	.1	.0	.0	.0	- .1	- .1	- .1	- .1	135	9		
10	150	.0	.1	.1	.1	.1	.0	.0	- .1	- .1	- .1	- .1	.0	.0	150	10		
11	165	.0	.1	.1	.1	.0	.0	- .1	- .1	- .1	- .1	.0	.0	.1	165	11		
12	180	.1	.2	.2	.1	.0	- .1	- .2	- .2	- .2	- .1	.0	.1	.2	180	12		
13	195	.1	.2	.2	.1	.0	- .1	- .2	- .3	- .2	- .1	.0	.1	.3	195	13		
14	210	.1	.2	.2	.1	- .1	- .2	- .3	- .3	- .2	- .1	.1	.2	.4	210	14		
15	225	.1	.2	.2	.1	- .1	- .2	- .3	- .3	- .2	- .1	.1	.2	.4	225	15		
16	240	.1	.2	.2	.1	- .1	- .2	- .3	- .3	- .2	- .1	.1	.2	.4	240	16		
17	255	.1	.2	.1	.0	- .1	- .2	- .3	- .3	- .2	.0	.1	.2	.4	255	17		
18	270	.1	.1	.1	.0	- .1	- .2	- .2	- .2	- .1	.0	.1	.2	.3	270	18		
19	285	.1	.1	.0	.0	- .1	- .2	- .2	- .2	- .1	.0	.1	.2	.3	285	19		
20	300	.0	.0	.0	- .1	- .1	- .1	- .1	- .1	.0	.0	.1	.1	.2	300	20		
21	315	.0	.0	- .1	- .1	- .1	- .1	.0	.0	.0	.1	.1	.1	.1	315	21		
22	330	.0	- .1	- .1	- .1	- .1	.0	.0	.1	.1	.1	.1	.0	.0	330	22		
23	345	.0	- .1	- .1	- .1	.0	.0	.1	.1	.1	.1	.0	.0	- .1	345	23		
24	360	- .1	- .2	- .2	- .1	.0	.1	.2	.2	.2	.1	.0	- .1	- .2	360	24		

AZIMUTI SEVERNJAČE

φ s_{γ}	0°	30°	40°	50°	55°	60°	65°	70°	75°	+ $\varphi = \nu$
0	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	0
15	0.3	0.4	0.5	0.6	0.6	0.7	0.8	1.1	1.4	15
30	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.7	30
45	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	359.9	45
60	359.8	359.8	359.7	359.7	359.6	359.6	359.5	359.4	359.2	60
75	359.6	359.6	359.5	359.4	359.3	359.2	359.1	358.9	358.5	75
90	359.5	359.4	359.3	359.2	359.1	358.9	358.7	358.4	357.9	90
105	359.4	359.3	359.2	359.0	358.9	358.7	358.5	358.1	357.5	105
120	359.3	359.2	359.1	358.9	358.8	358.6	358.3	357.9	357.3	120
135	359.3	359.2	359.1	358.9	358.7	358.6	358.3	357.9	357.2	135
150	359.3	359.2	359.1	358.9	358.8	358.6	358.4	358.0	357.3	150
165	359.4	359.3	359.2	359.0	358.9	358.8	358.6	358.2	357.7	165
180	359.5	359.4	359.4	359.2	359.1	359.0	358.8	358.6	358.1	180
195	359.7	359.6	359.5	359.5	359.4	359.3	359.2	359.0	358.7	195
210	359.8	359.8	359.8	359.7	359.7	359.7	359.6	359.5	359.4	210
225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	225
240	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.7	240
255	0.4	0.4	0.5	0.6	0.6	0.7	0.9	1.1	1.4	255
270	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	270
285	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.8	2.4	285
300	0.7	0.8	0.9	1.1	1.2	1.4	1.7	2.0	2.7	300
315	0.7	0.8	0.9	1.1	1.3	1.5	1.7	2.1	2.8	315
330	0.7	0.8	0.9	1.1	1.2	1.4	1.7	2.1	2.7	330
345	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.8	2.5	345
360	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.5	2.0	360

O B J A Š N J E N J E

Poslednja rubrika daje podatak, koji algebarski sabran sa geografskom širinom zbirne pozicije broda daje približnu visinu sa tačnošću od nekoliko lučnih minuta radi njenog prethodnog postavljanja na sekstant u cilju olakšanja rada pri merenju visine Severnjače.

★ ★ ★ ★ ★

I_n terpolacione

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POMOĆNE TABLICE

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza i zalaza Sunca i Meseca

ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$									
$\Delta\varphi$ Δt_s	1°	2°	3°	4°	5°	6°	7°	8°	9°
1	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
2	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8
3	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7
4	0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6
5	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5
6	0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4
7	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3
8	0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2
9	0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1
10	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
11	1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9
12	1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8
13	1.3	2.6	3.9	5.2	6.5	7.8	9.1	10.4	11.7
14	1.4	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6
15	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5
16	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4
17	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6	15.3
18	1.8	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2
19	1.9	3.8	5.7	7.6	9.5	11.4	13.3	15.2	17.1
20	2.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0
21	2.1	4.2	6.3	8.4	10.5	12.6	14.7	16.8	18.9
22	2.2	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8
23	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7
24	2.4	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6
25	2.5	5.0	7.5	10.0	12.5	15.0	17.5	20.0	22.5
26	2.6	5.2	7.8	10.4	13.0	15.6	18.2	20.8	23.4
27	2.7	5.4	8.1	10.8	13.5	16.2	18.9	21.6	24.3
28	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2
29	2.9	5.8	8.7	11.6	14.5	17.4	20.3	23.2	26.1
30	3.0	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0
31	3.1	6.2	9.3	12.4	15.5	18.6	21.7	24.8	27.9
32	3.2	6.4	9.6	12.8	16.0	19.2	22.4	25.6	28.8
33	3.3	6.6	9.9	13.2	16.5	19.8	23.1	26.4	29.7
34	3.4	6.8	10.2	13.6	17.0	20.4	23.8	27.2	30.6
35	3.5	7.0	10.5	14.0	17.5	21.0	24.5	28.0	31.5
36	3.6	7.2	10.8	14.4	18.0	21.6	25.2	28.8	32.4
37	3.7	7.4	11.1	14.8	18.5	22.2	25.9	29.6	33.3
38	3.8	7.6	11.4	15.2	19.0	22.8	26.6	30.4	34.2
39	3.9	7.8	11.7	15.6	19.5	23.4	27.3	31.2	35.1
40	4.0	8.0	12.0	16.0	20.0	24.0	28.0	32.0	36.0
41	4.1	8.2	12.3	16.4	20.5	24.6	28.7	32.8	36.9
42	4.2	8.4	12.6	16.8	21.0	25.2	29.4	33.6	37.8
43	4.3	8.6	12.9	17.2	21.5	25.8	30.1	34.4	38.7
44	4.4	8.8	13.2	17.6	22.0	26.4	30.8	35.2	39.6
45	4.5	9.0	13.5	18.0	22.5	27.0	31.5	36.0	40.5
46	4.6	9.2	13.8	18.4	23.0	27.6	32.2	36.8	41.4
47	4.7	9.4	14.1	18.8	23.5	28.2	32.9	37.6	42.3
48	4.8	9.6	14.4	19.2	24.0	28.8	33.6	38.4	43.2
49	4.9	9.8	14.7	19.6	24.5	29.4	34.3	39.2	44.1
50	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0
51	5.1	10.2	15.3	20.4	25.5	30.6	35.7	40.8	45.9
52	5.2	10.4	15.6	20.8	26.0	31.2	36.4	41.6	46.8
53	5.3	10.6	15.9	21.2	26.5	31.8	37.1	42.4	47.7
54	5.4	10.8	16.2	21.6	27.0	32.4	37.8	43.2	48.6
55	5.5	11.0	16.5	22.0	27.5	33.0	38.5	44.0	49.5
56	5.6	11.2	16.8	22.4	28.0	33.6	39.2	44.8	50.4
57	5.7	11.4	17.1	22.8	28.5	34.2	39.9	45.6	51.3
58	5.8	11.6	17.4	23.2	29.0	34.8	40.6	46.4	52.2
59	5.9	11.8	17.7	23.6	29.5	35.4	41.3	47.2	53.1
60	6.0	12.0	18.0	24.0	30.0	36.0	42.0	48.0	54.0

ZA $\varphi = 0^\circ$ DO $\pm 30^\circ$									
0°.1	0°.2	0°.3	0°.4	0°.5	0°.6	0°.7	0°.8	0°.9	$\Delta\varphi$ Δt_s
0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	1
0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	2
0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	3
0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	4
0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	5
0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	6
0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.6	7
0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	8
0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	10
0.1	0.2	0.3	0.4	0.6	0.7	0.8	0.9	1.0	11
0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	12
0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.0	1.2	13
0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	14
0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	15
0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	16
0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.5	17
0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	18
0.2	0.4	0.6	0.8	1.0	1.1	1.3	1.5	1.7	19
0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	20
0.2	0.4	0.6	0.8	1.1	1.3	1.5	1.7	1.9	21
0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	22
0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.8	2.1	23
0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	24
0.3	0.5	0.8	1.0	1.3	1.5	1.8	2.0	2.3	25
0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	26
0.3	0.5	0.8	1.1	1.4	1.6	1.9	2.2	2.4	27
0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	28
0.3	0.6	0.9	1.2	1.5	1.7	2.0	2.3	2.6	29
0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	30
0.3	0.6	0.9	1.2	1.6	1.9	2.2	2.5	2.8	31
0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	32
0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.6	3.0	33
0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	34
0.4	0.7	1.1	1.4	1.8	2.1	2.5	2.8	3.2	35
0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	36
0.4	0.7	1.1	1.5	1.9	2.2	2.6	3.0	3.3	37
0.4	0.8	1.1	1.5	1.9	2.3	2.7	3.0	3.4	38
0.4	0.8	1.2	1.6	2.0	2.3	2.7	3.1	3.5	39
0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	40
0.4	0.8	1.2	1.6	2.1	2.5	2.9	3.3	3.7	41
0.4	0.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	42
0.4	0.9	1.3	1.7	2.2	2.6	3.0	3.4	3.9	43
0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	44
0.5	0.9	1.4	1.8	2.3	2.7	3.2	3.6	4.1	45
0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	46
0.5	0.9	1.4	1.9	2.4	2.8	3.3	3.8	4.2	47
0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	48
0.5	1.0	1.5	2.0	2.5	2.9	3.4	3.9	4.4	49
0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	50
0.5	1.0	1.5	2.0	2.6	3.1	3.6	4.1	4.6	51
0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	52
0.5	1.1	1.6	2.1	2.7	3.2	3.7	4.2	4.8	53
0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	54
0.6	1.1	1.7	2.2	2.8	3.3	3.9	4.4	5.0	55
0.6	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.0	56
0.6	1.1	1.7	2.3	2.9	3.4	4.0	4.6	5.1	57
0.6	1.2	1.7	2.3	2.9	3.5	4.1	4.6	5.2	58
0.6	1.2	1.8	2.4	3.0	3.5	4.1	4.7	5.3	59
0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	60

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza i zalaza Sunca i Meseca

ZA $\varphi = \pm(30^\circ \text{ DO } 60^\circ)$				
$\Delta\varphi$ Δt_s	1°	2°	3°	4°
1	0.2	0.4	0.6	0.8
2	0.4	0.8	1.2	1.6
3	0.6	1.2	1.8	2.4
4	0.8	1.6	2.4	3.2
5	1.0	2.0	3.0	4.0
6	1.2	2.4	3.6	4.8
7	1.4	2.8	4.2	5.6
8	1.6	3.2	4.8	6.4
9	1.8	3.6	5.4	7.2
10	2.0	4.0	6.0	8.0
11	2.2	4.4	6.6	8.8
12	2.4	4.8	7.2	9.6
13	2.6	5.2	7.8	10.4
14	2.8	5.6	8.4	11.2
15	3.0	6.0	9.0	12.0
16	3.2	6.4	9.6	12.8
17	3.4	6.8	10.2	13.6
18	3.6	7.2	10.8	14.4
19	3.8	7.6	11.4	15.2
20	4.0	8.0	12.0	16.0
21	4.2	8.4	12.6	16.8
22	4.4	8.8	13.2	17.6
23	4.6	9.2	13.8	18.4
24	4.8	9.6	14.4	19.2
25	5.0	10.0	15.0	20.0
26	5.2	10.4	15.6	20.8
27	5.4	10.8	16.2	21.6
28	5.6	11.2	16.8	22.4
29	5.8	11.6	17.4	23.2
30	6.0	12.0	18.0	24.0
31	6.2	12.4	18.6	24.8
32	6.4	12.8	19.2	25.6
33	6.6	13.2	19.8	26.4
34	6.8	13.6	20.4	27.2
35	7.0	14.0	21.0	28.0
36	7.2	14.4	21.6	28.8
37	7.4	14.8	22.2	29.6
38	7.6	15.2	22.8	30.4
39	7.8	15.6	23.4	31.2
40	8.0	16.0	24.0	32.0
41	8.2	16.4	24.6	32.8
42	8.4	16.8	25.2	33.6
43	8.6	17.2	25.8	34.4
44	8.8	17.6	26.4	35.2
45	9.0	18.0	27.0	36.0
46	9.2	18.4	27.6	36.8
47	9.4	18.8	28.2	37.6
48	9.6	19.2	28.8	38.4
49	9.8	19.6	29.4	39.2
50	10.0	20.0	30.0	40.0
51	10.2	20.4	30.6	40.8
52	10.4	20.8	31.2	41.6
53	10.6	21.2	31.8	42.4
54	10.8	21.6	32.4	43.2
55	11.0	22.0	33.0	44.0
56	11.2	22.4	33.6	44.8
57	11.4	22.8	34.2	45.6
58	11.6	23.2	34.8	46.4
59	11.8	23.6	35.4	47.2
60	12.0	24.0	36.0	48.0

ZA $\varphi = \pm(30^\circ \text{ DO } 60^\circ)$													
0°.1	0°.2	0°.3	0°.4	0°.5	0°.6	0°.7	0°.8	0°.9	$\Delta\varphi$ Δt_s				
0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1				
0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	2				
0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	3				
0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	4				
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	5				
0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	6				
0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	7				
0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	8				
0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	9				
0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	10				
0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	11				
0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	12				
0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	13				
0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	14				
0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	15				
0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	16				
0.3	0.7	1.0	1.4	1.7	2.0	2.4	2.7	3.1	17				
0.4	0.7	1.1	1.4	1.8	2.2	2.5	2.9	3.2	18				
0.4	0.8	1.1	1.5	1.9	2.3	2.7	3.0	3.4	19				
0.4	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	20				
0.4	0.8	1.3	1.7	2.1	2.5	2.9	3.4	3.8	21				
0.4	0.9	1.3	1.8	2.2	2.6	3.1	3.5	4.0	22				
0.5	0.9	1.4	1.8	2.3	2.8	3.2	3.7	4.1	23				
0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	24				
0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	25				
0.5	1.0	1.6	2.1	2.6	3.1	3.6	4.2	4.7	26				
0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9	27				
0.6	1.1	1.7	2.2	2.8	3.4	3.9	4.5	5.0	28				
0.6	1.2	1.7	2.3	2.9	3.5	4.1	4.6	5.2	29				
0.6	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	30				
0.6	1.2	1.9	2.5	3.1	3.7	4.3	5.0	5.6	31				
0.6	1.3	1.9	2.6	3.2	3.8	4.5	5.1	5.8	32				
0.7	1.3	2.0	2.6	3.3	4.0	4.6	5.3	5.9	33				
0.7	1.4	2.0	2.7	3.4	4.1	4.8	5.4	6.1	34				
0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6	6.3	35				
0.7	1.4	2.2	2.9	3.6	4.3	5.0	5.8	6.5	36				
0.7	1.5	2.2	3.0	3.7	4.4	5.2	5.9	6.7	37				
0.8	1.5	2.3	3.0	3.8	4.6	5.3	6.1	6.8	38				
0.8	1.6	2.3	3.1	3.9	4.7	5.5	6.2	7.0	39				
0.8	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	40				
0.8	1.6	2.5	3.3	4.1	4.9	5.7	6.6	7.4	41				
0.8	1.7	2.5	3.4	4.2	5.0	5.9	6.7	7.6	42				
0.9	1.7	2.6	3.4	4.3	5.2	6.0	6.9	7.7	43				
0.9	1.8	2.6	3.5	4.4	5.3	6.2	7.0	7.9	44				
0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2	8.1	45				
0.9	1.8	2.8	3.7	4.6	5.5	6.4	7.4	8.3	46				
0.9	1.9	2.8	3.8	4.7	5.6	6.6	7.5	8.5	47				
1.0	1.9	2.9	3.8	4.8	5.8	6.7	7.7	8.6	48				
1.0	2.0	2.9	3.9	4.9	5.9	6.9	7.8	8.8	49				
1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	50				
1.0	2.0	3.1	4.1	5.1	6.1	7.1	8.2	9.2	51				
1.0	2.1	3.1	4.2	5.2	6.2	7.3	8.3	9.4	52				
1.1	2.1	3.2	4.2	5.3	6.4	7.4	8.5	9.5	53				
1.1	2.2	3.2	4.3	5.4	6.5	7.6	8.6	9.7	54				
1.1	2.2	3.3	4.4	5.5	6.6	7.7	8.8	9.9	55				
1.1	2.2	3.4	4.5	5.6	6.7	7.8	9.0	10.1	56				
1.1	2.3	3.4	4.6	5.7	6.8	8.0	9.1	10.3	57				
1.2	2.3	3.5	4.6	5.8	7.0	8.1	9.3	10.4	58				
1.2	2.4	3.5	4.7	5.9	7.1	8.3	9.4	10.6	59				
1.2	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	60				

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan

λ																				λ	
$\frac{\Delta}{24}$	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	$\frac{\Delta}{24}$
0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.2	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2
0.3	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3
0.4	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4
0.5	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.5
0.6	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.6
0.7	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.7
0.8	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	0.8
0.9	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.1	1.2	0.9
1.0	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	1.3	1.3	1.0
1.1	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.1
1.2	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.2
1.3	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.3
1.4	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.4
1.5	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	1.5
1.6	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	1.6
1.7	0.1	0.2	0.3	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.3	1.7
1.8	0.1	0.2	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4	1.8
1.9	0.1	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.1	1.3	1.4	1.5	1.6	1.8	1.9	2.0	2.2	2.3	2.4	2.5	1.9
2.0	0.1	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.1	2.3	2.4	2.5	2.7	2.0
2.1	0.1	0.3	0.4	0.6	0.7	0.8	1.0	1.1	1.3	1.4	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.7	2.8	2.1
2.2	0.1	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.3	2.5	2.6	2.8	2.9	2.2
2.3	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.5	2.6	2.8	2.9	3.1	2.3
2.4	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.4	1.6	1.8	1.9	2.1	2.2	2.4	2.6	2.7	2.9	3.0	3.2	2.4
2.5	0.2	0.3	0.5	0.7	0.8	1.0	1.2	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.7	2.8	3.0	3.2	3.3	2.5
2.6	0.2	0.3	0.5	0.7	0.9	1.0	1.2	1.4	1.6	1.7	1.9	2.1	2.3	2.4	2.6	2.8	2.9	3.1	3.3	3.5	2.6
2.7	0.2	0.4	0.5	0.7	0.9	1.1	1.3	1.4	1.6	1.8	2.0	2.2	2.3	2.5	2.7	2.9	3.1	3.2	3.4	3.6	2.7
2.8	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.5	3.7	2.8
2.9	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	2.9
3.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	3.0
3.1	0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	3.1
3.2	0.2	0.4	0.6	0.9	1.1	1.3	1.5	1.7	1.9	2.1	2.3	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.1	4.3	3.2
3.3	0.2	0.4	0.7	0.9	1.1	1.3	1.5	1.8	2.0	2.2	2.4	2.6	2.9	3.1	3.3	3.5	3.7	4.0	4.2	4.4	3.3
3.4	0.2	0.5	0.7	0.9	1.1	1.4	1.6	1.8	2.0	2.3	2.5	2.7	2.9	3.2	3.4	3.6	3.9	4.1	4.3	4.5	3.4
3.5	0.2	0.5	0.7	0.9	1.2	1.4	1.6	1.9	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.7	4.0	4.2	4.4	4.7	3.5
3.6	0.2	0.5	0.7	1.0	1.2	1.4	1.7	1.9	2.2	2.4	2.6	2.9	3.1	3.4	3.6	3.8	4.1	4.3	4.6	4.8	3.6
3.7	0.2	0.5	0.7	1.0	1.2	1.5	1.7	2.0	2.2	2.5	2.7	3.0	3.2	3.5	3.7	3.9	4.2	4.4	4.7	4.9	3.7
3.8	0.3	0.5	0.8	1.0	1.3	1.5	1.8	2.0	2.3	2.5	2.8	3.0	3.3	3.5	3.8	4.1	4.3	4.6	4.8	5.1	3.8
3.9	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.3	2.6	2.9	3.1	3.4	3.6	3.9	4.2	4.4	4.7	4.9	5.2	3.9
4.0	0.3	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.3	4.5	4.8	5.1	5.3	4.0
4.1	0.3	0.5	0.8	1.1	1.4	1.6	1.9	2.2	2.5	2.7	3.0	3.3	3.6	3.8	4.1	4.4	4.6	4.9	5.2	5.5	4.1
4.2	0.3	0.6	0.8	1.1	1.4	1.7	2.0	2.2	2.5	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.8	5.0	5.3	5.6	4.2
4.3	0.3	0.6	0.9	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.4	5.7	4.3
4.4	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.3	2.6	2.9	3.2	3.5	3.8	4.1	4.4	4.7	5.0	5.3	5.6	5.9	4.4
4.5	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	4.5
4.6	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.5	2.8	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.5	5.8	6.1	4.6
4.7	0.3	0.6	0.9	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.8	4.1	4.4	4.7	5.0	5.3	5.6	6.0	6.3	4.7
4.8	0.3	0.6	1.0	1.3	1.6	1.9	2.2	2.6	2.9	3.2	3.5	3.8	4.2	4.5	4.8	5.1	5.4	5.8	6.1	6.4	4.8
4.9	0.3	0.7	1.0	1.3	1.6	2.0	2.3	2.6	2.9	3.3	3.6	3.9	4.2	4.6	4.9	5.2	5.6	5.9	6.2	6.5	4.9
5.0	0.3	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	5.7	6.0	6.3	6.7	5.0

INTERPOLACIONA TABLICA

za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan

λ																	λ	
$\frac{\Delta}{24}$	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°	180°	$\frac{\Delta}{24}$
0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.2	0.1
0.2	0.3	0.4	0.5	0.7	0.8	0.9	1.1	1.2	1.3	1.5	1.6	1.7	1.9	2.0	2.1	2.3	2.4	0.2
0.3	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	0.3
0.4	0.5	0.8	1.1	1.3	1.6	1.9	2.1	2.4	2.7	2.9	3.2	3.5	3.7	4.0	4.3	4.5	4.8	0.4
0.5	0.7	1.0	1.3	1.7	2.0	2.3	2.7	3.0	3.3	3.7	4.0	4.3	4.7	5.0	5.3	5.7	6.0	0.5
0.6	0.8	1.2	1.6	2.0	2.4	2.8	3.2	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	0.6
0.7	0.9	1.4	1.9	2.3	2.8	3.3	3.7	4.2	4.7	5.1	5.6	6.1	6.5	7.0	7.5	7.9	8.4	0.7
0.8	1.1	1.6	2.1	2.7	3.2	3.7	4.3	4.8	5.3	5.9	6.4	6.9	7.5	8.0	8.5	9.1	9.6	0.8
0.9	1.2	1.8	2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6	7.2	7.8	8.4	9.0	9.6	10.2	10.8	0.9
1.0	1.3	2.0	2.7	3.3	4.0	4.7	5.3	6.0	6.7	7.3	8.0	8.7	9.3	10.0	10.7	11.3	12.0	1.0
1.1	1.5	2.2	2.9	3.7	4.4	5.1	5.9	6.6	7.3	8.1	8.8	9.5	10.3	11.0	11.7	12.5	13.2	1.1
1.2	1.6	2.4	3.2	4.0	4.8	5.6	6.4	7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.4	1.2
1.3	1.7	2.6	3.5	4.3	5.2	6.1	6.9	7.8	8.7	9.5	10.4	11.3	12.1	13.0	13.9	14.7	15.6	1.3
1.4	1.9	2.8	3.7	4.7	5.6	6.5	7.5	8.4	9.3	10.3	11.2	12.1	13.1	14.0	14.9	15.9	16.8	1.4
1.5	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	1.5
1.6	2.1	3.2	4.3	5.3	6.4	7.5	8.5	9.6	10.7	11.7	12.8	13.9	14.9	16.0	17.1	18.1	19.2	1.6
1.7	2.3	3.4	4.5	5.7	6.8	7.9	9.1	10.2	11.3	12.5	13.6	14.7	15.9	17.0	18.1	19.3	20.4	1.7
1.8	2.4	3.6	4.8	6.0	7.2	8.4	9.6	10.8	12.0	13.2	14.4	15.6	16.8	18.0	19.2	20.4	21.6	1.8
1.9	2.5	3.8	5.1	6.3	7.6	8.9	10.1	11.4	12.7	13.9	15.2	16.5	17.7	19.0	20.3	21.5	22.8	1.9
2.0	2.7	4.0	5.3	6.7	8.0	9.3	10.7	12.0	13.3	14.7	16.0	17.3	18.7	20.0	21.3	22.7	24.0	2.0
2.1	2.8	4.2	5.6	7.0	8.4	9.8	11.2	12.6	14.0	15.4	16.8	18.2	19.6	21.0	22.4	23.8	25.2	2.1
2.2	2.9	4.4	5.9	7.3	8.8	10.3	11.7	13.2	14.7	16.1	17.6	19.1	20.5	22.0	23.5	24.9	26.4	2.2
2.3	3.1	4.6	6.1	7.7	9.2	10.7	12.3	13.8	15.3	16.9	18.4	19.9	21.5	23.0	24.5	26.1	27.6	2.3
2.4	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4	16.0	17.6	19.2	20.8	22.4	24.0	25.6	27.2	28.8	2.4
2.5	3.3	5.0	6.7	8.3	10.0	11.7	13.3	15.0	16.7	18.3	20.0	21.7	23.3	25.0	26.7	28.3	30.0	2.5
2.6	3.5	5.2	6.9	8.7	10.4	12.1	13.9	15.6	17.3	19.1	20.8	22.5	24.3	26.0	27.7	29.5	31.2	2.6
2.7	3.6	5.4	7.2	9.0	10.8	12.6	14.4	16.2	18.0	19.8	21.6	23.4	25.2	27.0	28.8	30.6	32.4	2.7
2.8	3.7	5.6	7.5	9.3	11.2	13.1	14.9	16.8	18.7	20.5	22.4	24.3	26.1	28.0	29.9	31.7	33.6	2.8
2.9	3.9	5.8	7.7	9.7	11.6	13.5	15.5	17.4	19.3	21.3	23.2	25.1	27.1	29.0	30.9	32.9	34.8	2.9
3.0	4.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	3.0
3.1	4.1	6.2	8.3	10.3	12.4	14.5	16.5	18.6	20.7	22.7	24.8	26.9	28.9	31.0	33.1	35.1	37.2	3.1
3.2	4.3	6.4	8.5	10.7	12.8	14.9	17.1	19.2	21.3	23.5	25.6	27.7	29.9	32.0	34.1	36.3	38.4	3.2
3.3	4.4	6.6	8.8	11.0	13.2	15.4	17.6	19.8	22.0	24.2	26.4	28.6	30.8	33.0	35.2	37.4	39.6	3.3
3.4	4.5	6.8	9.1	11.3	13.6	15.9	18.1	20.4	22.7	24.9	27.2	29.5	31.7	34.0	36.3	38.5	40.8	3.4
3.5	4.7	7.0	9.3	11.7	14.0	16.3	18.7	21.0	23.3	25.7	28.0	30.3	32.7	35.0	37.3	39.7	42.0	3.5
3.6	4.8	7.2	9.6	12.0	14.4	16.8	19.2	21.6	24.0	26.4	28.8	31.2	33.6	36.0	38.4	40.8	43.2	3.6
3.7	4.9	7.4	9.9	12.3	14.8	17.3	19.7	22.2	24.7	27.1	29.6	32.1	34.5	37.0	39.5	41.9	44.4	3.7
3.8	5.1	7.6	10.1	12.7	15.2	17.7	20.3	22.8	25.3	27.9	30.4	32.9	35.5	38.0	40.5	43.1	45.6	3.8
3.9	5.2	7.8	10.4	13.0	15.6	18.2	20.8	23.4	26.0	28.6	31.2	33.8	36.4	39.0	41.6	44.2	46.8	3.9
4.0	5.3	8.0	10.7	13.3	16.0	18.7	21.3	24.0	26.7	29.3	32.0	34.7	37.3	40.0	42.7	45.3	48.0	4.0
4.1	5.5	8.2	10.9	13.7	16.4	19.1	21.9	24.6	27.3	30.1	32.8	35.5	38.3	41.0	43.7	46.5	49.2	4.1
4.2	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	39.2	42.0	44.8	47.6	50.4	4.2
4.3	5.7	8.6	11.5	14.3	17.2	20.1	22.9	25.8	28.7	31.5	34.4	37.3	40.1	43.0	45.9	48.7	51.6	4.3
4.4	5.9	8.8	11.7	14.7	17.6	20.5	23.5	26.4	29.3	32.3	35.2	38.1	41.1	44.0	46.9	49.9	52.8	4.4
4.5	6.0	9.0	12.0	15.0	18.0	21.0	24.0	27.0	30.0	33.0	36.0	39.0	42.0	45.0	48.0	51.0	54.0	4.5
4.6	6.1	9.2	12.3	15.3	18.4	21.5	24.5	27.6	30.7	33.7	36.8	39.9	42.9	46.0	49.1	52.1	55.2	4.6
4.7	6.3	9.4	12.5	15.7	18.8	21.9	25.1	28.2	31.3	34.5	37.6	40.7	43.9	47.0	50.1	53.3	56.4	4.7
4.8	6.4	9.6	12.8	16.0	19.2	22.4	25.6	28.8	32.0	35.2	38.4	41.6	44.8	48.0	51.2	54.4	57.6	4.8
4.9	6.5	9.8	13.1	16.3	19.6	22.9	26.1	29.4	32.7	35.9	39.2	42.5	45.7	49.0	52.3	55.5	58.8	4.9
5.0	6.7	10.0	13.3	16.7	20.0	23.3	26.7	30.0	33.3	36.7	40.0	43.3	46.7	50.0	53.3	56.7	60.0	5.0

★ ★ ★ ★ ★

I_nterpolaciona tablica

ZA

POPRAVKU ČASOVNOG UGLA I DEKLINACIJE

0 h 0 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	°	'	°	'	°	'						
0	0	.0	0	.0	0	.0	0	.0	60	.1	120	.1
1	0	.3	0	.3	0	.2	1	.0	61	.1	121	.1
2	0	.5	0	.5	0	.5	2	.0	62	.1	122	.1
3	0	.8	0	.8	0	.7	3	.0	63	.1	123	.1
4	0	1.0	0	1.0	0	1.0	4	.0	64	.1	124	.1
5	0	1.3	0	1.3	0	1.2	5	.0	65	.1	125	.1
6	0	1.5	0	1.5	0	1.4	6	.0	66	.1	126	.1
7	0	1.8	0	1.8	0	1.7	7	.0	67	.1	127	.1
8	0	2.0	0	2.0	0	1.9	8	.0	68	.1	128	.1
9	0	2.3	0	2.3	0	2.1	9	.0	69	.1	129	.1
10	0	2.5	0	2.5	0	2.4	10	.0	70	.1	130	.1
11	0	2.8	0	2.8	0	2.6	11	.0	71	.1	131	.1
12	0	3.0	0	3.0	0	2.9	12	.0	72	.1	132	.1
13	0	3.3	0	3.3	0	3.1	13	.0	73	.1	133	.1
14	0	3.5	0	3.5	0	3.3	14	.0	74	.1	134	.1
15	0	3.8	0	3.8	0	3.6	15	.0	75	.1	135	.1
16	0	4.0	0	4.0	0	3.8	16	.0	76	.1	136	.1
17	0	4.3	0	4.3	0	4.1	17	.0	77	.1	137	.1
18	0	4.5	0	4.5	0	4.3	18	.0	78	.1	138	.1
19	0	4.8	0	4.8	0	4.5	19	.0	79	.1	139	.1
20	0	5.0	0	5.0	0	4.8	20	.0	80	.1	140	.1
21	0	5.3	0	5.3	0	5.0	21	.0	81	.1	141	.1
22	0	5.5	0	5.5	0	5.2	22	.0	82	.1	142	.1
23	0	5.8	0	5.8	0	5.5	23	.0	83	.1	143	.1
24	0	6.0	0	6.0	0	5.7	24	.0	84	.1	144	.1
25	0	6.3	0	6.3	0	6.0	25	.0	85	.1	145	.1
26	0	6.5	0	6.5	0	6.2	26	.0	86	.1	146	.1
27	0	6.8	0	6.8	0	6.4	27	.0	87	.1	147	.1
28	0	7.0	0	7.0	0	6.7	28	.0	88	.1	148	.1
29	0	7.3	0	7.3	0	6.9	29	.0	89	.1	149	.1
30	0	7.5	0	7.5	0	7.2	30	.0	90	.1	150	.1
31	0	7.8	0	7.8	0	7.4	31	.0	91	.1	151	.1
32	0	8.0	0	8.0	0	7.6	32	.0	92	.1	152	.1
33	0	8.3	0	8.3	0	7.9	33	.0	93	.1	153	.1
34	0	8.5	0	8.5	0	8.1	34	.0	94	.1	154	.1
35	0	8.8	0	8.8	0	8.4	35	.0	95	.1	155	.1
36	0	9.0	0	9.0	0	8.6	36	.0	96	.1	156	.1
37	0	9.3	0	9.3	0	8.8	37	.0	97	.1	157	.1
38	0	9.5	0	9.5	0	9.1	38	.0	98	.1	158	.1
39	0	9.8	0	9.8	0	9.3	39	.0	99	.1	159	.1
40	0	10.0	0	10.0	0	9.5	40	.0	100	.1	160	.1
41	0	10.3	0	10.3	0	9.8	41	.0	101	.1	161	.1
42	0	10.5	0	10.5	0	10.0	42	.0	102	.1	162	.1
43	0	10.8	0	10.8	0	10.3	43	.0	103	.1	163	.1
44	0	11.0	0	11.0	0	10.5	44	.0	104	.1	164	.1
45	0	11.3	0	11.3	0	10.7	45	.0	105	.1	165	.1
46	0	11.5	0	11.5	0	11.0	46	.0	106	.1	166	.1
47	0	11.8	0	11.8	0	11.2	47	.0	107	.1	167	.1
48	0	12.0	0	12.0	0	11.5	48	.0	108	.1	168	.1
49	0	12.3	0	12.3	0	11.7	49	.0	109	.1	169	.1
50	0	12.5	0	12.5	0	11.9	50	.0	110	.1	170	.1
51	0	12.8	0	12.8	0	12.2	51	.0	111	.1	171	.1
52	0	13.0	0	13.0	0	12.4	52	.0	112	.1	172	.1
53	0	13.3	0	13.3	0	12.6	53	.0	113	.1	173	.1
54	0	13.5	0	13.5	0	12.9	54	.0	114	.1	174	.1
55	0	13.8	0	13.8	0	13.1	55	.0	115	.1	175	.1
56	0	14.0	0	14.0	0	13.4	56	.0	116	.1	176	.1
57	0	14.3	0	14.3	0	13.6	57	.0	117	.1	177	.1
58	0	14.5	0	14.5	0	13.8	58	.0	118	.1	178	.1
59	0	14.8	0	14.8	0	14.1	59	.0	119	.1	179	.1
60	0	15.0	0	15.0	0	14.3	60	.1	120	.1	180	.2

0 h 1 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	°	'	°	'	°	'						
0	0	15.0	0	15.0	0	14.3	0	.0	60	.2	120	.3
1	0	15.3	0	15.3	0	14.6	1	.0	61	.2	121	.3
2	0	15.5	0	15.5	0	14.8	2	.0	62	.2	122	.3
3	0	15.8	0	15.8	0	15.0	3	.0	63	.2	123	.3
4	0	16.0	0	16.0	0	15.3	4	.0	64	.2	124	.3
5	0	16.3	0	16.3	0	15.5	5	.0	65	.2	125	.3
6	0	16.5	0	16.5	0	15.7	6	.0	66	.2	126	.3
7	0	16.8	0	16.8	0	16.0	7	.0	67	.2	127	.3
8	0	17.0	0	17.0	0	16.2	8	.0	68	.2	128	.3
9	0	17.3	0	17.3	0	16.5	9	.0	69	.2	129	.3
10	0	17.5	0	17.5	0	16.7	10	.0	70	.2	130	.3
11	0	17.8	0	17.8	0	16.9	11	.0	71	.2	131	.3
12	0	18.0	0	18.1	0	17.2	12	.0	72	.2	132	.3
13	0	18.3	0	18.3	0	17.4	13	.0	73	.2	133	.3
14	0	18.5	0	18.6	0	17.7	14	.0	74	.2	134	.3
15	0	18.8	0	18.8	0	17.9	15	.0	75	.2	135	.3
16	0	19.0	0	19.1	0	18.1	16	.0	76	.2	136	.3
17	0	19.3	0	19.3	0	18.4	17	.0	77	.2	137	.3
18	0	19.5	0	19.6	0	18.6	18	.0	78	.2	138	.3
19	0	19.8	0	19.8	0	18.9	19	.0	79	.2	139	.3
20	0	20.0	0	20.1	0	19.1	20	.1	80	.2	140	.4
21	0	20.3	0	20.3	0	19.3	21	.1	81	.2	141	.4
22	0	20.5	0	20.6	0	19.6	22	.1	82	.2	142	.4
23	0	20.8	0	20.8	0	19.8	23	.1	83	.2	143	.4
24	0	21.0	0	21.1	0	20.0	24	.1	84	.2	144	.4
25	0	21.3	0	21.3	0	20.3	25	.1	85	.2	145	.4
26	0	21.5	0	21.6	0	20.5	26	.1	86	.2	146	.4
27	0	21.8	0	21.8	0	20.8	27	.1	87	.2	147	.4
28	0	22.0	0	22.1	0	21.0	28	.1	88	.2	148	.4
29	0	22.3	0	22.3	0	21.2	29	.1	89	.2	149	.4
30	0	22.5	0	22.6	0	21.5	30	.1	90	.2	150	.4
31	0	22.8	0	22.8	0	21.7	31	.1	91	.2	151	.4
32	0	23.0	0	23.1	0	22.0	32	.1	92	.2	152	.4
33	0	23.3	0	23.3	0	22.2	33	.1	93	.2	153	.4
34	0	23.5	0	23.6	0	22.4	34	.1	94	.2	154	.4
35	0	23.8	0	23.8	0	22.7	35	.1	95	.2	155	.4
36	0	24.0	0	24.1	0	22.9	36	.1	96	.2	156	.4
37	0	24.3	0	24.3	0	23.1	37	.1	97	.2	157	.4
38	0	24.5	0	24.6	0	23.4	38	.1	98	.2	158	.4
39	0	24.8	0	24.8	0	23.6	39	.1	99	.2	159	.4
40	0	25.0	0	25.1	0	23.9	40	.1	100	.3	160	.4
41	0	25.3	0	25.3	0	24.1	41	.1	101	.3	161	.4
42	0	25.5	0	25.6	0	24.3	42	.1	102	.3	162	.4
43	0	25.8	0	25.8	0	24.6	43	.1	103	.3	163	.4
44	0	26.0	0	26.1	0	24.8	44	.1	104	.3	164	.4
45	0	26.3	0	26.3	0	25.1	45	.1	105	.3	165	.4
46	0	26.5	0	26.6	0	25.3	46	.1	106	.3	166	.4
47	0	26.8	0	26.8	0	25.5	47	.1	107	.3	167	.4
48	0	27.0	0	27.1	0	25.8	48	.1	108	.3	168	.4
49	0	27.3	0	27.3	0	26.0	49	.1	109	.3	169	.4
50	0	27.5	0	27.6	0	26.2	50	.1	110	.3	170	.4
51	0	27.8	0	27.8	0	26.5	51	.1	111	.3	171	.4
52	0	28.0	0	28.1	0	26.7	52	.1	112	.3	172	.4
53	0	28.3	0	28.3	0	27.0	53	.1	113	.3	173	.4
54	0	28.5	0	28.6	0	27.2	54	.1	114	.3	174	.4
55	0	28.8	0	28.8	0	27.4	55	.1	115	.3	175	.4
56	0	29.0	0	29.1	0	27.7	56	.1	116	.3	176	.4
57	0	29.3	0	29.3	0	27.9	57	.1	117	.3	177	.4
58	0	29.5	0	29.6	0	28.2	58	.1	118	.3	178	.4
59	0	29.8	0	29.8	0	28.4	59	.1	119	.3	179	.4
60	0	30.0	0	30.1	0	28.6	60	.2	120	.3	180	.5

0 h 2 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	0 30.0	0 30.1	0 28.6	0	.0	60	.3
1	0 30.3	0 30.3	0 28.9	1	.0	61	.3
2	0 30.5	0 30.6	0 29.1	2	.0	62	.3
3	0 30.8	0 30.8	0 29.3	3	.0	63	.3
4	0 31.0	0 31.1	0 29.6	4	.0	64	.3
5	0 31.3	0 31.3	0 29.8	5	.0	65	.3
6	0 31.5	0 31.6	0 30.1	6	.0	66	.3
7	0 31.8	0 31.8	0 30.3	7	.0	67	.3
8	0 32.0	0 32.1	0 30.5	8	.0	68	.3
9	0 32.3	0 32.3	0 30.8	9	.0	69	.3
10	0 32.5	0 32.6	0 31.0	10	.0	70	.3
11	0 32.8	0 32.8	0 31.3	11	.0	71	.3
12	0 33.0	0 33.1	0 31.5	12	.1	72	.3
13	0 33.3	0 33.3	0 31.7	13	.1	73	.3
14	0 33.5	0 33.6	0 32.0	14	.1	74	.3
15	0 33.8	0 33.8	0 32.2	15	.1	75	.3
16	0 34.0	0 34.1	0 32.5	16	.1	76	.3
17	0 34.3	0 34.3	0 32.7	17	.1	77	.3
18	0 34.5	0 34.6	0 32.9	18	.1	78	.3
19	0 34.8	0 34.8	0 33.2	19	.1	79	.3
20	0 35.0	0 35.1	0 33.4	20	.1	80	.3
21	0 35.3	0 35.3	0 33.6	21	.1	81	.3
22	0 35.5	0 35.6	0 33.9	22	.1	82	.3
23	0 35.8	0 35.8	0 34.1	23	.1	83	.3
24	0 36.0	0 36.1	0 34.4	24	.1	84	.4
25	0 36.3	0 36.4	0 34.6	25	.1	85	.4
26	0 36.5	0 36.6	0 34.8	26	.1	86	.4
27	0 36.8	0 36.9	0 35.1	27	.1	87	.4
28	0 37.0	0 37.1	0 35.3	28	.1	88	.4
29	0 37.3	0 37.4	0 35.6	29	.1	89	.4
30	0 37.5	0 37.6	0 35.8	30	.1	90	.4
31	0 37.8	0 37.9	0 36.0	31	.1	91	.4
32	0 38.0	0 38.1	0 36.3	32	.1	92	.4
33	0 38.3	0 38.4	0 36.5	33	.1	93	.4
34	0 38.5	0 38.6	0 36.7	34	.1	94	.4
35	0 38.8	0 38.9	0 37.0	35	.1	95	.4
36	0 39.0	0 39.1	0 37.2	36	.2	96	.4
37	0 39.3	0 39.4	0 37.5	37	.2	97	.4
38	0 39.5	0 39.6	0 37.7	38	.2	98	.4
39	0 39.8	0 39.9	0 37.9	39	.2	99	.4
40	0 40.0	0 40.1	0 38.2	40	.2	100	.4
41	0 40.3	0 40.4	0 38.4	41	.2	101	.4
42	0 40.5	0 40.6	0 38.7	42	.2	102	.4
43	0 40.8	0 40.9	0 38.9	43	.2	103	.4
44	0 41.0	0 41.1	0 39.1	44	.2	104	.4
45	0 41.3	0 41.4	0 39.4	45	.2	105	.4
46	0 41.5	0 41.6	0 39.6	46	.2	106	.4
47	0 41.8	0 41.9	0 39.8	47	.2	107	.4
48	0 42.0	0 42.1	0 40.1	48	.2	108	.5
49	0 42.3	0 42.4	0 40.3	49	.2	109	.5
50	0 42.5	0 42.6	0 40.6	50	.2	110	.5
51	0 42.8	0 42.9	0 40.8	51	.2	111	.5
52	0 43.0	0 43.1	0 41.0	52	.2	112	.5
53	0 43.3	0 43.4	0 41.3	53	.2	113	.5
54	0 43.5	0 43.6	0 41.5	54	.2	114	.5
55	0 43.8	0 43.9	0 41.8	55	.2	115	.5
56	0 44.0	0 44.1	0 42.0	56	.2	116	.5
57	0 44.3	0 44.4	0 42.2	57	.2	117	.5
58	0 44.5	0 44.6	0 42.5	58	.2	118	.5
59	0 44.8	0 44.9	0 42.7	59	.2	119	.5
60	0 45.0	0 45.1	0 43.0	60	.3	120	.5

0 h 3 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	0 45.0	0 45.1	0 43.0	0	.0	60	.4
1	0 45.3	0 45.4	0 43.2	1	.0	61	.4
2	0 45.5	0 45.6	0 43.4	2	.0	62	.4
3	0 45.8	0 45.9	0 43.7	3	.0	63	.4
4	0 46.0	0 46.1	0 43.9	4	.0	64	.4
5	0 46.3	0 46.4	0 44.1	5	.0	65	.4
6	0 46.5	0 46.6	0 44.4	6	.0	66	.4
7	0 46.8	0 46.9	0 44.6	7	.0	67	.4
8	0 47.0	0 47.1	0 44.9	8	.0	68	.4
9	0 47.3	0 47.4	0 45.1	9	.1	69	.4
10	0 47.5	0 47.6	0 45.3	10	.1	70	.4
11	0 47.8	0 47.9	0 45.6	11	.1	71	.4
12	0 48.0	0 48.1	0 45.8	12	.1	72	.4
13	0 48.3	0 48.4	0 46.1	13	.1	73	.4
14	0 48.5	0 48.6	0 46.3	14	.1	74	.4
15	0 48.8	0 48.9	0 46.5	15	.1	75	.4
16	0 49.0	0 49.1	0 46.8	16	.1	76	.4
17	0 49.3	0 49.4	0 47.0	17	.1	77	.4
18	0 49.5	0 49.6	0 47.2	18	.1	78	.5
19	0 49.8	0 49.9	0 47.5	19	.1	79	.5
20	0 50.0	0 50.1	0 47.7	20	.1	80	.5
21	0 50.3	0 50.4	0 48.0	21	.1	81	.5
22	0 50.5	0 50.6	0 48.2	22	.1	82	.5
23	0 50.8	0 50.9	0 48.4	23	.1	83	.5
24	0 51.0	0 51.1	0 48.7	24	.1	84	.5
25	0 51.3	0 51.4	0 48.9	25	.1	85	.5
26	0 51.5	0 51.6	0 49.2	26	.2	86	.5
27	0 51.8	0 51.9	0 49.4	27	.2	87	.5
28	0 52.0	0 52.1	0 49.6	28	.2	88	.5
29	0 52.3	0 52.4	0 49.9	29	.2	89	.5
30	0 52.5	0 52.6	0 50.1	30	.2	90	.5
31	0 52.8	0 52.9	0 50.3	31	.2	91	.5
32	0 53.0	0 53.1	0 50.6	32	.2	92	.5
33	0 53.3	0 53.4	0 50.8	33	.2	93	.5
34	0 53.5	0 53.6	0 51.1	34	.2	94	.5
35	0 53.8	0 53.9	0 51.3	35	.2	95	.6
36	0 54.0	0 54.2	0 51.5	36	.2	96	.6
37	0 54.3	0 54.4	0 51.8	37	.2	97	.6
38	0 54.5	0 54.7	0 52.0	38	.2	98	.6
39	0 54.8	0 54.9	0 52.3	39	.2	99	.6
40	0 55.0	0 55.2	0 52.5	40	.2	100	.6
41	0 55.3	0 55.4	0 52.7	41	.2	101	.6
42	0 55.5	0 55.7	0 53.0	42	.2	102	.6
43	0 55.8	0 55.9	0 53.2	43	.3	103	.6
44	0 56.0	0 56.2	0 53.4	44	.3	104	.6
45	0 56.3	0 56.4	0 53.7	45	.3	105	.6
46	0 56.5	0 56.7	0 53.9	46	.3	106	.6
47	0 56.8	0 56.9	0 54.2	47	.3	107	.6
48	0 57.0	0 57.2	0 54.4	48	.3	108	.6
49	0 57.3	0 57.4	0 54.6	49	.3	109	.6
50	0 57.5	0 57.7	0 54.9	50	.3	110	.6
51	0 57.8	0 57.9	0 55.1	51	.3	111	.6
52	0 58.0	0 58.2	0 55.4	52	.3	112	.7
53	0 58.3	0 58.4	0 55.6	53	.3	113	.7
54	0 58.5	0 58.7	0 55.8	54	.3	114	.7
55	0 58.8	0 58.9	0 56.1	55	.3	115	.7
56	0 59.0	0 59.2	0 56.3	56	.3	116	.7
57	0 59.3	0 59.4	0 56.6	57	.3	117	.7
58	0 59.5	0 59.7	0 56.8	58	.3	118	.7
59	0 59.8	0 59.9	0 57.0	59	.3	119	.7
60	1 .0	1 .2	0 57.3	60	.4	120	.7

0 h 4 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	1	.0	1	.2	0	57.3	0	.0	60	.5	120	.9
1	1	.3	1	.4	0	57.5	1	.0	61	.5	121	.9
2	1	.5	1	.7	0	57.7	2	.0	62	.5	122	.9
3	1	.8	1	.9	0	58.0	3	.0	63	.5	123	.9
4	1	1.0	1	1.2	0	58.2	4	.0	64	.5	124	.9
5	1	1.3	1	1.4	0	58.5	5	.0	65	.5	125	.9
6	1	1.5	1	1.7	0	58.7	6	.0	66	.5	126	.9
7	1	1.8	1	1.9	0	58.9	7	.1	67	.5	127	1.0
8	1	2.0	1	2.2	0	59.2	8	.1	68	.5	128	1.0
9	1	2.3	1	2.4	0	59.4	9	.1	69	.5	129	1.0
10	1	2.5	1	2.7	0	59.7	10	.1	70	.5	130	1.0
11	1	2.8	1	2.9	0	59.9	11	.1	71	.5	131	1.0
12	1	3.0	1	3.2	1	.1	12	.1	72	.5	132	1.0
13	1	3.3	1	3.4	1	.4	13	.1	73	.5	133	1.0
14	1	3.5	1	3.7	1	.6	14	.1	74	.6	134	1.0
15	1	3.8	1	3.9	1	.8	15	.1	75	.6	135	1.0
16	1	4.0	1	4.2	1	1.1	16	.1	76	.6	136	1.0
17	1	4.3	1	4.4	1	1.3	17	.1	77	.6	137	1.0
18	1	4.5	1	4.7	1	1.6	18	.1	78	.6	138	1.0
19	1	4.8	1	4.9	1	1.8	19	.1	79	.6	139	1.0
20	1	5.0	1	5.2	1	2.0	20	.2	80	.6	140	1.1
21	1	5.3	1	5.4	1	2.3	21	.2	81	.6	141	1.1
22	1	5.5	1	5.7	1	2.5	22	.2	82	.6	142	1.1
23	1	5.8	1	5.9	1	2.8	23	.2	83	.6	143	1.1
24	1	6.0	1	6.2	1	3.0	24	.2	84	.6	144	1.1
25	1	6.3	1	6.4	1	3.2	25	.2	85	.6	145	1.1
26	1	6.5	1	6.7	1	3.5	26	.2	86	.6	146	1.1
27	1	6.8	1	6.9	1	3.7	27	.2	87	.7	147	1.1
28	1	7.0	1	7.2	1	3.9	28	.2	88	.7	148	1.1
29	1	7.3	1	7.4	1	4.2	29	.2	89	.7	149	1.1
30	1	7.5	1	7.7	1	4.4	30	.2	90	.7	150	1.1
31	1	7.8	1	7.9	1	4.7	31	.2	91	.7	151	1.1
32	1	8.0	1	8.2	1	4.9	32	.2	92	.7	152	1.1
33	1	8.3	1	8.4	1	5.1	33	.2	93	.7	153	1.1
34	1	8.5	1	8.7	1	5.4	34	.3	94	.7	154	1.2
35	1	8.8	1	8.9	1	5.6	35	.3	95	.7	155	1.2
36	1	9.0	1	9.2	1	5.9	36	.3	96	.7	156	1.2
37	1	9.3	1	9.4	1	6.1	37	.3	97	.7	157	1.2
38	1	9.5	1	9.7	1	6.3	38	.3	98	.7	158	1.2
39	1	9.8	1	9.9	1	6.6	39	.3	99	.7	159	1.2
40	1	10.0	1	10.2	1	6.8	40	.3	100	.8	160	1.2
41	1	10.3	1	10.4	1	7.0	41	.3	101	.8	161	1.2
42	1	10.5	1	10.7	1	7.3	42	.3	102	.8	162	1.2
43	1	10.8	1	10.9	1	7.5	43	.3	103	.8	163	1.2
44	1	11.0	1	11.2	1	7.8	44	.3	104	.8	164	1.2
45	1	11.3	1	11.4	1	8.0	45	.3	105	.8	165	1.2
46	1	11.5	1	11.7	1	8.2	46	.3	106	.8	166	1.2
47	1	11.8	1	11.9	1	8.5	47	.4	107	.8	167	1.3
48	1	12.0	1	12.2	1	8.7	48	.4	108	.8	168	1.3
49	1	12.3	1	12.5	1	9.0	49	.4	109	.8	169	1.3
50	1	12.5	1	12.7	1	9.2	50	.4	110	.8	170	1.3
51	1	12.8	1	13.0	1	9.4	51	.4	111	.8	171	1.3
52	1	13.0	1	13.2	1	9.7	52	.4	112	.8	172	1.3
53	1	13.3	1	13.5	1	9.9	53	.4	113	.8	173	1.3
54	1	13.5	1	13.7	1	10.2	54	.4	114	.9	174	1.3
55	1	13.8	1	14.0	1	10.4	55	.4	115	.9	175	1.3
56	1	14.0	1	14.2	1	10.6	56	.4	116	.9	176	1.3
57	1	14.3	1	14.5	1	10.9	57	.4	117	.9	177	1.3
58	1	14.5	1	14.7	1	11.1	58	.4	118	.9	178	1.3
59	1	14.8	1	15.0	1	11.3	59	.4	119	.9	179	1.3
60	1	15.0	1	15.2	1	11.6	60	.5	120	.9	180	1.4

0 h 5 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	1	15.0	1	15.2	1	11.6	0	.0	60	.6	120	1.1
1	1	15.3	1	15.5	1	11.8	1	.0	61	.6	121	1.1
2	1	15.5	1	15.7	1	12.1	2	.0	62	.6	122	1.1
3	1	15.8	1	16.0	1	12.3	3	.0	63	.6	123	1.1
4	1	16.0	1	16.2	1	12.5	4	.0	64	.6	124	1.1
5	1	16.3	1	16.5	1	12.8	5	.0	65	.6	125	1.1
6	1	16.5	1	16.7	1	13.0	6	.1	66	.6	126	1.2
7	1	16.8	1	17.0	1	13.3	7	.1	67	.6	127	1.2
8	1	17.0	1	17.2	1	13.5	8	.1	68	.6	128	1.2
9	1	17.3	1	17.5	1	13.7	9	.1	69	.6	129	1.2
10	1	17.5	1	17.7	1	14.0	10	.1	70	.6	130	1.2
11	1	17.8	1	18.0	1	14.2	11	.1	71	.7	131	1.2
12	1	18.0	1	18.2	1	14.4	12	.1	72	.7	132	1.2
13	1	18.3	1	18.5	1	14.7	13	.1	73	.7	133	1.2
14	1	18.5	1	18.7	1	14.9	14	.1	74	.7	134	1.2
15	1	18.8	1	19.0	1	15.2	15	.1	75	.7	135	1.2
16	1	19.0	1	19.2	1	15.4	16	.1	76	.7	136	1.2
17	1	19.3	1	19.5	1	15.6	17	.2	77	.7	137	1.3
18	1	19.5	1	19.7	1	15.9	18	.2	78	.7	138	1.3
19	1	19.8	1	20.0	1	16.1	19	.2	79	.7	139	1.3
20	1	20.0	1	20.2	1	16.4	20	.2	80	.7	140	1.3
21	1	20.3	1	20.5	1	16.6	21	.2	81	.7	141	1.3
22	1	20.5	1	20.7	1	16.8	22	.2	82	.8	142	1.3
23	1	20.8	1	21.0	1	17.1	23	.2	83	.8	143	1.3
24	1	21.0	1	21.2	1	17.3	24	.2	84	.8	144	1.3
25	1	21.3	1	21.5	1	17.5	25	.2	85	.8	145	1.3
26	1	21.5	1	21.7	1	17.8	26	.2	86	.8	146	1.3
27	1	21.8	1	22.0	1	18.0	27	.2	87	.8	147	1.3
28	1	22.0	1	22.2	1	18.3	28	.3	88	.8	148	1.4
29	1	22.3	1	22.5	1	18.5	29	.3	89	.8	149	1.4
30	1	22.5	1	22.7	1	18.7	30	.3	90	.8	150	1.4
31	1	22.8	1	23.0	1	19.0	31	.3	91	.8	151	1.4
32	1	23.0	1	23.2	1	19.2	32	.3	92	.8	152	1.4
33	1	23.3	1	23.5	1	19.5	33	.3	93	.9	153	1.4
34	1	23.5	1	23.7	1	19.7	34	.3	94	.9	154	1.4
35	1	23.8	1	24.0	1	19.9	35	.3	95	.9	155	1.4
36	1	24.0	1	24.2	1	20.2	36	.3	96	.9	156	1.4
37	1	24.3	1	24.5	1	20.4	37	.3	97	.9	157	1.4
38	1	24.5	1	24.7	1	20.7	38	.3	98	.9	158	1.4
39	1	24.8	1	25.0	1	20.9	39	.4	99	.9	159	1.5
40	1	25.0	1	25.2	1	21.1	40	.4	100	.9	160	1.5
41	1	25.3	1	25.5	1	21.4	41	.4	101	.9	161	1.5
42	1	25.5	1	25.7	1	21.6	42	.4	102	.9	162	1.5
43	1	25.8	1	26.0	1	21.8	43	.4	103	.9	163	1.5
44	1	26.0	1	26.2	1	22.1	44	.4	104	1.0	164	1.5
45	1	26.3	1	26.5	1	22.3	45	.4	105	1.0	165	1.5
46	1	26.5	1	26.7	1	22.6	46	.4	106	1.0	166	1.5
47	1	26.8	1	27.0	1	22.8	47	.4	107	1.0	167	1.5
48	1	27.0	1	27.2	1	23.0	48	.4	108	1.0	168	1.5
49	1	27.3	1	27.5	1	23.3	49	.4	109	1.0	169	1.5
50	1	27.5	1	27.7	1	23.5	50	.5	110	1.0	170	1.6
51	1	27.8	1	28.0	1	23.8	51	.5	111	1.0	171	1.6
52	1	28.0	1	28.2	1	24.0	52	.5	112	1.0	172	1.6
53	1	28.3	1	28.5	1	24.2	53	.5	113	1.0	173	1.6
54	1	28.5	1	28.7	1	24.5	54	.5	114	1.0	174	1.6
55	1	28.8	1	29.0	1	24.7	55	.5	115	1.1	175	1.6
56	1	29.0	1	29.2	1	24.9	56	.5	116	1.1	176	1.6
57	1	29.3	1	29.5	1	25.2	57	.5	117	1.1	177	1.6
58	1	29.5	1	29.7	1	25.4	58	.5	118</			

0 h 6 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	1 30.0	1 30.3	1 25.9	0 .0	60 .7	120 1.3
1	1 30.3	1 30.5	1 26.1	1 .0	61 .7	121 1.3
2	1 30.5	1 30.8	1 26.4	2 .0	62 .7	122 1.3
3	1 30.8	1 31.0	1 26.6	3 .0	63 .7	123 1.3
4	1 31.0	1 31.3	1 26.9	4 .0	64 .7	124 1.3
5	1 31.3	1 31.5	1 27.1	5 .1	65 .7	125 1.4
6	1 31.5	1 31.8	1 27.3	6 .1	66 .7	126 1.4
7	1 31.8	1 32.0	1 27.6	7 .1	67 .7	127 1.4
8	1 32.0	1 32.3	1 27.8	8 .1	68 .7	128 1.4
9	1 32.3	1 32.5	1 28.0	9 .1	69 .7	129 1.4
10	1 32.5	1 32.8	1 28.3	10 .1	70 .8	130 1.4
11	1 32.8	1 33.0	1 28.5	11 .1	71 .8	131 1.4
12	1 33.0	1 33.3	1 28.8	12 .1	72 .8	132 1.4
13	1 33.3	1 33.5	1 29.0	13 .1	73 .8	133 1.4
14	1 33.5	1 33.8	1 29.2	14 .2	74 .8	134 1.5
15	1 33.8	1 34.0	1 29.5	15 .2	75 .8	135 1.5
16	1 34.0	1 34.3	1 29.7	16 .2	76 .8	136 1.5
17	1 34.3	1 34.5	1 30.0	17 .2	77 .8	137 1.5
18	1 34.5	1 34.8	1 30.2	18 .2	78 .8	138 1.5
19	1 34.8	1 35.0	1 30.4	19 .2	79 .9	139 1.5
20	1 35.0	1 35.3	1 30.7	20 .2	80 .9	140 1.5
21	1 35.3	1 35.5	1 30.9	21 .2	81 .9	141 1.5
22	1 35.5	1 35.8	1 31.1	22 .2	82 .9	142 1.5
23	1 35.8	1 36.0	1 31.4	23 .2	83 .9	143 1.5
24	1 36.0	1 36.3	1 31.6	24 .3	84 .9	144 1.6
25	1 36.3	1 36.5	1 31.9	25 .3	85 .9	145 1.6
26	1 36.5	1 36.8	1 32.1	26 .3	86 .9	146 1.6
27	1 36.8	1 37.0	1 32.3	27 .3	87 .9	147 1.6
28	1 37.0	1 37.3	1 32.6	28 .3	88 1.0	148 1.6
29	1 37.3	1 37.5	1 32.8	29 .3	89 1.0	149 1.6
30	1 37.5	1 37.8	1 33.1	30 .3	90 1.0	150 1.6
31	1 37.8	1 38.0	1 33.3	31 .3	91 1.0	151 1.6
32	1 38.0	1 38.3	1 33.5	32 .3	92 1.0	152 1.6
33	1 38.3	1 38.5	1 33.8	33 .4	93 1.0	153 1.7
34	1 38.5	1 38.8	1 34.0	34 .4	94 1.0	154 1.7
35	1 38.8	1 39.0	1 34.3	35 .4	95 1.0	155 1.7
36	1 39.0	1 39.3	1 34.5	36 .4	96 1.0	156 1.7
37	1 39.3	1 39.5	1 34.7	37 .4	97 1.1	157 1.7
38	1 39.5	1 39.8	1 35.0	38 .4	98 1.1	158 1.7
39	1 39.8	1 40.0	1 35.2	39 .4	99 1.1	159 1.7
40	1 40.0	1 40.3	1 35.4	40 .4	100 1.1	160 1.7
41	1 40.3	1 40.5	1 35.7	41 .4	101 1.1	161 1.7
42	1 40.5	1 40.8	1 35.9	42 .5	102 1.1	162 1.8
43	1 40.8	1 41.0	1 36.2	43 .5	103 1.1	163 1.8
44	1 41.0	1 41.3	1 36.4	44 .5	104 1.1	164 1.8
45	1 41.3	1 41.5	1 36.6	45 .5	105 1.1	165 1.8
46	1 41.5	1 41.8	1 36.9	46 .5	106 1.1	166 1.8
47	1 41.8	1 42.0	1 37.1	47 .5	107 1.2	167 1.8
48	1 42.0	1 42.3	1 37.4	48 .5	108 1.2	168 1.8
49	1 42.3	1 42.5	1 37.6	49 .5	109 1.2	169 1.8
50	1 42.5	1 42.8	1 37.8	50 .5	110 1.2	170 1.8
51	1 42.8	1 43.0	1 38.1	51 .6	111 1.2	171 1.9
52	1 43.0	1 43.3	1 38.3	52 .6	112 1.2	172 1.9
53	1 43.3	1 43.5	1 38.5	53 .6	113 1.2	173 1.9
54	1 43.5	1 43.8	1 38.8	54 .6	114 1.2	174 1.9
55	1 43.8	1 44.0	1 39.0	55 .6	115 1.2	175 1.9
56	1 44.0	1 44.3	1 39.3	56 .6	116 1.3	176 1.9
57	1 44.3	1 44.5	1 39.5	57 .6	117 1.3	177 1.9
58	1 44.5	1 44.8	1 39.7	58 .6	118 1.3	178 1.9
59	1 44.8	1 45.0	1 40.0	59 .6	119 1.3	179 1.9
60	1 45.0	1 45.3	1 40.2	60 .7	120 1.3	180 2.0

0 h 7 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	1 45.0	1 45.3	1 40.2	0 .0	60 .8	120 1.5
1	1 45.3	1 45.5	1 40.5	1 .0	61 .8	121 1.5
2	1 45.5	1 45.8	1 40.7	2 .0	62 .8	122 1.5
3	1 45.8	1 46.0	1 40.9	3 .0	63 .8	123 1.5
4	1 46.0	1 46.3	1 41.2	4 .1	64 .8	124 1.6
5	1 46.3	1 46.5	1 41.4	5 .1	65 .8	125 1.6
6	1 46.5	1 46.8	1 41.6	6 .1	66 .8	126 1.6
7	1 46.8	1 47.0	1 41.9	7 .1	67 .8	127 1.6
8	1 47.0	1 47.3	1 42.1	8 .1	68 .9	128 1.6
9	1 47.3	1 47.5	1 42.4	9 .1	69 .9	129 1.6
10	1 47.5	1 47.8	1 42.6	10 .1	70 .9	130 1.6
11	1 47.8	1 48.0	1 42.8	11 .1	71 .9	131 1.6
12	1 48.0	1 48.3	1 43.1	12 .2	72 .9	132 1.7
13	1 48.3	1 48.6	1 43.3	13 .2	73 .9	133 1.7
14	1 48.5	1 48.8	1 43.6	14 .2	74 .9	134 1.7
15	1 48.8	1 49.1	1 43.8	15 .2	75 .9	135 1.7
16	1 49.0	1 49.3	1 44.0	16 .2	76 1.0	136 1.7
17	1 49.3	1 49.6	1 44.3	17 .2	77 1.0	137 1.7
18	1 49.5	1 49.8	1 44.5	18 .2	78 1.0	138 1.7
19	1 49.8	1 50.1	1 44.8	19 .2	79 1.0	139 1.7
20	1 50.0	1 50.3	1 45.0	20 .3	80 1.0	140 1.8
21	1 50.3	1 50.6	1 45.2	21 .3	81 1.0	141 1.8
22	1 50.5	1 50.8	1 45.5	22 .3	82 1.0	142 1.8
23	1 50.8	1 51.1	1 45.7	23 .3	83 1.0	143 1.8
24	1 51.0	1 51.3	1 45.9	24 .3	84 1.1	144 1.8
25	1 51.3	1 51.6	1 46.2	25 .3	85 1.1	145 1.8
26	1 51.5	1 51.8	1 46.4	26 .3	86 1.1	146 1.8
27	1 51.8	1 52.1	1 46.7	27 .3	87 1.1	147 1.8
28	1 52.0	1 52.3	1 46.9	28 .4	88 1.1	148 1.9
29	1 52.3	1 52.6	1 47.1	29 .4	89 1.1	149 1.9
30	1 52.5	1 52.8	1 47.4	30 .4	90 1.1	150 1.9
31	1 52.8	1 53.1	1 47.6	31 .4	91 1.1	151 1.9
32	1 53.0	1 53.3	1 47.9	32 .4	92 1.2	152 1.9
33	1 53.3	1 53.6	1 48.1	33 .4	93 1.2	153 1.9
34	1 53.5	1 53.8	1 48.3	34 .4	94 1.2	154 1.9
35	1 53.8	1 54.1	1 48.6	35 .4	95 1.2	155 1.9
36	1 54.0	1 54.3	1 48.8	36 .5	96 1.2	156 2.0
37	1 54.3	1 54.6	1 49.0	37 .5	97 1.2	157 2.0
38	1 54.5	1 54.8	1 49.3	38 .5	98 1.2	158 2.0
39	1 54.8	1 55.1	1 49.5	39 .5	99 1.2	159 2.0
40	1 55.0	1 55.3	1 49.8	40 .5	100 1.3	160 2.0
41	1 55.3	1 55.6	1 50.0	41 .5	101 1.3	161 2.0
42	1 55.5	1 55.8	1 50.2	42 .5	102 1.3	162 2.0
43	1 55.8	1 56.1	1 50.5	43 .5	103 1.3	163 2.0
44	1 56.0	1 56.3	1 50.7	44 .6	104 1.3	164 2.1
45	1 56.3	1 56.6	1 51.0	45 .6	105 1.3	165 2.1
46	1 56.5	1 56.8	1 51.2	46 .6	106 1.3	166 2.1
47	1 56.8	1 57.1	1 51.4	47 .6	107 1.3	167 2.1
48	1 57.0	1 57.3	1 51.7	48 .6	108 1.4	168 2.1
49	1 57.3	1 57.6	1 51.9	49 .6	109 1.4	169 2.1
50	1 57.5	1 57.8	1 52.1	50 .6	110 1.4	170 2.1
51	1 57.8	1 58.1	1 52.4	51 .6	111 1.4	171 2.1
52	1 58.0	1 58.3	1 52.6	52 .7	112 1.4	172 2.2
53	1 58.3	1 58.6	1 52.9	53 .7	113 1.4	173 2.2
54	1 58.5	1 58.8	1 53.1	54 .7	114 1.4	174 2.2
55	1 58.8	1 59.1	1 53.3	55 .7	115 1.4	175 2.2
56	1 59.0	1 59.3	1 53.6	56 .7	116 1.5	176 2.2
57	1 59.3	1 59.6	1 53.8	57 .7	117 1.5	177 2.2
58	1 59.5	1 59.8	1 54.1	58 .7	118 1.5	178 2.2
59	1 59.8	2 .1	1 54.3	59 .7	119 1.5	179 2.2
60	2 .0	2 .3	1 54.5	60 .8	120 1.5	180 2.3

0 h 8 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	2	.0	2	.3	1	54.5	0	.0	60	.9	120	1.7
1	2	.3	2	.6	1	54.8	1	.0	61	.9	121	1.7
2	2	.5	2	.8	1	55.0	2	.0	62	.9	122	1.7
3	2	.8	2	1.1	1	55.2	3	.0	63	.9	123	1.7
4	2	1.0	2	1.3	1	55.5	4	.1	64	.9	124	1.8
5	2	1.3	2	1.6	1	55.7	5	.1	65	.9	125	1.8
6	2	1.5	2	1.8	1	56.0	6	.1	66	.9	126	1.8
7	2	1.8	2	2.1	1	56.2	7	.1	67	.9	127	1.8
8	2	2.0	2	2.3	1	56.4	8	.1	68	1.0	128	1.8
9	2	2.3	2	2.6	1	56.7	9	.1	69	1.0	129	1.8
10	2	2.5	2	2.8	1	56.9	10	.1	70	1.0	130	1.8
11	2	2.8	2	3.1	1	57.2	11	.2	71	1.0	131	1.9
12	2	3.0	2	3.3	1	57.4	12	.2	72	1.0	132	1.9
13	2	3.3	2	3.6	1	57.6	13	.2	73	1.0	133	1.9
14	2	3.5	2	3.8	1	57.9	14	.2	74	1.0	134	1.9
15	2	3.8	2	4.1	1	58.1	15	.2	75	1.1	135	1.9
16	2	4.0	2	4.3	1	58.4	16	.2	76	1.1	136	1.9
17	2	4.3	2	4.6	1	58.6	17	.2	77	1.1	137	1.9
18	2	4.5	2	4.8	1	58.8	18	.3	78	1.1	138	2.0
19	2	4.8	2	5.1	1	59.1	19	.3	79	1.1	139	2.0
20	2	5.0	2	5.3	1	59.3	20	.3	80	1.1	140	2.0
21	2	5.3	2	5.6	1	59.5	21	.3	81	1.1	141	2.0
22	2	5.5	2	5.8	1	59.8	22	.3	82	1.2	142	2.0
23	2	5.8	2	6.1	2	.0	23	.3	83	1.2	143	2.0
24	2	6.0	2	6.4	2	.3	24	.3	84	1.2	144	2.0
25	2	6.3	2	6.6	2	.5	25	.4	85	1.2	145	2.1
26	2	6.5	2	6.9	2	.7	26	.4	86	1.2	146	2.1
27	2	6.8	2	7.1	2	1.0	27	.4	87	1.2	147	2.1
28	2	7.0	2	7.4	2	1.2	28	.4	88	1.2	148	2.1
29	2	7.3	2	7.6	2	1.5	29	.4	89	1.3	149	2.1
30	2	7.5	2	7.9	2	1.7	30	.4	90	1.3	150	2.1
31	2	7.8	2	8.1	2	1.9	31	.4	91	1.3	151	2.1
32	2	8.0	2	8.4	2	2.2	32	.5	92	1.3	152	2.2
33	2	8.3	2	8.6	2	2.4	33	.5	93	1.3	153	2.2
34	2	8.5	2	8.9	2	2.6	34	.5	94	1.3	154	2.2
35	2	8.8	2	9.1	2	2.9	35	.5	95	1.3	155	2.2
36	2	9.0	2	9.4	2	3.1	36	.5	96	1.4	156	2.2
37	2	9.3	2	9.6	2	3.4	37	.5	97	1.4	157	2.2
38	2	9.5	2	9.9	2	3.6	38	.5	98	1.4	158	2.2
39	2	9.8	2	10.1	2	3.8	39	.6	99	1.4	159	2.3
40	2	10.0	2	10.4	2	4.1	40	.6	100	1.4	160	2.3
41	2	10.3	2	10.6	2	4.3	41	.6	101	1.4	161	2.3
42	2	10.5	2	10.9	2	4.6	42	.6	102	1.4	162	2.3
43	2	10.8	2	11.1	2	4.8	43	.6	103	1.5	163	2.3
44	2	11.0	2	11.4	2	5.0	44	.6	104	1.5	164	2.3
45	2	11.3	2	11.6	2	5.3	45	.6	105	1.5	165	2.3
46	2	11.5	2	11.9	2	5.5	46	.7	106	1.5	166	2.4
47	2	11.8	2	12.1	2	5.7	47	.7	107	1.5	167	2.4
48	2	12.0	2	12.4	2	6.0	48	.7	108	1.5	168	2.4
49	2	12.3	2	12.6	2	6.2	49	.7	109	1.5	169	2.4
50	2	12.5	2	12.9	2	6.5	50	.7	110	1.6	170	2.4
51	2	12.8	2	13.1	2	6.7	51	.7	111	1.6	171	2.4
52	2	13.0	2	13.4	2	6.9	52	.7	112	1.6	172	2.4
53	2	13.3	2	13.6	2	7.2	53	.8	113	1.6	173	2.5
54	2	13.5	2	13.9	2	7.4	54	.8	114	1.6	174	2.5
55	2	13.8	2	14.1	2	7.7	55	.8	115	1.6	175	2.5
56	2	14.0	2	14.4	2	7.9	56	.8	116	1.6	176	2.5
57	2	14.3	2	14.6	2	8.1	57	.8	117	1.7	177	2.5
58	2	14.5	2	14.9	2	8.4	58	.8	118	1.7	178	2.5
59	2	14.8	2	15.1	2	8.6	59	.8	119	1.7	179	2.5
60	2	15.0	2	15.4	2	8.9	60	.9	120	1.7	180	2.6

0 h 9 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	2	15.0	2	15.4	2	8.9	0	.0	60	1.0	120	1.9
1	2	15.3	2	15.6	2	9.1	1	.0	61	1.0	121	1.9
2	2	15.5	2	15.9	2	9.3	2	.0	62	1.0	122	1.9
3	2	15.8	2	16.1	2	9.6	3	.0	63	1.0	123	1.9
4	2	16.0	2	16.4	2	9.8	4	.1	64	1.0	124	2.0
5	2	16.3	2	16.6	2	10.0	5	.1	65	1.0	125	2.0
6	2	16.5	2	16.9	2	10.3	6	.1	66	1.0	126	2.0
7	2	16.8	2	17.1	2	10.5	7	.1	67	1.1	127	2.0
8	2	17.0	2	17.4	2	10.8	8	.1	68	1.1	128	2.0
9	2	17.3	2	17.6	2	11.0	9	.1	69	1.1	129	2.0
10	2	17.5	2	17.9	2	11.2	10	.2	70	1.1	130	2.1
11	2	17.8	2	18.1	2	11.5	11	.2	71	1.1	131	2.1
12	2	18.0	2	18.4	2	11.7	12	.2	72	1.1	132	2.1
13	2	18.3	2	18.6	2	12.0	13	.2	73	1.2	133	2.1
14	2	18.5	2	18.9	2	12.2	14	.2	74	1.2	134	2.1
15	2	18.8	2	19.1	2	12.4	15	.2	75	1.2	135	2.1
16	2	19.0	2	19.4	2	12.7	16	.3	76	1.2	136	2.2
17	2	19.3	2	19.6	2	12.9	17	.3	77	1.2	137	2.2
18	2	19.5	2	19.9	2	13.1	18	.3	78	1.2	138	2.2
19	2	19.8	2	20.1	2	13.4	19	.3	79	1.3	139	2.2
20	2	20.0	2	20.4	2	13.6	20	.3	80	1.3	140	2.2
21	2	20.3	2	20.6	2	13.9	21	.3	81	1.3	141	2.2
22	2	20.5	2	20.9	2	14.1	22	.3	82	1.3	142	2.2
23	2	20.8	2	21.1	2	14.3	23	.4	83	1.3	143	2.3
24	2	21.0	2	21.4	2	14.6	24	.4	84	1.3	144	2.3
25	2	21.3	2	21.6	2	14.8	25	.4	85	1.3	145	2.3
26	2	21.5	2	21.9	2	15.1	26	.4	86	1.4	146	2.3
27	2	21.8	2	22.1	2	15.3	27	.4	87	1.4	147	2.3
28	2	22.0	2	22.4	2	15.5	28	.4	88	1.4	148	2.3
29	2	22.3	2	22.6	2	15.8	29	.5	89	1.4	149	2.4
30	2	22.5	2	22.9	2	16.0	30	.5	90	1.4	150	2.4
31	2	22.8	2	23.1	2	16.2	31	.5	91	1.4	151	2.4
32	2	23.0	2	23.4	2	16.5	32	.5	92	1.5	152	2.4
33	2	23.3	2	23.6	2	16.7	33	.5	93	1.5	153	2.4
34	2	23.5	2	23.9	2	17.0	34	.5	94	1.5	154	2.4
35	2	23.8	2	24.1	2	17.2	35	.6	95	1.5	155	2.5
36	2	24.0	2	24.4	2	17.4	36	.6	96	1.5	156	2.5
37	2	24.3	2	24.7	2	17.7	37	.6	97	1.5	157	2.5
38	2	24.5	2	24.9	2	17.9	38	.6	98	1.6	158	2.5
39	2	24.8	2	25.2	2	18.2	39	.6	99	1.6	159	2.5
40	2	25.0	2	25.4	2	18.4	40	.6	100	1.6	160	2.5
41	2	25.3	2	25.7	2	18.6	41	.6	101	1.6	161	2.5
42	2	25.5	2	25.9	2	18.9	42	.7	102	1.6	162	2.6
43	2	25.8	2	26.2	2	19.1	43	.7	103	1.6	163	2.6
44	2	26.0	2	26.4	2	19.3	44	.7	104	1.6	164	2.6
45	2	26.3	2	26.7	2	19.6	45	.7	105	1.7	165	2.6
46	2	26.5	2	26.9	2	19.8	46	.7	106	1.7	166	2.6
47	2	26.8	2	27.2	2	20.1	47	.7	107	1.7	167	2.6
48	2	27.0	2	27.4	2	20.3	48	.8	108	1.7	168	2.7
49	2	27.3	2	27.7	2	20.5	49	.8	109	1.7	169	2.7
50	2	27.5	2	27.9	2	20.8	50	.8	110	1.7	170	2.7
51	2	27.8	2	28.2	2	21.0	51	.8	111	1.8	171	2.7
52	2	28.0	2	28.4	2	21.3	52	.8	112	1.8	172	2.7
53	2	28.3	2	28.7	2	21.5	53	.8	113	1.8	173	2.7
54	2	28.5	2	28.9	2	21.7	54	.9	114	1.8	174	2.8
55	2	28.8	2	29.2	2	22.0	55	.9	115	1.8	175	2.8
56	2	29.0	2	29.4	2	22.2	56	.9	11			

0 h 10 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	2 30.0	2 30.4	2 23.2	0 .0	60 1.1	120 2.1	
1	2 30.3	2 30.7	2 23.4	1 .0	61 1.1	121 2.1	
2	2 30.5	2 30.9	2 23.6	2 .0	62 1.1	122 2.1	
3	2 30.8	2 31.2	2 23.9	3 .1	63 1.1	123 2.2	
4	2 31.0	2 31.4	2 24.1	4 .1	64 1.1	124 2.2	
5	2 31.3	2 31.7	2 24.4	5 .1	65 1.1	125 2.2	
6	2 31.5	2 31.9	2 24.6	6 .1	66 1.2	126 2.2	
7	2 31.8	2 32.2	2 24.8	7 .1	67 1.2	127 2.2	
8	2 32.0	2 32.4	2 25.1	8 .1	68 1.2	128 2.2	
9	2 32.3	2 32.7	2 25.3	9 .2	69 1.2	129 2.3	
10	2 32.5	2 32.9	2 25.6	10 .2	70 1.2	130 2.3	
11	2 32.8	2 33.2	2 25.8	11 .2	71 1.2	131 2.3	
12	2 33.0	2 33.4	2 26.0	12 .2	72 1.3	132 2.3	
13	2 33.3	2 33.7	2 26.3	13 .2	73 1.3	133 2.3	
14	2 33.5	2 33.9	2 26.5	14 .2	74 1.3	134 2.3	
15	2 33.8	2 34.2	2 26.7	15 .3	75 1.3	135 2.4	
16	2 34.0	2 34.4	2 27.0	16 .3	76 1.3	136 2.4	
17	2 34.3	2 34.7	2 27.2	17 .3	77 1.3	137 2.4	
18	2 34.5	2 34.9	2 27.5	18 .3	78 1.4	138 2.4	
19	2 34.8	2 35.2	2 27.7	19 .3	79 1.4	139 2.4	
20	2 35.0	2 35.4	2 27.9	20 .4	80 1.4	140 2.5	
21	2 35.3	2 35.7	2 28.2	21 .4	81 1.4	141 2.5	
22	2 35.5	2 35.9	2 28.4	22 .4	82 1.4	142 2.5	
23	2 35.8	2 36.2	2 28.7	23 .4	83 1.5	143 2.5	
24	2 36.0	2 36.4	2 28.9	24 .4	84 1.5	144 2.5	
25	2 36.3	2 36.7	2 29.1	25 .4	85 1.5	145 2.5	
26	2 36.5	2 36.9	2 29.4	26 .5	86 1.5	146 2.6	
27	2 36.8	2 37.2	2 29.6	27 .5	87 1.5	147 2.6	
28	2 37.0	2 37.4	2 29.8	28 .5	88 1.5	148 2.6	
29	2 37.3	2 37.7	2 30.1	29 .5	89 1.6	149 2.6	
30	2 37.5	2 37.9	2 30.3	30 .5	90 1.6	150 2.6	
31	2 37.8	2 38.2	2 30.6	31 .5	91 1.6	151 2.6	
32	2 38.0	2 38.4	2 30.8	32 .6	92 1.6	152 2.7	
33	2 38.3	2 38.7	2 31.0	33 .6	93 1.6	153 2.7	
34	2 38.5	2 38.9	2 31.3	34 .6	94 1.6	154 2.7	
35	2 38.8	2 39.2	2 31.5	35 .6	95 1.7	155 2.7	
36	2 39.0	2 39.4	2 31.8	36 .6	96 1.7	156 2.7	
37	2 39.3	2 39.7	2 32.0	37 .6	97 1.7	157 2.7	
38	2 39.5	2 39.9	2 32.2	38 .7	98 1.7	158 2.8	
39	2 39.8	2 40.2	2 32.5	39 .7	99 1.7	159 2.8	
40	2 40.0	2 40.4	2 32.7	40 .7	100 1.8	160 2.8	
41	2 40.3	2 40.7	2 32.9	41 .7	101 1.8	161 2.8	
42	2 40.5	2 40.9	2 33.2	42 .7	102 1.8	162 2.8	
43	2 40.8	2 41.2	2 33.4	43 .8	103 1.8	163 2.9	
44	2 41.0	2 41.4	2 33.7	44 .8	104 1.8	164 2.9	
45	2 41.3	2 41.7	2 33.9	45 .8	105 1.8	165 2.9	
46	2 41.5	2 41.9	2 34.1	46 .8	106 1.9	166 2.9	
47	2 41.8	2 42.2	2 34.4	47 .8	107 1.9	167 2.9	
48	2 42.0	2 42.5	2 34.6	48 .8	108 1.9	168 2.9	
49	2 42.3	2 42.7	2 34.9	49 .9	109 1.9	169 3.0	
50	2 42.5	2 43.0	2 35.1	50 .9	110 1.9	170 3.0	
51	2 42.8	2 43.2	2 35.3	51 .9	111 1.9	171 3.0	
52	2 43.0	2 43.5	2 35.6	52 .9	112 2.0	172 3.0	
53	2 43.3	2 43.7	2 35.8	53 .9	113 2.0	173 3.0	
54	2 43.5	2 44.0	2 36.1	54 .9	114 2.0	174 3.0	
55	2 43.8	2 44.2	2 36.3	55 1.0	115 2.0	175 3.1	
56	2 44.0	2 44.5	2 36.5	56 1.0	116 2.0	176 3.1	
57	2 44.3	2 44.7	2 36.8	57 1.0	117 2.0	177 3.1	
58	2 44.5	2 45.0	2 37.0	58 1.0	118 2.1	178 3.1	
59	2 44.8	2 45.2	2 37.2	59 1.0	119 2.1	179 3.1	
60	2 45.0	2 45.5	2 37.5	60 1.1	120 2.1	180 3.2	

0 h 11 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	2 45.0	2 45.5	2 37.5	0 .0	60 1.2	120 2.3	
1	2 45.3	2 45.7	2 37.7	1 .0	61 1.2	121 2.3	
2	2 45.5	2 46.0	2 38.0	2 .0	62 1.2	122 2.3	
3	2 45.8	2 46.2	2 38.2	3 .1	63 1.2	123 2.4	
4	2 46.0	2 46.5	2 38.4	4 .1	64 1.2	124 2.4	
5	2 46.3	2 46.7	2 38.7	5 .1	65 1.2	125 2.4	
6	2 46.5	2 47.0	2 38.9	6 .1	66 1.3	126 2.4	
7	2 46.8	2 47.2	2 39.2	7 .1	67 1.3	127 2.4	
8	2 47.0	2 47.5	2 39.4	8 .2	68 1.3	128 2.5	
9	2 47.3	2 47.7	2 39.6	9 .2	69 1.3	129 2.5	
10	2 47.5	2 48.0	2 39.9	10 .2	70 1.3	130 2.5	
11	2 47.8	2 48.2	2 40.1	11 .2	71 1.4	131 2.5	
12	2 48.0	2 48.5	2 40.3	12 .2	72 1.4	132 2.5	
13	2 48.3	2 48.7	2 40.6	13 .2	73 1.4	133 2.5	
14	2 48.5	2 49.0	2 40.8	14 .3	74 1.4	134 2.6	
15	2 48.8	2 49.2	2 41.1	15 .3	75 1.4	135 2.6	
16	2 49.0	2 49.5	2 41.3	16 .3	76 1.5	136 2.6	
17	2 49.3	2 49.7	2 41.5	17 .3	77 1.5	137 2.6	
18	2 49.5	2 50.0	2 41.8	18 .3	78 1.5	138 2.6	
19	2 49.8	2 50.2	2 42.0	19 .4	79 1.5	139 2.7	
20	2 50.0	2 50.5	2 42.3	20 .4	80 1.5	140 2.7	
21	2 50.3	2 50.7	2 42.5	21 .4	81 1.6	141 2.7	
22	2 50.5	2 51.0	2 42.7	22 .4	82 1.6	142 2.7	
23	2 50.8	2 51.2	2 43.0	23 .4	83 1.6	143 2.7	
24	2 51.0	2 51.5	2 43.2	24 .5	84 1.6	144 2.8	
25	2 51.3	2 51.7	2 43.4	25 .5	85 1.6	145 2.8	
26	2 51.5	2 52.0	2 43.7	26 .5	86 1.6	146 2.8	
27	2 51.8	2 52.2	2 43.9	27 .5	87 1.7	147 2.8	
28	2 52.0	2 52.5	2 44.2	28 .5	88 1.7	148 2.8	
29	2 52.3	2 52.7	2 44.4	29 .6	89 1.7	149 2.9	
30	2 52.5	2 53.0	2 44.6	30 .6	90 1.7	150 2.9	
31	2 52.8	2 53.2	2 44.9	31 .6	91 1.7	151 2.9	
32	2 53.0	2 53.5	2 45.1	32 .6	92 1.8	152 2.9	
33	2 53.3	2 53.7	2 45.4	33 .6	93 1.8	153 2.9	
34	2 53.5	2 54.0	2 45.6	34 .7	94 1.8	154 3.0	
35	2 53.8	2 54.2	2 45.8	35 .7	95 1.8	155 3.0	
36	2 54.0	2 54.5	2 46.1	36 .7	96 1.8	156 3.0	
37	2 54.3	2 54.7	2 46.3	37 .7	97 1.9	157 3.0	
38	2 54.5	2 55.0	2 46.6	38 .7	98 1.9	158 3.0	
39	2 54.8	2 55.2	2 46.8	39 .7	99 1.9	159 3.0	
40	2 55.0	2 55.5	2 47.0	40 .8	100 1.9	160 3.1	
41	2 55.3	2 55.7	2 47.3	41 .8	101 1.9	161 3.1	
42	2 55.5	2 56.0	2 47.5	42 .8	102 2.0	162 3.1	
43	2 55.8	2 56.2	2 47.7	43 .8	103 2.0	163 3.1	
44	2 56.0	2 56.5	2 48.0	44 .8	104 2.0	164 3.1	
45	2 56.3	2 56.7	2 48.2	45 .9	105 2.0	165 3.2	
46	2 56.5	2 57.0	2 48.5	46 .9	106 2.0	166 3.2	
47	2 56.8	2 57.2	2 48.7	47 .9	107 2.1	167 3.2	
48	2 57.0	2 57.5	2 48.9	48 .9	108 2.1	168 3.2	
49	2 57.3	2 57.7	2 49.2	49 .9	109 2.1	169 3.2	
50	2 57.5	2 58.0	2 49.4	50 1.0	110 2.1	170 3.3	
51	2 57.8	2 58.2	2 49.7	51 1.0	111 2.1	171 3.3	
52	2 58.0	2 58.5	2 49.9	52 1.0	112 2.1	172 3.3	
53	2 58.3	2 58.7	2 50.1	53 1.0	113 2.2	173 3.3	
54	2 58.5	2 59.0	2 50.4	54 1.0	114 2.2	174 3.3	
55	2 58.8	2 59.2	2 50.6	55 1.1	115 2.2	175 3.4	
56	2 59.0	2 59.5	2 50.8	56 1.1	116 2.2	176 3.4	
57	2 59.3	2 59.7	2 51.1	57 1.1	117 2.2	177 3.4	
58	2 59.5	2 60.0	2 51.3	58 1.1	118 2.3	178 3.4	
59	2 59.8	3 .2	2 51.6	59 1.1	119 2.3	179 3.4	
60	3 .0	3 .5	2 51.8	60 1.2	120 2.3	180 3.5	

0 h 12 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	3	.0	3	.5	2	51.8	0	.0	60	1.3	120	2.5
1	3	.3	3	.8	2	52.0	1	.0	61	1.3	121	2.5
2	3	.5	3	1.0	2	52.3	2	.0	62	1.3	122	2.5
3	3	.8	3	1.3	2	52.5	3	.1	63	1.3	123	2.6
4	3	1.0	3	1.5	2	52.8	4	.1	64	1.3	124	2.6
5	3	1.3	3	1.8	2	53.0	5	.1	65	1.4	125	2.6
6	3	1.5	3	2.0	2	53.2	6	.1	66	1.4	126	2.6
7	3	1.8	3	2.3	2	53.5	7	.1	67	1.4	127	2.6
8	3	2.0	3	2.5	2	53.7	8	.2	68	1.4	128	2.7
9	3	2.3	3	2.8	2	53.9	9	.2	69	1.4	129	2.7
10	3	2.5	3	3.0	2	54.2	10	.2	70	1.5	130	2.7
11	3	2.8	3	3.3	2	54.4	11	.2	71	1.5	131	2.7
12	3	3.0	3	3.5	2	54.7	12	.3	72	1.5	132	2.8
13	3	3.3	3	3.8	2	54.9	13	.3	73	1.5	133	2.8
14	3	3.5	3	4.0	2	55.1	14	.3	74	1.5	134	2.8
15	3	3.8	3	4.3	2	55.4	15	.3	75	1.6	135	2.8
16	3	4.0	3	4.5	2	55.6	16	.3	76	1.6	136	2.8
17	3	4.3	3	4.8	2	55.9	17	.4	77	1.6	137	2.9
18	3	4.5	3	5.0	2	56.1	18	.4	78	1.6	138	2.9
19	3	4.8	3	5.3	2	56.3	19	.4	79	1.6	139	2.9
20	3	5.0	3	5.5	2	56.6	20	.4	80	1.7	140	2.9
21	3	5.3	3	5.8	2	56.8	21	.4	81	1.7	141	2.9
22	3	5.5	3	6.0	2	57.0	22	.5	82	1.7	142	3.0
23	3	5.8	3	6.3	2	57.3	23	.5	83	1.7	143	3.0
24	3	6.0	3	6.5	2	57.5	24	.5	84	1.8	144	3.0
25	3	6.3	3	6.8	2	57.8	25	.5	85	1.8	145	3.0
26	3	6.5	3	7.0	2	58.0	26	.5	86	1.8	146	3.0
27	3	6.8	3	7.3	2	58.2	27	.6	87	1.8	147	3.1
28	3	7.0	3	7.5	2	58.5	28	.6	88	1.8	148	3.1
29	3	7.3	3	7.8	2	58.7	29	.6	89	1.9	149	3.1
30	3	7.5	3	8.0	2	59.0	30	.6	90	1.9	150	3.1
31	3	7.8	3	8.3	2	59.2	31	.6	91	1.9	151	3.1
32	3	8.0	3	8.5	2	59.4	32	.7	92	1.9	152	3.2
33	3	8.3	3	8.8	2	59.7	33	.7	93	1.9	153	3.2
34	3	8.5	3	9.0	2	59.9	34	.7	94	2.0	154	3.2
35	3	8.8	3	9.3	3	.2	35	.7	95	2.0	155	3.2
36	3	9.0	3	9.5	3	.4	36	.8	96	2.0	156	3.3
37	3	9.3	3	9.8	3	.6	37	.8	97	2.0	157	3.3
38	3	9.5	3	10.0	3	.9	38	.8	98	2.0	158	3.3
39	3	9.8	3	10.3	3	1.1	39	.8	99	2.1	159	3.3
40	3	10.0	3	10.5	3	1.3	40	.8	100	2.1	160	3.3
41	3	10.3	3	10.8	3	1.6	41	.9	101	2.1	161	3.4
42	3	10.5	3	11.0	3	1.8	42	.9	102	2.1	162	3.4
43	3	10.8	3	11.3	3	2.1	43	.9	103	2.1	163	3.4
44	3	11.0	3	11.5	3	2.3	44	.9	104	2.2	164	3.4
45	3	11.3	3	11.8	3	2.5	45	.9	105	2.2	165	3.4
46	3	11.5	3	12.0	3	2.8	46	1.0	106	2.2	166	3.5
47	3	11.8	3	12.3	3	3.0	47	1.0	107	2.2	167	3.5
48	3	12.0	3	12.5	3	3.3	48	1.0	108	2.3	168	3.5
49	3	12.3	3	12.8	3	3.5	49	1.0	109	2.3	169	3.5
50	3	12.5	3	13.0	3	3.7	50	1.0	110	2.3	170	3.5
51	3	12.8	3	13.3	3	4.0	51	1.1	111	2.3	171	3.6
52	3	13.0	3	13.5	3	4.2	52	1.1	112	2.3	172	3.6
53	3	13.3	3	13.8	3	4.4	53	1.1	113	2.4	173	3.6
54	3	13.5	3	14.0	3	4.7	54	1.1	114	2.4	174	3.6
55	3	13.8	3	14.3	3	4.9	55	1.1	115	2.4	175	3.6
56	3	14.0	3	14.5	3	5.2	56	1.2	116	2.4	176	3.7
57	3	14.3	3	14.8	3	5.4	57	1.2	117	2.4	177	3.7
58	3	14.5	3	15.0	3	5.6	58	1.2	118	2.5	178	3.7
59	3	14.8	3	15.3	3	5.9	59	1.2	119	2.5	179	3.7
60	3	15.0	3	15.5	3	6.1	60	1.3	120	2.5	180	3.8

0 h 13 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ	popr.	Δ	popr.	Δ	popr.		
	o	'	o	'	o	'	o	'	o	'		
0	3	15.0	3	15.5	3	6.1	0	.0	60	1.4	120	2.7
1	3	15.3	3	15.8	3	6.4	1	.0	61	1.4	121	2.7
2	3	15.5	3	16.0	3	6.6	2	.0	62	1.4	122	2.7
3	3	15.8	3	16.3	3	6.8	3	.1	63	1.4	123	2.8
4	3	16.0	3	16.5	3	7.1	4	.1	64	1.4	124	2.8
5	3	16.3	3	16.8	3	7.3	5	.1	65	1.5	125	2.8
6	3	16.5	3	17.0	3	7.5	6	.1	66	1.5	126	2.8
7	3	16.8	3	17.3	3	7.8	7	.2	67	1.5	127	2.9
8	3	17.0	3	17.5	3	8.0	8	.2	68	1.5	128	2.9
9	3	17.3	3	17.8	3	8.3	9	.2	69	1.6	129	2.9
10	3	17.5	3	18.0	3	8.5	10	.2	70	1.6	130	2.9
11	3	17.8	3	18.3	3	8.7	11	.2	71	1.6	131	2.9
12	3	18.0	3	18.6	3	9.0	12	.3	72	1.6	132	3.0
13	3	18.3	3	18.8	3	9.2	13	.3	73	1.6	133	3.0
14	3	18.5	3	19.1	3	9.5	14	.3	74	1.7	134	3.0
15	3	18.8	3	19.3	3	9.7	15	.3	75	1.7	135	3.0
16	3	19.0	3	19.6	3	9.9	16	.4	76	1.7	136	3.1
17	3	19.3	3	19.8	3	10.2	17	.4	77	1.7	137	3.1
18	3	19.5	3	20.1	3	10.4	18	.4	78	1.8	138	3.1
19	3	19.8	3	20.3	3	10.7	19	.4	79	1.8	139	3.1
20	3	20.0	3	20.6	3	10.9	20	.5	80	1.8	140	3.2
21	3	20.3	3	20.8	3	11.1	21	.5	81	1.8	141	3.2
22	3	20.5	3	21.1	3	11.4	22	.5	82	1.8	142	3.2
23	3	20.8	3	21.3	3	11.6	23	.5	83	1.9	143	3.2
24	3	21.0	3	21.6	3	11.8	24	.5	84	1.9	144	3.2
25	3	21.3	3	21.8	3	12.1	25	.6	85	1.9	145	3.3
26	3	21.5	3	22.1	3	12.3	26	.6	86	1.9	146	3.3
27	3	21.8	3	22.3	3	12.6	27	.6	87	2.0	147	3.3
28	3	22.0	3	22.6	3	12.8	28	.6	88	2.0	148	3.3
29	3	22.3	3	22.8	3	13.0	29	.7	89	2.0	149	3.4
30	3	22.5	3	23.1	3	13.3	30	.7	90	2.0	150	3.4
31	3	22.8	3	23.3	3	13.5	31	.7	91	2.0	151	3.4
32	3	23.0	3	23.6	3	13.8	32	.7	92	2.1	152	3.4
33	3	23.3	3	23.8	3	14.0	33	.7	93	2.1	153	3.4
34	3	23.5	3	24.1	3	14.2	34	.8	94	2.1	154	3.5
35	3	23.8	3	24.3	3	14.5	35	.8	95	2.1	155	3.5
36	3	24.0	3	24.6	3	14.7	36	.8	96	2.2	156	3.5
37	3	24.3	3	24.8	3	14.9	37	.8	97	2.2	157	3.5
38	3	24.5	3	25.1	3	15.2	38	.9	98	2.2	158	3.6
39	3	24.8	3	25.3	3	15.4	39	.9	99	2.2	159	3.6
40	3	25.0	3	25.6	3	15.7	40	.9	100	2.3	160	3.6
41	3	25.3	3	25.8	3	15.9	41	.9	101	2.3	161	3.6
42	3	25.5	3	26.1	3	16.1	42	.9	102	2.3	162	3.6
43	3	25.8	3	26.3	3	16.4	43	1.0	103	2.3	163	3.7
44	3	26.0	3	26.6	3	16.6	44	1.0	104	2.3	164	3.7
45	3	26.3	3	26.8	3	16.9	45	1.0	105	2.4	165	3.7
46	3	26.5	3	27.1	3	17.1	46	1.0	106	2.4	166	3.7
47	3	26.8	3	27.3	3	17.3	47	1.1	107	2.4	167	3.8
48	3	27.0	3	27.6	3	17.6	48	1.1	108	2.4	168	3.8
49	3	27.3	3	27.8	3	17.8	49	1.1	109	2.5	169	3.8
50	3	27.5	3	28.1	3	18.0	50	1.1	110	2.5	170	3.8
51	3	27.8	3	28.3	3	18.3	51	1.1	111	2.5	171	3.8
52	3	28.0	3	28.6	3	18.5	52	1.2	112	2.5	172	3.9
53	3	28.3	3	28.8	3	18.8	53	1.2	113	2.5	173	3.9
54	3	28.5	3	29.1	3	19.0	54	1.2	114	2.6	174	3.9
55	3	28.8	3	29.3	3	19.2	55	1.2	115	2.6	175	3.9

0 h 14 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	3 30.0	3 30.6	3 20.4	0 .0	60 1.5	120 2.9	
1	3 30.3	3 30.8	3 20.7	1 .0	61 1.5	121 2.9	
2	3 30.5	3 31.1	3 20.9	2 .0	62 1.5	122 2.9	
3	3 30.8	3 31.3	3 21.1	3 .1	63 1.5	123 3.0	
4	3 31.0	3 31.6	3 21.4	4 .1	64 1.5	124 3.0	
5	3 31.3	3 31.8	3 21.6	5 .1	65 1.6	125 3.0	
6	3 31.5	3 32.1	3 21.9	6 .1	66 1.6	126 3.0	
7	3 31.8	3 32.3	3 22.1	7 .2	67 1.6	127 3.1	
8	3 32.0	3 32.6	3 22.3	8 .2	68 1.6	128 3.1	
9	3 32.3	3 32.8	3 22.6	9 .2	69 1.7	129 3.1	
10	3 32.5	3 33.1	3 22.8	10 .2	70 1.7	130 3.1	
11	3 32.8	3 33.3	3 23.1	11 .3	71 1.7	131 3.2	
12	3 33.0	3 33.6	3 23.3	12 .3	72 1.7	132 3.2	
13	3 33.3	3 33.8	3 23.5	13 .3	73 1.8	133 3.2	
14	3 33.5	3 34.1	3 23.8	14 .3	74 1.8	134 3.2	
15	3 33.8	3 34.3	3 24.0	15 .4	75 1.8	135 3.3	
16	3 34.0	3 34.6	3 24.3	16 .4	76 1.8	136 3.3	
17	3 34.3	3 34.8	3 24.5	17 .4	77 1.9	137 3.3	
18	3 34.5	3 35.1	3 24.7	18 .4	78 1.9	138 3.3	
19	3 34.8	3 35.3	3 25.0	19 .5	79 1.9	139 3.4	
20	3 35.0	3 35.6	3 25.2	20 .5	80 1.9	140 3.4	
21	3 35.3	3 35.8	3 25.4	21 .5	81 2.0	141 3.4	
22	3 35.5	3 36.1	3 25.7	22 .5	82 2.0	142 3.4	
23	3 35.8	3 36.3	3 25.9	23 .6	83 2.0	143 3.5	
24	3 36.0	3 36.6	3 26.2	24 .6	84 2.0	144 3.5	
25	3 36.3	3 36.9	3 26.4	25 .6	85 2.1	145 3.5	
26	3 36.5	3 37.1	3 26.6	26 .6	86 2.1	146 3.5	
27	3 36.8	3 37.4	3 26.9	27 .7	87 2.1	147 3.6	
28	3 37.0	3 37.6	3 27.1	28 .7	88 2.1	148 3.6	
29	3 37.3	3 37.9	3 27.4	29 .7	89 2.2	149 3.6	
30	3 37.5	3 38.1	3 27.6	30 .7	90 2.2	150 3.6	
31	3 37.8	3 38.4	3 27.8	31 .7	91 2.2	151 3.6	
32	3 38.0	3 38.6	3 28.1	32 .8	92 2.2	152 3.7	
33	3 38.3	3 38.9	3 28.3	33 .8	93 2.2	153 3.7	
34	3 38.5	3 39.1	3 28.5	34 .8	94 2.3	154 3.7	
35	3 38.8	3 39.4	3 28.8	35 .8	95 2.3	155 3.7	
36	3 39.0	3 39.6	3 29.0	36 .9	96 2.3	156 3.8	
37	3 39.3	3 39.9	3 29.3	37 .9	97 2.3	157 3.8	
38	3 39.5	3 40.1	3 29.5	38 .9	98 2.4	158 3.8	
39	3 39.8	3 40.4	3 29.7	39 .9	99 2.4	159 3.8	
40	3 40.0	3 40.6	3 30.0	40 1.0	100 2.4	160 3.9	
41	3 40.3	3 40.9	3 30.2	41 1.0	101 2.4	161 3.9	
42	3 40.5	3 41.1	3 30.5	42 1.0	102 2.5	162 3.9	
43	3 40.8	3 41.4	3 30.7	43 1.0	103 2.5	163 3.9	
44	3 41.0	3 41.6	3 30.9	44 1.1	104 2.5	164 4.0	
45	3 41.3	3 41.9	3 31.2	45 1.1	105 2.5	165 4.0	
46	3 41.5	3 42.1	3 31.4	46 1.1	106 2.6	166 4.0	
47	3 41.8	3 42.4	3 31.6	47 1.1	107 2.6	167 4.0	
48	3 42.0	3 42.6	3 31.9	48 1.2	108 2.6	168 4.1	
49	3 42.3	3 42.9	3 32.1	49 1.2	109 2.6	169 4.1	
50	3 42.5	3 43.1	3 32.4	50 1.2	110 2.7	170 4.1	
51	3 42.8	3 43.4	3 32.6	51 1.2	111 2.7	171 4.1	
52	3 43.0	3 43.6	3 32.8	52 1.3	112 2.7	172 4.2	
53	3 43.3	3 43.9	3 33.1	53 1.3	113 2.7	173 4.2	
54	3 43.5	3 44.1	3 33.3	54 1.3	114 2.8	174 4.2	
55	3 43.8	3 44.4	3 33.6	55 1.3	115 2.8	175 4.2	
56	3 44.0	3 44.6	3 33.8	56 1.4	116 2.8	176 4.3	
57	3 44.3	3 44.9	3 34.0	57 1.4	117 2.8	177 4.3	
58	3 44.5	3 45.1	3 34.3	58 1.4	118 2.9	178 4.3	
59	3 44.8	3 45.4	3 34.5	59 1.4	119 2.9	179 4.3	
60	3 45.0	3 45.6	3 34.8	60 1.5	120 2.9	180 4.4	

0 h 15 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	3 45.0	3 45.6	3 34.8	0 .0	60 1.6	120 3.1	
1	3 45.3	3 45.9	3 35.0	1 .0	61 1.6	121 3.1	
2	3 45.5	3 46.1	3 35.2	2 .1	62 1.6	122 3.2	
3	3 45.8	3 46.4	3 35.5	3 .1	63 1.6	123 3.2	
4	3 46.0	3 46.6	3 35.7	4 .1	64 1.7	124 3.2	
5	3 46.3	3 46.9	3 35.9	5 .1	65 1.7	125 3.2	
6	3 46.5	3 47.1	3 36.2	6 .2	66 1.7	126 3.3	
7	3 46.8	3 47.4	3 36.4	7 .2	67 1.7	127 3.3	
8	3 47.0	3 47.6	3 36.7	8 .2	68 1.8	128 3.3	
9	3 47.3	3 47.9	3 36.9	9 .2	69 1.8	129 3.3	
10	3 47.5	3 48.1	3 37.1	10 .3	70 1.8	130 3.4	
11	3 47.8	3 48.4	3 37.4	11 .3	71 1.8	131 3.4	
12	3 48.0	3 48.6	3 37.6	12 .3	72 1.9	132 3.4	
13	3 48.3	3 48.9	3 37.9	13 .3	73 1.9	133 3.4	
14	3 48.5	3 49.1	3 38.1	14 .4	74 1.9	134 3.5	
15	3 48.8	3 49.4	3 38.3	15 .4	75 1.9	135 3.5	
16	3 49.0	3 49.6	3 38.6	16 .4	76 2.0	136 3.5	
17	3 49.3	3 49.9	3 38.8	17 .4	77 2.0	137 3.5	
18	3 49.5	3 50.1	3 39.0	18 .5	78 2.0	138 3.6	
19	3 49.8	3 50.4	3 39.3	19 .5	79 2.0	139 3.6	
20	3 50.0	3 50.6	3 39.5	20 .5	80 2.1	140 3.6	
21	3 50.3	3 50.9	3 39.8	21 .5	81 2.1	141 3.6	
22	3 50.5	3 51.1	3 40.0	22 .6	82 2.1	142 3.7	
23	3 50.8	3 51.4	3 40.2	23 .6	83 2.1	143 3.7	
24	3 51.0	3 51.6	3 40.5	24 .6	84 2.2	144 3.7	
25	3 51.3	3 51.9	3 40.7	25 .6	85 2.2	145 3.7	
26	3 51.5	3 52.1	3 41.0	26 .7	86 2.2	146 3.8	
27	3 51.8	3 52.4	3 41.2	27 .7	87 2.2	147 3.8	
28	3 52.0	3 52.6	3 41.4	28 .7	88 2.3	148 3.8	
29	3 52.3	3 52.9	3 41.7	29 .7	89 2.3	149 3.8	
30	3 52.5	3 53.1	3 41.9	30 .8	90 2.3	150 3.9	
31	3 52.8	3 53.4	3 42.1	31 .8	91 2.4	151 3.9	
32	3 53.0	3 53.6	3 42.4	32 .8	92 2.4	152 3.9	
33	3 53.3	3 53.9	3 42.6	33 .9	93 2.4	153 4.0	
34	3 53.5	3 54.1	3 42.9	34 .9	94 2.4	154 4.0	
35	3 53.8	3 54.4	3 43.1	35 .9	95 2.5	155 4.0	
36	3 54.0	3 54.7	3 43.3	36 .9	96 2.5	156 4.0	
37	3 54.3	3 54.9	3 43.6	37 1.0	97 2.5	157 4.1	
38	3 54.5	3 55.2	3 43.8	38 1.0	98 2.5	158 4.1	
39	3 54.8	3 55.4	3 44.1	39 1.0	99 2.6	159 4.1	
40	3 55.0	3 55.7	3 44.3	40 1.0	100 2.6	160 4.1	
41	3 55.3	3 55.9	3 44.5	41 1.1	101 2.6	161 4.2	
42	3 55.5	3 56.2	3 44.8	42 1.1	102 2.6	162 4.2	
43	3 55.8	3 56.4	3 45.0	43 1.1	103 2.7	163 4.2	
44	3 56.0	3 56.7	3 45.2	44 1.1	104 2.7	164 4.2	
45	3 56.3	3 56.9	3 45.5	45 1.2	105 2.7	165 4.3	
46	3 56.5	3 57.2	3 45.7	46 1.2	106 2.7	166 4.3	
47	3 56.8	3 57.4	3 46.0	47 1.2	107 2.8	167 4.3	
48	3 57.0	3 57.7	3 46.2	48 1.2	108 2.8	168 4.3	
49	3 57.3	3 57.9	3 46.4	49 1.3	109 2.8	169 4.4	
50	3 57.5	3 58.2	3 46.7	50 1.3	110 2.8	170 4.4	
51	3 57.8	3 58.4	3 46.9	51 1.3	111 2.9	171 4.4	
52	3 58.0	3 58.7	3 47.2	52 1.3	112 2.9	172 4.4	
53	3 58.3	3 58.9	3 47.4	53 1.4	113 2.9	173 4.5	
54	3 58.5	3 59.2	3 47.6	54 1.4	114 2.9	174 4.5	
55	3 58.8	3 59.4	3 47.9	55 1.4	115 3.0	175 4.5	
56	3 59.0	3 59.7	3 48.1	56 1.4	116 3.0	176 4.5	
57	3 59.3	3 59.9	3 48.4	57 1.5	117 3.0	177 4.6	
58	3 59.5	4 .2	3 48.6	58 1.5	118 3.0	178 4.6	
59	3 59.8	4 .4	3 48.8	59 1.5	119 3.1	179 4.6	
60	4 .0	4 .7	3 49.1	60 1.6	120 3.1	180 4.7	

0 h 16 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	4	.0	4	.7	3	49.1	0	.0	60	1.7	120	3.3
1	4	.3	4	.9	3	49.3	1	.0	61	1.7	121	3.3
2	4	.5	4	1.2	3	49.5	2	.1	62	1.7	122	3.4
3	4	.8	4	1.4	3	49.8	3	.1	63	1.7	123	3.4
4	4	1.0	4	1.7	3	50.0	4	.1	64	1.8	124	3.4
5	4	1.3	4	1.9	3	50.3	5	.1	65	1.8	125	3.4
6	4	1.5	4	2.2	3	50.5	6	.2	66	1.8	126	3.5
7	4	1.8	4	2.4	3	50.7	7	.2	67	1.8	127	3.5
8	4	2.0	4	2.7	3	51.0	8	.2	68	1.9	128	3.5
9	4	2.3	4	2.9	3	51.2	9	.2	69	1.9	129	3.5
10	4	2.5	4	3.2	3	51.5	10	.3	70	1.9	130	3.6
11	4	2.8	4	3.4	3	51.7	11	.3	71	2.0	131	3.6
12	4	3.0	4	3.7	3	51.9	12	.3	72	2.0	132	3.6
13	4	3.3	4	3.9	3	52.2	13	.4	73	2.0	133	3.7
14	4	3.5	4	4.2	3	52.4	14	.4	74	2.0	134	3.7
15	4	3.8	4	4.4	3	52.6	15	.4	75	2.1	135	3.7
16	4	4.0	4	4.7	3	52.9	16	.4	76	2.1	136	3.7
17	4	4.3	4	4.9	3	53.1	17	.5	77	2.1	137	3.8
18	4	4.5	4	5.2	3	53.4	18	.5	78	2.1	138	3.8
19	4	4.8	4	5.4	3	53.6	19	.5	79	2.2	139	3.8
20	4	5.0	4	5.7	3	53.8	20	.6	80	2.2	140	3.9
21	4	5.3	4	5.9	3	54.1	21	.6	81	2.2	141	3.9
22	4	5.5	4	6.2	3	54.3	22	.6	82	2.3	142	3.9
23	4	5.8	4	6.4	3	54.6	23	.6	83	2.3	143	3.9
24	4	6.0	4	6.7	3	54.8	24	.7	84	2.3	144	4.0
25	4	6.3	4	6.9	3	55.0	25	.7	85	2.3	145	4.0
26	4	6.5	4	7.2	3	55.3	26	.7	86	2.4	146	4.0
27	4	6.8	4	7.4	3	55.5	27	.7	87	2.4	147	4.0
28	4	7.0	4	7.7	3	55.7	28	.8	88	2.4	148	4.1
29	4	7.3	4	7.9	3	56.0	29	.8	89	2.4	149	4.1
30	4	7.5	4	8.2	3	56.2	30	.8	90	2.5	150	4.1
31	4	7.8	4	8.4	3	56.5	31	.9	91	2.5	151	4.2
32	4	8.0	4	8.7	3	56.7	32	.9	92	2.5	152	4.2
33	4	8.3	4	8.9	3	56.9	33	.9	93	2.6	153	4.2
34	4	8.5	4	9.2	3	57.2	34	.9	94	2.6	154	4.2
35	4	8.8	4	9.4	3	57.4	35	1.0	95	2.6	155	4.3
36	4	9.0	4	9.7	3	57.7	36	1.0	96	2.6	156	4.3
37	4	9.3	4	9.9	3	57.9	37	1.0	97	2.7	157	4.3
38	4	9.5	4	10.2	3	58.1	38	1.0	98	2.7	158	4.3
39	4	9.8	4	10.4	3	58.4	39	1.1	99	2.7	159	4.4
40	4	10.0	4	10.7	3	58.6	40	1.1	100	2.8	160	4.4
41	4	10.3	4	10.9	3	58.8	41	1.1	101	2.8	161	4.4
42	4	10.5	4	11.2	3	59.1	42	1.2	102	2.8	162	4.5
43	4	10.8	4	11.4	3	59.3	43	1.2	103	2.8	163	4.5
44	4	11.0	4	11.7	3	59.6	44	1.2	104	2.9	164	4.5
45	4	11.3	4	11.9	3	59.8	45	1.2	105	2.9	165	4.5
46	4	11.5	4	12.2	4	.0	46	1.3	106	2.9	166	4.6
47	4	11.8	4	12.4	4	.3	47	1.3	107	2.9	167	4.6
48	4	12.0	4	12.7	4	.5	48	1.3	108	3.0	168	4.6
49	4	12.3	4	13.0	4	.8	49	1.3	109	3.0	169	4.6
50	4	12.5	4	13.2	4	1.0	50	1.4	110	3.0	170	4.7
51	4	12.8	4	13.5	4	1.2	51	1.4	111	3.1	171	4.7
52	4	13.0	4	13.7	4	1.5	52	1.4	112	3.1	172	4.7
53	4	13.3	4	14.0	4	1.7	53	1.5	113	3.1	173	4.8
54	4	13.5	4	14.2	4	2.0	54	1.5	114	3.1	174	4.8
55	4	13.8	4	14.5	4	2.2	55	1.5	115	3.2	175	4.8
56	4	14.0	4	14.7	4	2.4	56	1.5	116	3.2	176	4.8
57	4	14.3	4	15.0	4	2.7	57	1.6	117	3.2	177	4.9
58	4	14.5	4	15.2	4	2.9	58	1.6	118	3.2	178	4.9
59	4	14.8	4	15.5	4	3.1	59	1.6	119	3.3	179	4.9
60	4	15.0	4	15.7	4	3.4	60	1.7	120	3.3	180	5.0

0 h 17 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.					
	o	'			'	'	'	'				
0	4	15.0	4	15.7	4	3.4	0	.0	60	1.8	120	3.5
1	4	15.3	4	16.0	4	3.6	1	.0	61	1.8	121	3.5
2	4	15.5	4	16.2	4	3.9	2	.1	62	1.8	122	3.6
3	4	15.8	4	16.5	4	4.1	3	.1	63	1.8	123	3.6
4	4	16.0	4	16.7	4	4.3	4	.1	64	1.9	124	3.6
5	4	16.3	4	17.0	4	4.6	5	.1	65	1.9	125	3.6
6	4	16.5	4	17.2	4	4.8	6	.2	66	1.9	126	3.7
7	4	16.8	4	17.5	4	5.1	7	.2	67	2.0	127	3.7
8	4	17.0	4	17.7	4	5.3	8	.2	68	2.0	128	3.7
9	4	17.3	4	18.0	4	5.5	9	.3	69	2.0	129	3.8
10	4	17.5	4	18.2	4	5.8	10	.3	70	2.0	130	3.8
11	4	17.8	4	18.5	4	6.0	11	.3	71	2.1	131	3.8
12	4	18.0	4	18.7	4	6.2	12	.4	72	2.1	132	3.9
13	4	18.3	4	19.0	4	6.5	13	.4	73	2.1	133	3.9
14	4	18.5	4	19.2	4	6.7	14	.4	74	2.2	134	3.9
15	4	18.8	4	19.5	4	7.0	15	.4	75	2.2	135	3.9
16	4	19.0	4	19.7	4	7.2	16	.5	76	2.2	136	4.0
17	4	19.3	4	20.0	4	7.4	17	.5	77	2.2	137	4.0
18	4	19.5	4	20.2	4	7.7	18	.5	78	2.3	138	4.0
19	4	19.8	4	20.5	4	7.9	19	.6	79	2.3	139	4.1
20	4	20.0	4	20.7	4	8.2	20	.6	80	2.3	140	4.1
21	4	20.3	4	21.0	4	8.4	21	.6	81	2.4	141	4.1
22	4	20.5	4	21.2	4	8.6	22	.6	82	2.4	142	4.1
23	4	20.8	4	21.5	4	8.9	23	.7	83	2.4	143	4.2
24	4	21.0	4	21.7	4	9.1	24	.7	84	2.5	144	4.2
25	4	21.3	4	22.0	4	9.3	25	.7	85	2.5	145	4.2
26	4	21.5	4	22.2	4	9.6	26	.8	86	2.5	146	4.3
27	4	21.8	4	22.5	4	9.8	27	.8	87	2.5	147	4.3
28	4	22.0	4	22.7	4	10.1	28	.8	88	2.6	148	4.3
29	4	22.3	4	23.0	4	10.3	29	.8	89	2.6	149	4.3
30	4	22.5	4	23.2	4	10.5	30	.9	90	2.6	150	4.4
31	4	22.8	4	23.5	4	10.8	31	.9	91	2.7	151	4.4
32	4	23.0	4	23.7	4	11.0	32	.9	92	2.7	152	4.4
33	4	23.3	4	24.0	4	11.3	33	1.0	93	2.7	153	4.5
34	4	23.5	4	24.2	4	11.5	34	1.0	94	2.7	154	4.5
35	4	23.8	4	24.5	4	11.7	35	1.0	95	2.8	155	4.5
36	4	24.0	4	24.7	4	12.0	36	1.1	96	2.8	156	4.6
37	4	24.3	4	25.0	4	12.2	37	1.1	97	2.8	157	4.6
38	4	24.5	4	25.2	4	12.5	38	1.1	98	2.9	158	4.6
39	4	24.8	4	25.5	4	12.7	39	1.1	99	2.9	159	4.6
40	4	25.0	4	25.7	4	12.9	40	1.2	100	2.9	160	4.7
41	4	25.3	4	26.0	4	13.2	41	1.2	101	2.9	161	4.7
42	4	25.5	4	26.2	4	13.4	42	1.2	102	3.0	162	4.7
43	4	25.8	4	26.5	4	13.6	43	1.3	103	3.0	163	4.8
44	4	26.0	4	26.7	4	13.9	44	1.3	104	3.0	164	4.8
45	4	26.3	4	27.0	4	14.1	45	1.3	105	3.1	165	4.8
46	4	26.5	4	27.2	4	14.4	46	1.3	106	3.1	166	4.8
47	4	26.8	4	27.5	4	14.6	47	1.4	107	3.1	167	4.9
48	4	27.0	4	27.7	4	14.8	48	1.4	108	3.2	168	4.9
49	4	27.3	4	28.0	4	15.1	49	1.4	109	3.2	169	4.9
50	4	27.5	4	28.2	4	15.3	50	1.5	110	3.2	170	5.0
51	4	27.8	4	28.5	4	15.6	51	1.5	111	3.2	171	5.0
52	4	28.0	4	28.7	4	15.8	52	1.5	112	3.3	172	5.0
53	4	28.3	4	29.0	4	16.0	53	1.5	113	3.3	173	5.0
54	4	28.5	4	29.2	4	16.3	54	1.6	114	3.3	174	5.1
55	4	28.8	4	29.5	4	16.5	55	1.6	115	3.4	175	5.1
56	4	29.0	4	29.7								

0 h 18 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	4 30.0	4 30.8	4 17.7	0 .0	60 1.9	120 3.7	
1	4 30.3	4 31.0	4 17.9	1 .0	61 1.9	121 3.7	
2	4 30.5	4 31.3	4 18.2	2 .1	62 1.9	122 3.8	
3	4 30.8	4 31.5	4 18.4	3 .1	63 1.9	123 3.8	
4	4 31.0	4 31.8	4 18.7	4 .1	64 2.0	124 3.8	
5	4 31.3	4 32.0	4 18.9	5 .2	65 2.0	125 3.9	
6	4 31.5	4 32.3	4 19.1	6 .2	66 2.0	126 3.9	
7	4 31.8	4 32.5	4 19.4	7 .2	67 2.1	127 3.9	
8	4 32.0	4 32.8	4 19.6	8 .2	68 2.1	128 3.9	
9	4 32.3	4 33.0	4 19.8	9 .3	69 2.1	129 4.0	
10	4 32.5	4 33.3	4 20.1	10 .3	70 2.2	130 4.0	
11	4 32.8	4 33.5	4 20.3	11 .3	71 2.2	131 4.0	
12	4 33.0	4 33.8	4 20.6	12 .4	72 2.2	132 4.1	
13	4 33.3	4 34.0	4 20.8	13 .4	73 2.3	133 4.1	
14	4 33.5	4 34.3	4 21.0	14 .4	74 2.3	134 4.1	
15	4 33.8	4 34.5	4 21.3	15 .5	75 2.3	135 4.2	
16	4 34.0	4 34.8	4 21.5	16 .5	76 2.3	136 4.2	
17	4 34.3	4 35.0	4 21.8	17 .5	77 2.4	137 4.2	
18	4 34.5	4 35.3	4 22.0	18 .6	78 2.4	138 4.3	
19	4 34.8	4 35.5	4 22.2	19 .6	79 2.4	139 4.3	
20	4 35.0	4 35.8	4 22.5	20 .6	80 2.5	140 4.3	
21	4 35.3	4 36.0	4 22.7	21 .6	81 2.5	141 4.3	
22	4 35.5	4 36.3	4 22.9	22 .7	82 2.5	142 4.4	
23	4 35.8	4 36.5	4 23.2	23 .7	83 2.6	143 4.4	
24	4 36.0	4 36.8	4 23.4	24 .7	84 2.6	144 4.4	
25	4 36.3	4 37.0	4 23.7	25 .8	85 2.6	145 4.5	
26	4 36.5	4 37.3	4 23.9	26 .8	86 2.7	146 4.5	
27	4 36.8	4 37.5	4 24.1	27 .8	87 2.7	147 4.5	
28	4 37.0	4 37.8	4 24.4	28 .9	88 2.7	148 4.6	
29	4 37.3	4 38.0	4 24.6	29 .9	89 2.7	149 4.6	
30	4 37.5	4 38.3	4 24.9	30 .9	90 2.8	150 4.6	
31	4 37.8	4 38.5	4 25.1	31 1.0	91 2.8	151 4.7	
32	4 38.0	4 38.8	4 25.3	32 1.0	92 2.8	152 4.7	
33	4 38.3	4 39.0	4 25.6	33 1.0	93 2.9	153 4.7	
34	4 38.5	4 39.3	4 25.8	34 1.0	94 2.9	154 4.7	
35	4 38.8	4 39.5	4 26.1	35 1.1	95 2.9	155 4.8	
36	4 39.0	4 39.8	4 26.3	36 1.1	96 3.0	156 4.8	
37	4 39.3	4 40.0	4 26.5	37 1.1	97 3.0	157 4.8	
38	4 39.5	4 40.3	4 26.8	38 1.2	98 3.0	158 4.9	
39	4 39.8	4 40.5	4 27.0	39 1.2	99 3.1	159 4.9	
40	4 40.0	4 40.8	4 27.2	40 1.2	100 3.1	160 4.9	
41	4 40.3	4 41.0	4 27.5	41 1.3	101 3.1	161 5.0	
42	4 40.5	4 41.3	4 27.7	42 1.3	102 3.1	162 5.0	
43	4 40.8	4 41.5	4 28.0	43 1.3	103 3.2	163 5.0	
44	4 41.0	4 41.8	4 28.2	44 1.4	104 3.2	164 5.1	
45	4 41.3	4 42.0	4 28.4	45 1.4	105 3.2	165 5.1	
46	4 41.5	4 42.3	4 28.7	46 1.4	106 3.3	166 5.1	
47	4 41.8	4 42.5	4 28.9	47 1.4	107 3.3	167 5.1	
48	4 42.0	4 42.8	4 29.2	48 1.5	108 3.3	168 5.2	
49	4 42.3	4 43.0	4 29.4	49 1.5	109 3.4	169 5.2	
50	4 42.5	4 43.3	4 29.6	50 1.5	110 3.4	170 5.2	
51	4 42.8	4 43.5	4 29.9	51 1.6	111 3.4	171 5.3	
52	4 43.0	4 43.8	4 30.1	52 1.6	112 3.5	172 5.3	
53	4 43.3	4 44.0	4 30.3	53 1.6	113 3.5	173 5.3	
54	4 43.5	4 44.3	4 30.6	54 1.7	114 3.5	174 5.4	
55	4 43.8	4 44.5	4 30.8	55 1.7	115 3.5	175 5.4	
56	4 44.0	4 44.8	4 31.1	56 1.7	116 3.6	176 5.4	
57	4 44.3	4 45.0	4 31.3	57 1.8	117 3.6	177 5.5	
58	4 44.5	4 45.3	4 31.5	58 1.8	118 3.6	178 5.5	
59	4 44.8	4 45.5	4 31.8	59 1.8	119 3.7	179 5.5	
60	4 45.0	4 45.8	4 32.0	60 1.9	120 3.7	180 5.6	

0 h 19 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	4 45.0	4 45.8	4 32.0	0 .0	60 2.0	120 3.9	
1	4 45.3	4 46.0	4 32.3	1 .0	61 2.0	121 3.9	
2	4 45.5	4 46.3	4 32.5	2 .1	62 2.0	122 4.0	
3	4 45.8	4 46.5	4 32.7	3 .1	63 2.0	123 4.0	
4	4 46.0	4 46.8	4 33.0	4 .1	64 2.1	124 4.0	
5	4 46.3	4 47.0	4 33.2	5 .2	65 2.1	125 4.1	
6	4 46.5	4 47.3	4 33.4	6 .2	66 2.1	126 4.1	
7	4 46.8	4 47.5	4 33.7	7 .2	67 2.2	127 4.1	
8	4 47.0	4 47.8	4 33.9	8 .3	68 2.2	128 4.2	
9	4 47.3	4 48.0	4 34.2	9 .3	69 2.2	129 4.2	
10	4 47.5	4 48.3	4 34.4	10 .3	70 2.3	130 4.2	
11	4 47.8	4 48.5	4 34.6	11 .4	71 2.3	131 4.3	
12	4 48.0	4 48.8	4 34.9	12 .4	72 2.3	132 4.3	
13	4 48.3	4 49.1	4 35.1	13 .4	73 2.4	133 4.3	
14	4 48.5	4 49.3	4 35.4	14 .5	74 2.4	134 4.4	
15	4 48.8	4 49.6	4 35.6	15 .5	75 2.4	135 4.4	
16	4 49.0	4 49.8	4 35.8	16 .5	76 2.5	136 4.4	
17	4 49.3	4 50.1	4 36.1	17 .6	77 2.5	137 4.5	
18	4 49.5	4 50.3	4 36.3	18 .6	78 2.5	138 4.5	
19	4 49.8	4 50.6	4 36.6	19 .6	79 2.6	139 4.5	
20	4 50.0	4 50.8	4 36.8	20 .7	80 2.6	140 4.6	
21	4 50.3	4 51.1	4 37.0	21 .7	81 2.6	141 4.6	
22	4 50.5	4 51.3	4 37.3	22 .7	82 2.7	142 4.6	
23	4 50.8	4 51.6	4 37.5	23 .7	83 2.7	143 4.6	
24	4 51.0	4 51.8	4 37.7	24 .8	84 2.7	144 4.7	
25	4 51.3	4 52.1	4 38.0	25 .8	85 2.8	145 4.7	
26	4 51.5	4 52.3	4 38.2	26 .8	86 2.8	146 4.7	
27	4 51.8	4 52.6	4 38.5	27 .9	87 2.8	147 4.8	
28	4 52.0	4 52.8	4 38.7	28 .9	88 2.9	148 4.8	
29	4 52.3	4 53.1	4 38.9	29 .9	89 2.9	149 4.8	
30	4 52.5	4 53.3	4 39.2	30 1.0	90 2.9	150 4.9	
31	4 52.8	4 53.6	4 39.4	31 1.0	91 3.0	151 4.9	
32	4 53.0	4 53.8	4 39.7	32 1.0	92 3.0	152 4.9	
33	4 53.3	4 54.1	4 39.9	33 1.1	93 3.0	153 5.0	
34	4 53.5	4 54.3	4 40.1	34 1.1	94 3.1	154 5.0	
35	4 53.8	4 54.6	4 40.4	35 1.1	95 3.1	155 5.0	
36	4 54.0	4 54.8	4 40.6	36 1.2	96 3.1	156 5.1	
37	4 54.3	4 55.1	4 40.8	37 1.2	97 3.2	157 5.1	
38	4 54.5	4 55.3	4 41.1	38 1.2	98 3.2	158 5.1	
39	4 54.8	4 55.6	4 41.3	39 1.3	99 3.2	159 5.2	
40	4 55.0	4 55.8	4 41.6	40 1.3	100 3.3	160 5.2	
41	4 55.3	4 56.1	4 41.8	41 1.3	101 3.3	161 5.2	
42	4 55.5	4 56.3	4 42.0	42 1.4	102 3.3	162 5.3	
43	4 55.8	4 56.6	4 42.3	43 1.4	103 3.3	163 5.3	
44	4 56.0	4 56.8	4 42.5	44 1.4	104 3.4	164 5.3	
45	4 56.3	4 57.1	4 42.8	45 1.5	105 3.4	165 5.4	
46	4 56.5	4 57.3	4 43.0	46 1.5	106 3.4	166 5.4	
47	4 56.8	4 57.6	4 43.2	47 1.5	107 3.5	167 5.4	
48	4 57.0	4 57.8	4 43.5	48 1.6	108 3.5	168 5.5	
49	4 57.3	4 58.1	4 43.7	49 1.6	109 3.5	169 5.5	
50	4 57.5	4 58.3	4 43.9	50 1.6	110 3.6	170 5.5	
51	4 57.8	4 58.6	4 44.2	51 1.7	111 3.6	171 5.6	
52	4 58.0	4 58.8	4 44.4	52 1.7	112 3.6	172 5.6	
53	4 58.3	4 59.1	4 44.7	53 1.7	113 3.7	173 5.6	
54	4 58.5	4 59.3	4 44.9	54 1.8	114 3.7	174 5.7	
55	4 58.8	4 59.6	4 45.1	55 1.8	115 3.7	175 5.7	
56	4 59.0	4 59.8	4 45.4	56 1.8	116 3.8	176 5.7	
57	4 59.3	5 .1	4 45.6	57 1.9	117 3.8	177 5.8	
58	4 59.5	5 .3	4 45.9	58 1.9	118 3.8	178 5.8	
59	4 59.8	5 .6	4 46.1	59 1.9	119 3.9	179 5.8	
60	5 .0	5 .8	4 46.3	60 2.0	120 3.9	180 5.9	

0 h 20 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	5	.0	5	.8	4 46.3	0	.0	60 2.1	120 4.1
1	5	.3	5	1.1	4 46.6	1	.0	61 2.1	121 4.1
2	5	.5	5	1.3	4 46.8	2	.1	62 2.1	122 4.2
3	5	.8	5	1.6	4 47.0	3	.1	63 2.2	123 4.2
4	5	1.0	5	1.8	4 47.3	4	.1	64 2.2	124 4.2
5	5	1.3	5	2.1	4 47.5	5	.2	65 2.2	125 4.3
6	5	1.5	5	2.3	4 47.8	6	.2	66 2.3	126 4.3
7	5	1.8	5	2.6	4 48.0	7	.2	67 2.3	127 4.3
8	5	2.0	5	2.8	4 48.2	8	.3	68 2.3	128 4.4
9	5	2.3	5	3.1	4 48.5	9	.3	69 2.4	129 4.4
10	5	2.5	5	3.3	4 48.7	10	.3	70 2.4	130 4.4
11	5	2.8	5	3.6	4 49.0	11	.4	71 2.4	131 4.5
12	5	3.0	5	3.8	4 49.2	12	.4	72 2.5	132 4.5
13	5	3.3	5	4.1	4 49.4	13	.4	73 2.5	133 4.5
14	5	3.5	5	4.3	4 49.7	14	.5	74 2.5	134 4.6
15	5	3.8	5	4.6	4 49.9	15	.5	75 2.6	135 4.6
16	5	4.0	5	4.8	4 50.2	16	.5	76 2.6	136 4.6
17	5	4.3	5	5.1	4 50.4	17	.6	77 2.6	137 4.7
18	5	4.5	5	5.3	4 50.6	18	.6	78 2.7	138 4.7
19	5	4.8	5	5.6	4 50.9	19	.6	79 2.7	139 4.7
20	5	5.0	5	5.8	4 51.1	20	.7	80 2.7	140 4.8
21	5	5.3	5	6.1	4 51.3	21	.7	81 2.8	141 4.8
22	5	5.5	5	6.3	4 51.6	22	.8	82 2.8	142 4.9
23	5	5.8	5	6.6	4 51.8	23	.8	83 2.8	143 4.9
24	5	6.0	5	6.9	4 52.1	24	.8	84 2.9	144 4.9
25	5	6.3	5	7.1	4 52.3	25	.9	85 2.9	145 5.0
26	5	6.5	5	7.4	4 52.5	26	.9	86 2.9	146 5.0
27	5	6.8	5	7.6	4 52.8	27	.9	87 3.0	147 5.0
28	5	7.0	5	7.9	4 53.0	28	1.0	88 3.0	148 5.1
29	5	7.3	5	8.1	4 53.3	29	1.0	89 3.0	149 5.1
30	5	7.5	5	8.4	4 53.5	30	1.0	90 3.1	150 5.1
31	5	7.8	5	8.6	4 53.7	31	1.1	91 3.1	151 5.2
32	5	8.0	5	8.9	4 54.0	32	1.1	92 3.1	152 5.2
33	5	8.3	5	9.1	4 54.2	33	1.1	93 3.2	153 5.2
34	5	8.5	5	9.4	4 54.4	34	1.2	94 3.2	154 5.3
35	5	8.8	5	9.6	4 54.7	35	1.2	95 3.2	155 5.3
36	5	9.0	5	9.9	4 54.9	36	1.2	96 3.3	156 5.3
37	5	9.3	5	10.1	4 55.2	37	1.3	97 3.3	157 5.4
38	5	9.5	5	10.4	4 55.4	38	1.3	98 3.3	158 5.4
39	5	9.8	5	10.6	4 55.6	39	1.3	99 3.4	159 5.4
40	5	10.0	5	10.9	4 55.9	40	1.4	100 3.4	160 5.5
41	5	10.3	5	11.1	4 56.1	41	1.4	101 3.5	161 5.5
42	5	10.5	5	11.4	4 56.4	42	1.4	102 3.5	162 5.5
43	5	10.8	5	11.6	4 56.6	43	1.5	103 3.5	163 5.6
44	5	11.0	5	11.9	4 56.8	44	1.5	104 3.6	164 5.6
45	5	11.3	5	12.1	4 57.1	45	1.5	105 3.6	165 5.6
46	5	11.5	5	12.4	4 57.3	46	1.6	106 3.6	166 5.7
47	5	11.8	5	12.6	4 57.5	47	1.6	107 3.7	167 5.7
48	5	12.0	5	12.9	4 57.8	48	1.6	108 3.7	168 5.7
49	5	12.3	5	13.1	4 58.0	49	1.7	109 3.7	169 5.8
50	5	12.5	5	13.4	4 58.3	50	1.7	110 3.8	170 5.8
51	5	12.8	5	13.6	4 58.5	51	1.7	111 3.8	171 5.8
52	5	13.0	5	13.9	4 58.7	52	1.8	112 3.8	172 5.9
53	5	13.3	5	14.1	4 59.0	53	1.8	113 3.9	173 5.9
54	5	13.5	5	14.4	4 59.2	54	1.8	114 3.9	174 5.9
55	5	13.8	5	14.6	4 59.5	55	1.9	115 3.9	175 6.0
56	5	14.0	5	14.9	4 59.7	56	1.9	116 4.0	176 6.0
57	5	14.3	5	15.1	4 59.9	57	1.9	117 4.0	177 6.0
58	5	14.5	5	15.4	5	.2	58 2.0	118 4.0	178 6.1
59	5	14.8	5	15.6	5	.4	59 2.0	119 4.1	179 6.1
60	5	15.0	5	15.9	5	.7	60 2.1	120 4.1	180 6.2

0 h 21 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta						
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	'	'	'			
0	5	15.0	5	15.9	5	.7	0	.0	60 2.2	120 4.3
1	5	15.3	5	16.1	5	.9	1	.0	61 2.2	121 4.3
2	5	15.5	5	16.4	5	1.1	2	.1	62 2.2	122 4.4
3	5	15.8	5	16.6	5	1.4	3	.1	63 2.3	123 4.4
4	5	16.0	5	16.9	5	1.6	4	.1	64 2.3	124 4.4
5	5	16.3	5	17.1	5	1.8	5	.2	65 2.3	125 4.5
6	5	16.5	5	17.4	5	2.1	6	.2	66 2.4	126 4.5
7	5	16.8	5	17.6	5	2.3	7	.3	67 2.4	127 4.6
8	5	17.0	5	17.9	5	2.6	8	.3	68 2.4	128 4.6
9	5	17.3	5	18.1	5	2.8	9	.3	69 2.5	129 4.6
10	5	17.5	5	18.4	5	3.0	10	.4	70 2.5	130 4.7
11	5	17.8	5	18.6	5	3.3	11	.4	71 2.5	131 4.7
12	5	18.0	5	18.9	5	3.5	12	.4	72 2.6	132 4.7
13	5	18.3	5	19.1	5	3.8	13	.5	73 2.6	133 4.8
14	5	18.5	5	19.4	5	4.0	14	.5	74 2.7	134 4.8
15	5	18.8	5	19.6	5	4.2	15	.5	75 2.7	135 4.8
16	5	19.0	5	19.9	5	4.5	16	.6	76 2.7	136 4.9
17	5	19.3	5	20.1	5	4.7	17	.6	77 2.8	137 4.9
18	5	19.5	5	20.4	5	4.9	18	.6	78 2.8	138 4.9
19	5	19.8	5	20.6	5	5.2	19	.7	79 2.8	139 5.0
20	5	20.0	5	20.9	5	5.4	20	.7	80 2.9	140 5.0
21	5	20.3	5	21.1	5	5.7	21	.8	81 2.9	141 5.1
22	5	20.5	5	21.4	5	5.9	22	.8	82 2.9	142 5.1
23	5	20.8	5	21.6	5	6.1	23	.8	83 3.0	143 5.1
24	5	21.0	5	21.9	5	6.4	24	.9	84 3.0	144 5.2
25	5	21.3	5	22.1	5	6.6	25	.9	85 3.0	145 5.2
26	5	21.5	5	22.4	5	6.9	26	.9	86 3.1	146 5.2
27	5	21.8	5	22.6	5	7.1	27	1.0	87 3.1	147 5.3
28	5	22.0	5	22.9	5	7.3	28	1.0	88 3.2	148 5.3
29	5	22.3	5	23.1	5	7.6	29	1.0	89 3.2	149 5.3
30	5	22.5	5	23.4	5	7.8	30	1.1	90 3.2	150 5.4
31	5	22.8	5	23.6	5	8.0	31	1.1	91 3.3	151 5.4
32	5	23.0	5	23.9	5	8.3	32	1.1	92 3.3	152 5.4
33	5	23.3	5	24.1	5	8.5	33	1.2	93 3.3	153 5.5
34	5	23.5	5	24.4	5	8.8	34	1.2	94 3.4	154 5.5
35	5	23.8	5	24.6	5	9.0	35	1.3	95 3.4	155 5.6
36	5	24.0	5	24.9	5	9.2	36	1.3	96 3.4	156 5.6
37	5	24.3	5	25.2	5	9.5	37	1.3	97 3.5	157 5.6
38	5	24.5	5	25.4	5	9.7	38	1.4	98 3.5	158 5.7
39	5	24.8	5	25.7	5	10.0	39	1.4	99 3.5	159 5.7
40	5	25.0	5	25.9	5	10.2	40	1.4	100 3.6	160 5.7
41	5	25.3	5	26.2	5	10.4	41	1.5	101 3.6	161 5.8
42	5	25.5	5	26.4	5	10.7	42	1.5	102 3.7	162 5.8
43	5	25.8	5	26.7	5	10.9	43	1.5	103 3.7	163 5.8
44	5	26.0	5	26.9	5	11.1	44	1.6	104 3.7	164 5.9
45	5	26.3	5	27.2	5	11.4	45	1.6	105 3.8	165 5.9
46	5	26.5	5	27.4	5	11.6	46	1.6	106 3.8	166 5.9
47	5	26.8	5	27.7	5	11.9	47	1.7	107 3.8	167 6.0
48	5	27.0	5	27.9	5	12.1	48	1.7	108 3.9	168 6.0
49	5	27.3	5	28.2	5	12.3	49	1.8	109 3.9	169 6.1
50	5	27.5	5	28.4	5	12.6	50	1.8	110 3.9	170 6.1
51	5	27.8	5	28.7	5	12.8	51	1.8	111 4.0	171 6.1
52	5	28.0	5	28.9	5	13.1	52	1.9	112 4.0	172 6.2
53	5	28.3	5	29.2	5	13.3	53	1.9	113 4.0	173 6.2
54	5	28.5	5	29.4	5	13.5	54	1.9	114 4.1	174 6.2
55	5	28.8	5	29.7	5	13.8	55	2.0	115 4.1	175 6.3
56	5	29.0	5	29.9	5	14.0	56	2.0	116 4.2	176 6.3
57	5	29.3	5	30.2	5	14.3	57	2.0	117 4.2	177 6.3
58	5	29.5	5	30.4	5	14.5	58	2.1	118 4.2	178 6.4
59	5	29.8	5	30.7	5	14.7	59	2.1	119 4.3	179 6.4
60	5	30.0	5	30.9	5	15.0	60	2.2	120 4.3	180 6.5

0 h 22 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	5 30.0	5 30.9	5 15.0	0 .0	60 2.3	120 4.5
1	5 30.3	5 31.2	5 15.2	1 .0	61 2.3	121 4.5
2	5 30.5	5 31.4	5 15.4	2 .1	62 2.3	122 4.6
3	5 30.8	5 31.7	5 15.7	3 .1	63 2.4	123 4.6
4	5 31.0	5 31.9	5 15.9	4 .2	64 2.4	124 4.7
5	5 31.3	5 32.2	5 16.2	5 .2	65 2.4	125 4.7
6	5 31.5	5 32.4	5 16.4	6 .2	66 2.5	126 4.7
7	5 31.8	5 32.7	5 16.6	7 .3	67 2.5	127 4.8
8	5 32.0	5 32.9	5 16.9	8 .3	68 2.6	128 4.8
9	5 32.3	5 33.2	5 17.1	9 .3	69 2.6	129 4.8
10	5 32.5	5 33.4	5 17.4	10 .4	70 2.6	130 4.9
11	5 32.8	5 33.7	5 17.6	11 .4	71 2.7	131 4.9
12	5 33.0	5 33.9	5 17.8	12 .5	72 2.7	132 5.0
13	5 33.3	5 34.2	5 18.1	13 .5	73 2.7	133 5.0
14	5 33.5	5 34.4	5 18.3	14 .5	74 2.8	134 5.0
15	5 33.8	5 34.7	5 18.5	15 .6	75 2.8	135 5.1
16	5 34.0	5 34.9	5 18.8	16 .6	76 2.9	136 5.1
17	5 34.3	5 35.2	5 19.0	17 .6	77 2.9	137 5.1
18	5 34.5	5 35.4	5 19.3	18 .7	78 2.9	138 5.2
19	5 34.8	5 35.7	5 19.5	19 .7	79 3.0	139 5.2
20	5 35.0	5 35.9	5 19.7	20 .8	80 3.0	140 5.3
21	5 35.3	5 36.2	5 20.0	21 .8	81 3.0	141 5.3
22	5 35.5	5 36.4	5 20.2	22 .8	82 3.1	142 5.3
23	5 35.8	5 36.7	5 20.5	23 .9	83 3.1	143 5.4
24	5 36.0	5 36.9	5 20.7	24 .9	84 3.2	144 5.4
25	5 36.3	5 37.2	5 20.9	25 .9	85 3.2	145 5.4
26	5 36.5	5 37.4	5 21.2	26 1.0	86 3.2	146 5.5
27	5 36.8	5 37.7	5 21.4	27 1.0	87 3.3	147 5.5
28	5 37.0	5 37.9	5 21.6	28 1.1	88 3.3	148 5.6
29	5 37.3	5 38.2	5 21.9	29 1.1	89 3.3	149 5.6
30	5 37.5	5 38.4	5 22.1	30 1.1	90 3.4	150 5.6
31	5 37.8	5 38.7	5 22.4	31 1.2	91 3.4	151 5.7
32	5 38.0	5 38.9	5 22.6	32 1.2	92 3.5	152 5.7
33	5 38.3	5 39.2	5 22.8	33 1.2	93 3.5	153 5.7
34	5 38.5	5 39.4	5 23.1	34 1.3	94 3.5	154 5.8
35	5 38.8	5 39.7	5 23.3	35 1.3	95 3.6	155 5.8
36	5 39.0	5 39.9	5 23.6	36 1.4	96 3.6	156 5.9
37	5 39.3	5 40.2	5 23.8	37 1.4	97 3.6	157 5.9
38	5 39.5	5 40.4	5 24.0	38 1.4	98 3.7	158 5.9
39	5 39.8	5 40.7	5 24.3	39 1.5	99 3.7	159 6.0
40	5 40.0	5 40.9	5 24.5	40 1.5	100 3.8	160 6.0
41	5 40.3	5 41.2	5 24.7	41 1.5	101 3.8	161 6.0
42	5 40.5	5 41.4	5 25.0	42 1.6	102 3.8	162 6.1
43	5 40.8	5 41.7	5 25.2	43 1.6	103 3.9	163 6.1
44	5 41.0	5 41.9	5 25.5	44 1.7	104 3.9	164 6.2
45	5 41.3	5 42.2	5 25.7	45 1.7	105 3.9	165 6.2
46	5 41.5	5 42.4	5 25.9	46 1.7	106 4.0	166 6.2
47	5 41.8	5 42.7	5 26.2	47 1.8	107 4.0	167 6.3
48	5 42.0	5 43.0	5 26.4	48 1.8	108 4.1	168 6.3
49	5 42.3	5 43.2	5 26.7	49 1.8	109 4.1	169 6.3
50	5 42.5	5 43.5	5 26.9	50 1.9	110 4.1	170 6.4
51	5 42.8	5 43.7	5 27.1	51 1.9	111 4.2	171 6.4
52	5 43.0	5 44.0	5 27.4	52 2.0	112 4.2	172 6.5
53	5 43.3	5 44.2	5 27.6	53 2.0	113 4.2	173 6.5
54	5 43.5	5 44.5	5 27.9	54 2.0	114 4.3	174 6.5
55	5 43.8	5 44.7	5 28.1	55 2.1	115 4.3	175 6.6
56	5 44.0	5 45.0	5 28.3	56 2.1	116 4.4	176 6.6
57	5 44.3	5 45.2	5 28.6	57 2.1	117 4.4	177 6.6
58	5 44.5	5 45.5	5 28.8	58 2.2	118 4.4	178 6.7
59	5 44.8	5 45.7	5 29.0	59 2.2	119 4.5	179 6.7
60	5 45.0	5 46.0	5 29.3	60 2.3	120 4.5	180 6.8

0 h 23 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	5 45.0	5 46.0	5 29.3	0 .0	60 2.4	120 4.7
1	5 45.3	5 46.2	5 29.5	1 .0	61 2.4	121 4.7
2	5 45.5	5 46.5	5 29.8	2 .1	62 2.4	122 4.8
3	5 45.8	5 46.7	5 30.0	3 .1	63 2.5	123 4.8
4	5 46.0	5 47.0	5 30.2	4 .2	64 2.5	124 4.9
5	5 46.3	5 47.2	5 30.5	5 .2	65 2.5	125 4.9
6	5 46.5	5 47.5	5 30.7	6 .2	66 2.6	126 4.9
7	5 46.8	5 47.7	5 31.0	7 .3	67 2.6	127 5.0
8	5 47.0	5 48.0	5 31.2	8 .3	68 2.7	128 5.0
9	5 47.3	5 48.2	5 31.4	9 .4	69 2.7	129 5.1
10	5 47.5	5 48.5	5 31.7	10 .4	70 2.7	130 5.1
11	5 47.8	5 48.7	5 31.9	11 .4	71 2.8	131 5.1
12	5 48.0	5 49.0	5 32.1	12 .5	72 2.8	132 5.2
13	5 48.3	5 49.2	5 32.4	13 .5	73 2.9	133 5.2
14	5 48.5	5 49.5	5 32.6	14 .5	74 2.9	134 5.2
15	5 48.8	5 49.7	5 32.9	15 .6	75 2.9	135 5.3
16	5 49.0	5 50.0	5 33.1	16 .6	76 3.0	136 5.3
17	5 49.3	5 50.2	5 33.3	17 .7	77 3.0	137 5.4
18	5 49.5	5 50.5	5 33.6	18 .7	78 3.1	138 5.4
19	5 49.8	5 50.7	5 33.8	19 .7	79 3.1	139 5.4
20	5 50.0	5 51.0	5 34.1	20 .8	80 3.1	140 5.5
21	5 50.3	5 51.2	5 34.3	21 .8	81 3.2	141 5.5
22	5 50.5	5 51.5	5 34.5	22 .9	82 3.2	142 5.6
23	5 50.8	5 51.7	5 34.8	23 .9	83 3.3	143 5.6
24	5 51.0	5 52.0	5 35.0	24 .9	84 3.3	144 5.6
25	5 51.3	5 52.2	5 35.2	25 1.0	85 3.3	145 5.7
26	5 51.5	5 52.5	5 35.5	26 1.0	86 3.4	146 5.7
27	5 51.8	5 52.7	5 35.7	27 1.1	87 3.4	147 5.8
28	5 52.0	5 53.0	5 36.0	28 1.1	88 3.4	148 5.8
29	5 52.3	5 53.2	5 36.2	29 1.1	89 3.5	149 5.8
30	5 52.5	5 53.5	5 36.4	30 1.2	90 3.5	150 5.9
31	5 52.8	5 53.7	5 36.7	31 1.2	91 3.6	151 5.9
32	5 53.0	5 54.0	5 36.9	32 1.3	92 3.6	152 6.0
33	5 53.3	5 54.2	5 37.2	33 1.3	93 3.6	153 6.0
34	5 53.5	5 54.5	5 37.4	34 1.3	94 3.7	154 6.0
35	5 53.8	5 54.7	5 37.6	35 1.4	95 3.7	155 6.1
36	5 54.0	5 55.0	5 37.9	36 1.4	96 3.8	156 6.1
37	5 54.3	5 55.2	5 38.1	37 1.4	97 3.8	157 6.1
38	5 54.5	5 55.5	5 38.4	38 1.5	98 3.8	158 6.2
39	5 54.8	5 55.7	5 38.6	39 1.5	99 3.9	159 6.2
40	5 55.0	5 56.0	5 38.8	40 1.6	100 3.9	160 6.3
41	5 55.3	5 56.2	5 39.1	41 1.6	101 4.0	161 6.3
42	5 55.5	5 56.5	5 39.3	42 1.6	102 4.0	162 6.3
43	5 55.8	5 56.7	5 39.5	43 1.7	103 4.0	163 6.4
44	5 56.0	5 57.0	5 39.8	44 1.7	104 4.1	164 6.4
45	5 56.3	5 57.2	5 40.0	45 1.8	105 4.1	165 6.5
46	5 56.5	5 57.5	5 40.3	46 1.8	106 4.2	166 6.5
47	5 56.8	5 57.7	5 40.5	47 1.8	107 4.2	167 6.5
48	5 57.0	5 58.0	5 40.7	48 1.9	108 4.2	168 6.6
49	5 57.3	5 58.2	5 41.0	49 1.9	109 4.3	169 6.6
50	5 57.5	5 58.5	5 41.2	50 2.0	110 4.3	170 6.7
51	5 57.8	5 58.7	5 41.5	51 2.0	111 4.3	171 6.7
52	5 58.0	5 59.0	5 41.7	52 2.0	112 4.4	172 6.7
53	5 58.3	5 59.2	5 41.9	53 2.1	113 4.4	173 6.8
54	5 58.5	5 59.5	5 42.2	54 2.1	114 4.5	174 6.8
55	5 58.8	5 59.7	5 42.4	55 2.2	115 4.5	175 6.9
56	5 59.0	5 60.0	5 42.6	56 2.2	116 4.5	176 6.9
57	5 59.3	6 .2	5 42.9	57 2.2	117 4.6	177 6.9
58	5 59.5	6 .5	5 43.1	58 2.3	118 4.6	178 7.0
59	5 59.8	6 .7	5 43.4	59 2.3	119 4.7	179 7.0
60	6 .0	6 1.0	5 43.6	60 2.4	120 4.7	180 7.1

0 h 24 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	6	.0	6	1.0	5	43.6	0 .0 60 2.5 120 4.9
1	6	.3	6	1.3	5	43.8	1 .0 61 2.5 121 4.9
2	6	.5	6	1.5	5	44.1	2 .1 62 2.5 122 5.0
3	6	.8	6	1.8	5	44.3	3 .1 63 2.6 123 5.0
4	6	1.0	6	2.0	5	44.6	4 .2 64 2.6 124 5.1
5	6	1.3	6	2.3	5	44.8	5 .2 65 2.7 125 5.1
6	6	1.5	6	2.5	5	45.0	6 .2 66 2.7 126 5.1
7	6	1.8	6	2.8	5	45.3	7 .3 67 2.7 127 5.2
8	6	2.0	6	3.0	5	45.5	8 .3 68 2.8 128 5.2
9	6	2.3	6	3.3	5	45.7	9 .4 69 2.8 129 5.3
10	6	2.5	6	3.5	5	46.0	10 .4 70 2.9 130 5.3
11	6	2.8	6	3.8	5	46.2	11 .4 71 2.9 131 5.3
12	6	3.0	6	4.0	5	46.5	12 .5 72 2.9 132 5.4
13	6	3.3	6	4.3	5	46.7	13 .5 73 3.0 133 5.4
14	6	3.5	6	4.5	5	46.9	14 .6 74 3.0 134 5.5
15	6	3.8	6	4.8	5	47.2	15 .6 75 3.1 135 5.5
16	6	4.0	6	5.0	5	47.4	16 .7 76 3.1 136 5.6
17	6	4.3	6	5.3	5	47.7	17 .7 77 3.1 137 5.6
18	6	4.5	6	5.5	5	47.9	18 .7 78 3.2 138 5.6
19	6	4.8	6	5.8	5	48.1	19 .8 79 3.2 139 5.7
20	6	5.0	6	6.0	5	48.4	20 .8 80 3.3 140 5.7
21	6	5.3	6	6.3	5	48.6	21 .9 81 3.3 141 5.8
22	6	5.5	6	6.5	5	48.8	22 .9 82 3.3 142 5.8
23	6	5.8	6	6.8	5	49.1	23 .9 83 3.4 143 5.8
24	6	6.0	6	7.0	5	49.3	24 1.0 84 3.4 144 5.9
25	6	6.3	6	7.3	5	49.6	25 1.0 85 3.5 145 5.9
26	6	6.5	6	7.5	5	49.8	26 1.1 86 3.5 146 6.0
27	6	6.8	6	7.8	5	50.0	27 1.1 87 3.6 147 6.0
28	6	7.0	6	8.0	5	50.3	28 1.1 88 3.6 148 6.0
29	6	7.3	6	8.3	5	50.5	29 1.2 89 3.6 149 6.1
30	6	7.5	6	8.5	5	50.8	30 1.2 90 3.7 150 6.1
31	6	7.8	6	8.8	5	51.0	31 1.3 91 3.7 151 6.2
32	6	8.0	6	9.0	5	51.2	32 1.3 92 3.8 152 6.2
33	6	8.3	6	9.3	5	51.5	33 1.3 93 3.8 153 6.2
34	6	8.5	6	9.5	5	51.7	34 1.4 94 3.8 154 6.3
35	6	8.8	6	9.8	5	52.0	35 1.4 95 3.9 155 6.3
36	6	9.0	6	10.0	5	52.2	36 1.5 96 3.9 156 6.4
37	6	9.3	6	10.3	5	52.4	37 1.5 97 4.0 157 6.4
38	6	9.5	6	10.5	5	52.7	38 1.6 98 4.0 158 6.5
39	6	9.8	6	10.8	5	52.9	39 1.6 99 4.0 159 6.5
40	6	10.0	6	11.0	5	53.1	40 1.6 100 4.1 160 6.5
41	6	10.3	6	11.3	5	53.4	41 1.7 101 4.1 161 6.6
42	6	10.5	6	11.5	5	53.6	42 1.7 102 4.2 162 6.6
43	6	10.8	6	11.8	5	53.9	43 1.8 103 4.2 163 6.7
44	6	11.0	6	12.0	5	54.1	44 1.8 104 4.2 164 6.7
45	6	11.3	6	12.3	5	54.3	45 1.8 105 4.3 165 6.7
46	6	11.5	6	12.5	5	54.6	46 1.9 106 4.3 166 6.8
47	6	11.8	6	12.8	5	54.8	47 1.9 107 4.4 167 6.8
48	6	12.0	6	13.0	5	55.1	48 2.0 108 4.4 168 6.9
49	6	12.3	6	13.3	5	55.3	49 2.0 109 4.5 169 6.9
50	6	12.5	6	13.5	5	55.5	50 2.0 110 4.5 170 6.9
51	6	12.8	6	13.8	5	55.8	51 2.1 111 4.5 171 7.0
52	6	13.0	6	14.0	5	56.0	52 2.1 112 4.6 172 7.0
53	6	13.3	6	14.3	5	56.2	53 2.2 113 4.6 173 7.1
54	6	13.5	6	14.5	5	56.5	54 2.2 114 4.7 174 7.1
55	6	13.8	6	14.8	5	56.7	55 2.2 115 4.7 175 7.1
56	6	14.0	6	15.0	5	57.0	56 2.3 116 4.7 176 7.2
57	6	14.3	6	15.3	5	57.2	57 2.3 117 4.8 177 7.2
58	6	14.5	6	15.5	5	57.4	58 2.4 118 4.8 178 7.3
59	6	14.8	6	15.8	5	57.7	59 2.4 119 4.9 179 7.3
60	6	15.0	6	16.0	5	57.9	60 2.5 120 4.9 180 7.4

0 h 25 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	6	15.0	6	16.0	5	57.9	0 .0 60 2.6 120 5.1
1	6	15.3	6	16.3	5	58.2	1 .0 61 2.6 121 5.1
2	6	15.5	6	16.5	5	58.4	2 .1 62 2.6 122 5.2
3	6	15.8	6	16.8	5	58.6	3 .1 63 2.7 123 5.2
4	6	16.0	6	17.0	5	58.9	4 .2 64 2.7 124 5.3
5	6	16.3	6	17.3	5	59.1	5 .2 65 2.8 125 5.3
6	6	16.5	6	17.5	5	59.3	6 .3 66 2.8 126 5.4
7	6	16.8	6	17.8	5	59.6	7 .3 67 2.8 127 5.4
8	6	17.0	6	18.0	5	59.8	8 .3 68 2.9 128 5.4
9	6	17.3	6	18.3	6	.1	9 .4 69 2.9 129 5.5
10	6	17.5	6	18.5	6	.3	10 .4 70 3.0 130 5.5
11	6	17.8	6	18.8	6	.5	11 .5 71 3.0 131 5.6
12	6	18.0	6	19.1	6	.8	12 .5 72 3.1 132 5.6
13	6	18.3	6	19.3	6	1.0	13 .6 73 3.1 133 5.7
14	6	18.5	6	19.6	6	1.3	14 .6 74 3.1 134 5.7
15	6	18.8	6	19.8	6	1.5	15 .6 75 3.2 135 5.7
16	6	19.0	6	20.1	6	1.7	16 .7 76 3.2 136 5.8
17	6	19.3	6	20.3	6	2.0	17 .7 77 3.3 137 5.8
18	6	19.5	6	20.6	6	2.2	18 .8 78 3.3 138 5.9
19	6	19.8	6	20.8	6	2.5	19 .8 79 3.4 139 5.9
20	6	20.0	6	21.1	6	2.7	20 .9 80 3.4 140 6.0
21	6	20.3	6	21.3	6	2.9	21 .9 81 3.4 141 6.0
22	6	20.5	6	21.6	6	3.2	22 .9 82 3.5 142 6.0
23	6	20.8	6	21.8	6	3.4	23 1.0 83 3.5 143 6.1
24	6	21.0	6	22.1	6	3.6	24 1.0 84 3.6 144 6.1
25	6	21.3	6	22.3	6	3.9	25 1.1 85 3.6 145 6.2
26	6	21.5	6	22.6	6	4.1	26 1.1 86 3.7 146 6.2
27	6	21.8	6	22.8	6	4.4	27 1.1 87 3.7 147 6.2
28	6	22.0	6	23.1	6	4.6	28 1.2 88 3.7 148 6.3
29	6	22.3	6	23.3	6	4.8	29 1.2 89 3.8 149 6.3
30	6	22.5	6	23.6	6	5.1	30 1.3 90 3.8 150 6.4
31	6	22.8	6	23.8	6	5.3	31 1.3 91 3.9 151 6.4
32	6	23.0	6	24.1	6	5.6	32 1.4 92 3.9 152 6.5
33	6	23.3	6	24.3	6	5.8	33 1.4 93 4.0 153 6.5
34	6	23.5	6	24.6	6	6.0	34 1.4 94 4.0 154 6.5
35	6	23.8	6	24.8	6	6.3	35 1.5 95 4.0 155 6.6
36	6	24.0	6	25.1	6	6.5	36 1.5 96 4.1 156 6.6
37	6	24.3	6	25.3	6	6.7	37 1.6 97 4.1 157 6.7
38	6	24.5	6	25.6	6	7.0	38 1.6 98 4.2 158 6.7
39	6	24.8	6	25.8	6	7.2	39 1.7 99 4.2 159 6.8
40	6	25.0	6	26.1	6	7.5	40 1.7 100 4.3 160 6.8
41	6	25.3	6	26.3	6	7.7	41 1.7 101 4.3 161 6.8
42	6	25.5	6	26.6	6	7.9	42 1.8 102 4.3 162 6.9
43	6	25.8	6	26.8	6	8.2	43 1.8 103 4.4 163 6.9
44	6	26.0	6	27.1	6	8.4	44 1.9 104 4.4 164 7.0
45	6	26.3	6	27.3	6	8.7	45 1.9 105 4.5 165 7.0
46	6	26.5	6	27.6	6	8.9	46 2.0 106 4.5 166 7.1
47	6	26.8	6	27.8	6	9.1	47 2.0 107 4.5 167 7.1
48	6	27.0	6	28.1	6	9.4	48 2.0 108 4.6 168 7.1
49	6	27.3	6	28.3	6	9.6	49 2.1 109 4.6 169 7.2
50	6	27.5	6	28.6	6	9.8	50 2.1 110 4.7 170 7.2
51	6	27.8	6	28.8	6	10.1	51 2.2 111 4.7 171 7.3
52	6	28.0	6	29.1	6	10.3	52 2.2 112 4.8 172 7.3
53	6	28.3	6	29.3	6	10.6	53 2.3 113 4.8 173 7.4
54	6	28.5	6	29.6	6	10.8	54 2.3 114 4.8 174 7.4
55	6	28.8	6	29.8	6	11.0	55 2.3 115 4.9 175 7.4
56	6	29.0	6	30.1	6	11.3	56 2.4 116 4.9 176 7.5
57	6	29.3	6	30.3	6	11.5	57 2.4 117 5.0 177 7.5
58	6	29.5	6	30.6	6	11.8	58 2.5 118 5.0 178 7.6
59	6	29.8	6	30.8	6	12.0	59 2.5 119 5.1 179 7.6
60	6	30.0	6	31.1	6	12.2	60 2.6 120 5.1 180 7.7

0 h 26 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	6 30.0	6 31.1	6 12.2	0 .0	60 2.7	120 5.3
1	6 30.3	6 31.3	6 12.5	1 .0	61 2.7	121 5.3
2	6 30.5	6 31.6	6 12.7	2 .1	62 2.7	122 5.4
3	6 30.8	6 31.8	6 12.9	3 .1	63 2.8	123 5.4
4	6 31.0	6 32.1	6 13.2	4 .2	64 2.8	124 5.5
5	6 31.3	6 32.3	6 13.4	5 .2	65 2.9	125 5.5
6	6 31.5	6 32.6	6 13.7	6 .3	66 2.9	126 5.6
7	6 31.8	6 32.8	6 13.9	7 .3	67 3.0	127 5.6
8	6 32.0	6 33.1	6 14.1	8 .4	68 3.0	128 5.7
9	6 32.3	6 33.3	6 14.4	9 .4	69 3.0	129 5.7
10	6 32.5	6 33.6	6 14.6	10 .4	70 3.1	130 5.7
11	6 32.8	6 33.8	6 14.9	11 .5	71 3.1	131 5.8
12	6 33.0	6 34.1	6 15.1	12 .5	72 3.2	132 5.8
13	6 33.3	6 34.3	6 15.3	13 .6	73 3.2	133 5.9
14	6 33.5	6 34.6	6 15.6	14 .6	74 3.3	134 5.9
15	6 33.8	6 34.8	6 15.8	15 .7	75 3.3	135 6.0
16	6 34.0	6 35.1	6 16.1	16 .7	76 3.4	136 6.0
17	6 34.3	6 35.3	6 16.3	17 .8	77 3.4	137 6.1
18	6 34.5	6 35.6	6 16.5	18 .8	78 3.4	138 6.1
19	6 34.8	6 35.8	6 16.8	19 .8	79 3.5	139 6.1
20	6 35.0	6 36.1	6 17.0	20 .9	80 3.5	140 6.2
21	6 35.3	6 36.3	6 17.2	21 .9	81 3.6	141 6.2
22	6 35.5	6 36.6	6 17.5	22 1.0	82 3.6	142 6.3
23	6 35.8	6 36.8	6 17.7	23 1.0	83 3.7	143 6.3
24	6 36.0	6 37.1	6 18.0	24 1.1	84 3.7	144 6.4
25	6 36.3	6 37.4	6 18.2	25 1.1	85 3.8	145 6.4
26	6 36.5	6 37.6	6 18.4	26 1.1	86 3.8	146 6.4
27	6 36.8	6 37.9	6 18.7	27 1.2	87 3.8	147 6.5
28	6 37.0	6 38.1	6 18.9	28 1.2	88 3.9	148 6.5
29	6 37.3	6 38.4	6 19.2	29 1.3	89 3.9	149 6.6
30	6 37.5	6 38.6	6 19.4	30 1.3	90 4.0	150 6.6
31	6 37.8	6 38.9	6 19.6	31 1.4	91 4.0	151 6.7
32	6 38.0	6 39.1	6 19.9	32 1.4	92 4.1	152 6.7
33	6 38.3	6 39.4	6 20.1	33 1.5	93 4.1	153 6.8
34	6 38.5	6 39.6	6 20.3	34 1.5	94 4.2	154 6.8
35	6 38.8	6 39.9	6 20.6	35 1.5	95 4.2	155 6.8
36	6 39.0	6 40.1	6 20.8	36 1.6	96 4.2	156 6.9
37	6 39.3	6 40.4	6 21.1	37 1.6	97 4.3	157 6.9
38	6 39.5	6 40.6	6 21.3	38 1.7	98 4.3	158 7.0
39	6 39.8	6 40.9	6 21.5	39 1.7	99 4.4	159 7.0
40	6 40.0	6 41.1	6 21.8	40 1.8	100 4.4	160 7.1
41	6 40.3	6 41.4	6 22.0	41 1.8	101 4.5	161 7.1
42	6 40.5	6 41.6	6 22.3	42 1.9	102 4.5	162 7.2
43	6 40.8	6 41.9	6 22.5	43 1.9	103 4.5	163 7.2
44	6 41.0	6 42.1	6 22.7	44 1.9	104 4.6	164 7.2
45	6 41.3	6 42.4	6 23.0	45 2.0	105 4.6	165 7.3
46	6 41.5	6 42.6	6 23.2	46 2.0	106 4.7	166 7.3
47	6 41.8	6 42.9	6 23.4	47 2.1	107 4.7	167 7.4
48	6 42.0	6 43.1	6 23.7	48 2.1	108 4.8	168 7.4
49	6 42.3	6 43.4	6 23.9	49 2.2	109 4.8	169 7.5
50	6 42.5	6 43.6	6 24.2	50 2.2	110 4.9	170 7.5
51	6 42.8	6 43.9	6 24.4	51 2.3	111 4.9	171 7.6
52	6 43.0	6 44.1	6 24.6	52 2.3	112 4.9	172 7.6
53	6 43.3	6 44.4	6 24.9	53 2.3	113 5.0	173 7.6
54	6 43.5	6 44.6	6 25.1	54 2.4	114 5.0	174 7.7
55	6 43.8	6 44.9	6 25.4	55 2.4	115 5.1	175 7.7
56	6 44.0	6 45.1	6 25.6	56 2.5	116 5.1	176 7.8
57	6 44.3	6 45.4	6 25.8	57 2.5	117 5.2	177 7.8
58	6 44.5	6 45.6	6 26.1	58 2.6	118 5.2	178 7.9
59	6 44.8	6 45.9	6 26.3	59 2.6	119 5.3	179 7.9
60	6 45.0	6 46.1	6 26.6	60 2.7	120 5.3	180 8.0

0 h 27 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	6 45.0	6 46.1	6 26.6	0 .0	60 2.8	120 5.5
1	6 45.3	6 46.4	6 26.8	1 .0	61 2.8	121 5.5
2	6 45.5	6 46.6	6 27.0	2 .1	62 2.8	122 5.6
3	6 45.8	6 46.9	6 27.3	3 .1	63 2.9	123 5.6
4	6 46.0	6 47.1	6 27.5	4 .2	64 2.9	124 5.7
5	6 46.3	6 47.4	6 27.7	5 .2	65 3.0	125 5.7
6	6 46.5	6 47.6	6 28.0	6 .3	66 3.0	126 5.8
7	6 46.8	6 47.9	6 28.2	7 .3	67 3.1	127 5.8
8	6 47.0	6 48.1	6 28.5	8 .4	68 3.1	128 5.9
9	6 47.3	6 48.4	6 28.7	9 .4	69 3.2	129 5.9
10	6 47.5	6 48.6	6 28.9	10 .5	70 3.2	130 6.0
11	6 47.8	6 48.9	6 29.2	11 .5	71 3.3	131 6.0
12	6 48.0	6 49.1	6 29.4	12 .6	72 3.3	132 6.1
13	6 48.3	6 49.4	6 29.7	13 .6	73 3.3	133 6.1
14	6 48.5	6 49.6	6 29.9	14 .6	74 3.4	134 6.1
15	6 48.8	6 49.9	6 30.1	15 .7	75 3.4	135 6.2
16	6 49.0	6 50.1	6 30.4	16 .7	76 3.5	136 6.2
17	6 49.3	6 50.4	6 30.6	17 .8	77 3.5	137 6.3
18	6 49.5	6 50.6	6 30.8	18 .8	78 3.6	138 6.3
19	6 49.8	6 50.9	6 31.1	19 .9	79 3.6	139 6.4
20	6 50.0	6 51.1	6 31.3	20 .9	80 3.7	140 6.4
21	6 50.3	6 51.4	6 31.6	21 1.0	81 3.7	141 6.5
22	6 50.5	6 51.6	6 31.8	22 1.0	82 3.8	142 6.5
23	6 50.8	6 51.9	6 32.0	23 1.1	83 3.8	143 6.6
24	6 51.0	6 52.1	6 32.3	24 1.1	84 3.9	144 6.6
25	6 51.3	6 52.4	6 32.5	25 1.1	85 3.9	145 6.6
26	6 51.5	6 52.6	6 32.8	26 1.2	86 3.9	146 6.7
27	6 51.8	6 52.9	6 33.0	27 1.2	87 4.0	147 6.7
28	6 52.0	6 53.1	6 33.2	28 1.3	88 4.0	148 6.8
29	6 52.3	6 53.4	6 33.5	29 1.3	89 4.1	149 6.8
30	6 52.5	6 53.6	6 33.7	30 1.4	90 4.1	150 6.9
31	6 52.8	6 53.9	6 33.9	31 1.4	91 4.2	151 6.9
32	6 53.0	6 54.1	6 34.2	32 1.5	92 4.2	152 7.0
33	6 53.3	6 54.4	6 34.4	33 1.5	93 4.3	153 7.0
34	6 53.5	6 54.6	6 34.7	34 1.6	94 4.3	154 7.1
35	6 53.8	6 54.9	6 34.9	35 1.6	95 4.4	155 7.1
36	6 54.0	6 55.2	6 35.1	36 1.7	96 4.4	156 7.2
37	6 54.3	6 55.4	6 35.4	37 1.7	97 4.4	157 7.2
38	6 54.5	6 55.7	6 35.6	38 1.7	98 4.5	158 7.2
39	6 54.8	6 55.9	6 35.9	39 1.8	99 4.5	159 7.3
40	6 55.0	6 56.2	6 36.1	40 1.8	100 4.6	160 7.3
41	6 55.3	6 56.4	6 36.3	41 1.9	101 4.6	161 7.4
42	6 55.5	6 56.7	6 36.6	42 1.9	102 4.7	162 7.4
43	6 55.8	6 56.9	6 36.8	43 2.0	103 4.7	163 7.5
44	6 56.0	6 57.2	6 37.0	44 2.0	104 4.8	164 7.5
45	6 56.3	6 57.4	6 37.3	45 2.1	105 4.8	165 7.6
46	6 56.5	6 57.7	6 37.5	46 2.1	106 4.9	166 7.6
47	6 56.8	6 57.9	6 37.8	47 2.2	107 4.9	167 7.7
48	6 57.0	6 58.2	6 38.0	48 2.2	108 5.0	168 7.7
49	6 57.3	6 58.4	6 38.2	49 2.2	109 5.0	169 7.7
50	6 57.5	6 58.7	6 38.5	50 2.3	110 5.0	170 7.8
51	6 57.8	6 58.9	6 38.7	51 2.3	111 5.1	171 7.8
52	6 58.0	6 59.2	6 39.0	52 2.4	112 5.1	172 7.9
53	6 58.3	6 59.4	6 39.2	53 2.4	113 5.2	173 7.9
54	6 58.5	6 59.7	6 39.4	54 2.5	114 5.2	174 8.0
55	6 58.8	6 59.9	6 39.7	55 2.5	115 5.3	175 8.0
56	6 59.0	7 .2	6 39.9	56 2.6	116 5.3	176 8.1
57	6 59.3	7 .4	6 40.2	57 2.6	117 5.4	177 8.1
58	6 59.5	7 .7	6 40.4	58 2.7	118 5.4	178 8.2
59	6 59.8	7 .9	6 40.6	59 2.7	119 5.5	179 8.2
60	7 .0	7 1.2	6 40.9	60 2.8	120 5.5	180 8.3

0 h 28 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	7	.0	7	1.2	6	40.9	0	.0	60	2.9	120	5.7
1	7	.3	7	1.4	6	41.1	1	.0	61	2.9	121	5.7
2	7	.5	7	1.7	6	41.3	2	.1	62	2.9	122	5.8
3	7	.8	7	1.9	6	41.6	3	.1	63	3.0	123	5.8
4	7	1.0	7	2.2	6	41.8	4	.2	64	3.0	124	5.9
5	7	1.3	7	2.4	6	42.1	5	.2	65	3.1	125	5.9
6	7	1.5	7	2.7	6	42.3	6	.3	66	3.1	126	6.0
7	7	1.8	7	2.9	6	42.5	7	.3	67	3.2	127	6.0
8	7	2.0	7	3.2	6	42.8	8	.4	68	3.2	128	6.1
9	7	2.3	7	3.4	6	43.0	9	.4	69	3.3	129	6.1
10	7	2.5	7	3.7	6	43.3	10	.5	70	3.3	130	6.2
11	7	2.8	7	3.9	6	43.5	11	.5	71	3.4	131	6.2
12	7	3.0	7	4.2	6	43.7	12	.6	72	3.4	132	6.3
13	7	3.3	7	4.4	6	44.0	13	.6	73	3.5	133	6.3
14	7	3.5	7	4.7	6	44.2	14	.7	74	3.5	134	6.4
15	7	3.8	7	4.9	6	44.4	15	.7	75	3.6	135	6.4
16	7	4.0	7	5.2	6	44.7	16	.8	76	3.6	136	6.5
17	7	4.3	7	5.4	6	44.9	17	.8	77	3.7	137	6.5
18	7	4.5	7	5.7	6	45.2	18	.9	78	3.7	138	6.6
19	7	4.8	7	5.9	6	45.4	19	.9	79	3.8	139	6.6
20	7	5.0	7	6.2	6	45.6	20	1.0	80	3.8	140	6.7
21	7	5.3	7	6.4	6	45.9	21	1.0	81	3.8	141	6.7
22	7	5.5	7	6.7	6	46.1	22	1.0	82	3.9	142	6.7
23	7	5.8	7	6.9	6	46.4	23	1.1	83	3.9	143	6.8
24	7	6.0	7	7.2	6	46.6	24	1.1	84	4.0	144	6.8
25	7	6.3	7	7.4	6	46.8	25	1.2	85	4.0	145	6.9
26	7	6.5	7	7.7	6	47.1	26	1.2	86	4.1	146	6.9
27	7	6.8	7	7.9	6	47.3	27	1.3	87	4.1	147	7.0
28	7	7.0	7	8.2	6	47.5	28	1.3	88	4.2	148	7.0
29	7	7.3	7	8.4	6	47.8	29	1.4	89	4.2	149	7.1
30	7	7.5	7	8.7	6	48.0	30	1.4	90	4.3	150	7.1
31	7	7.8	7	8.9	6	48.3	31	1.5	91	4.3	151	7.2
32	7	8.0	7	9.2	6	48.5	32	1.5	92	4.4	152	7.2
33	7	8.3	7	9.4	6	48.7	33	1.6	93	4.4	153	7.3
34	7	8.5	7	9.7	6	49.0	34	1.6	94	4.5	154	7.3
35	7	8.8	7	9.9	6	49.2	35	1.7	95	4.5	155	7.4
36	7	9.0	7	10.2	6	49.5	36	1.7	96	4.6	156	7.4
37	7	9.3	7	10.4	6	49.7	37	1.8	97	4.6	157	7.5
38	7	9.5	7	10.7	6	49.9	38	1.8	98	4.7	158	7.5
39	7	9.8	7	10.9	6	50.2	39	1.9	99	4.7	159	7.6
40	7	10.0	7	11.2	6	50.4	40	1.9	100	4.8	160	7.6
41	7	10.3	7	11.4	6	50.6	41	1.9	101	4.8	161	7.6
42	7	10.5	7	11.7	6	50.9	42	2.0	102	4.8	162	7.7
43	7	10.8	7	11.9	6	51.1	43	2.0	103	4.9	163	7.7
44	7	11.0	7	12.2	6	51.4	44	2.1	104	4.9	164	7.8
45	7	11.3	7	12.4	6	51.6	45	2.1	105	5.0	165	7.8
46	7	11.5	7	12.7	6	51.8	46	2.2	106	5.0	166	7.9
47	7	11.8	7	12.9	6	52.1	47	2.2	107	5.1	167	7.9
48	7	12.0	7	13.2	6	52.3	48	2.3	108	5.1	168	8.0
49	7	12.3	7	13.5	6	52.6	49	2.3	109	5.2	169	8.0
50	7	12.5	7	13.7	6	52.8	50	2.4	110	5.2	170	8.1
51	7	12.8	7	14.0	6	53.0	51	2.4	111	5.3	171	8.1
52	7	13.0	7	14.2	6	53.3	52	2.5	112	5.3	172	8.2
53	7	13.3	7	14.5	6	53.5	53	2.5	113	5.4	173	8.2
54	7	13.5	7	14.7	6	53.8	54	2.6	114	5.4	174	8.3
55	7	13.8	7	15.0	6	54.0	55	2.6	115	5.5	175	8.3
56	7	14.0	7	15.2	6	54.2	56	2.7	116	5.5	176	8.4
57	7	14.3	7	15.5	6	54.5	57	2.7	117	5.6	177	8.4
58	7	14.5	7	15.7	6	54.7	58	2.8	118	5.6	178	8.5
59	7	14.8	7	16.0	6	54.9	59	2.8	119	5.7	179	8.5
60	7	15.0	7	16.2	6	55.2	60	2.9	120	5.7	180	8.6

0 h 29 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	7	15.0	7	16.2	6	55.2	0	.0	60	3.0	120	5.9
1	7	15.3	7	16.5	6	55.4	1	.0	61	3.0	121	5.9
2	7	15.5	7	16.7	6	55.7	2	.1	62	3.0	122	6.0
3	7	15.8	7	17.0	6	55.9	3	.1	63	3.1	123	6.0
4	7	16.0	7	17.2	6	56.1	4	.2	64	3.1	124	6.1
5	7	16.3	7	17.5	6	56.4	5	.2	65	3.2	125	6.1
6	7	16.5	7	17.7	6	56.6	6	.3	66	3.2	126	6.2
7	7	16.8	7	18.0	6	56.9	7	.3	67	3.3	127	6.2
8	7	17.0	7	18.2	6	57.1	8	.4	68	3.3	128	6.3
9	7	17.3	7	18.5	6	57.3	9	.4	69	3.4	129	6.3
10	7	17.5	7	18.7	6	57.6	10	.5	70	3.4	130	6.4
11	7	17.8	7	19.0	6	57.8	11	.5	71	3.5	131	6.4
12	7	18.0	7	19.2	6	58.0	12	.6	72	3.5	132	6.5
13	7	18.3	7	19.5	6	58.3	13	.6	73	3.6	133	6.5
14	7	18.5	7	19.7	6	58.5	14	.7	74	3.6	134	6.6
15	7	18.8	7	20.0	6	58.8	15	.7	75	3.7	135	6.6
16	7	19.0	7	20.2	6	59.0	16	.8	76	3.7	136	6.7
17	7	19.3	7	20.5	6	59.2	17	.8	77	3.8	137	6.7
18	7	19.5	7	20.7	6	59.5	18	.9	78	3.8	138	6.8
19	7	19.8	7	21.0	6	59.7	19	.9	79	3.9	139	6.8
20	7	20.0	7	21.2	6	60.0	20	1.0	80	3.9	140	6.9
21	7	20.3	7	21.5	7	.2	21	1.0	81	4.0	141	6.9
22	7	20.5	7	21.7	7	.4	22	1.1	82	4.0	142	7.0
23	7	20.8	7	22.0	7	.7	23	1.1	83	4.1	143	7.0
24	7	21.0	7	22.2	7	.9	24	1.2	84	4.1	144	7.1
25	7	21.3	7	22.5	7	1.1	25	1.2	85	4.2	145	7.1
26	7	21.5	7	22.7	7	1.4	26	1.3	86	4.2	146	7.2
27	7	21.8	7	23.0	7	1.6	27	1.3	87	4.3	147	7.2
28	7	22.0	7	23.2	7	1.9	28	1.4	88	4.3	148	7.3
29	7	22.3	7	23.5	7	2.1	29	1.4	89	4.4	149	7.3
30	7	22.5	7	23.7	7	2.3	30	1.5	90	4.4	150	7.4
31	7	22.8	7	24.0	7	2.6	31	1.5	91	4.5	151	7.4
32	7	23.0	7	24.2	7	2.8	32	1.6	92	4.5	152	7.5
33	7	23.3	7	24.5	7	3.1	33	1.6	93	4.6	153	7.5
34	7	23.5	7	24.7	7	3.3	34	1.7	94	4.6	154	7.6
35	7	23.8	7	25.0	7	3.5	35	1.7	95	4.7	155	7.6
36	7	24.0	7	25.2	7	3.8	36	1.8	96	4.7	156	7.7
37	7	24.3	7	25.5	7	4.0	37	1.8	97	4.8	157	7.7
38	7	24.5	7	25.7	7	4.3	38	1.9	98	4.8	158	7.8
39	7	24.8	7	26.0	7	4.5	39	1.9	99	4.9	159	7.8
40	7	25.0	7	26.2	7	4.7	40	2.0	100	4.9	160	7.9
41	7	25.3	7	26.5	7	5.0	41	2.0	101	5.0	161	7.9
42	7	25.5	7	26.7	7	5.2	42	2.1	102	5.0	162	8.0
43	7	25.8	7	27.0	7	5.4	43	2.1	103	5.1	163	8.0
44	7	26.0	7	27.2	7	5.7	44	2.2	104	5.1	164	8.1
45	7	26.3	7	27.5	7	5.9	45	2.2	105	5.2	165	8.1
46	7	26.5	7	27.7	7	6.2	46	2.3	106	5.2	166	8.2
47	7	26.8	7	28.0	7	6.4	47	2.3	107	5.3	167	8.2
48	7	27.0	7	28.2	7	6.6	48	2.4	108	5.3	168	8.3
49	7	27.3	7	28.5	7	6.9	49	2.4	109	5.4	169	8.3
50	7	27.5	7	28.7	7	7.1	50	2.5	110	5.4	170	8.4
51	7	27.8	7	29.0	7	7.4	51	2.5	111	5.5	171	8.4
52	7	28.0	7	29.2	7	7.6	52	2.6	112	5.5	172	8.5
53	7	28.3	7	29.5	7	7.8	53	2.6	113	5.6	173	8.5
54	7	28.5	7	29.7	7	8.1	54	2.7	114	5.6	174	8.6
55	7	28.8	7	30.0	7	8.3	55	2.7				

0 h 30 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o /	o /	o /	/	/	/
0	7 30.0	7 31.3	7 9.5	0 .0	60 3.1	120 6.1
1	7 30.3	7 31.5	7 9.7	1 .1	61 3.1	121 6.2
2	7 30.5	7 31.8	7 10.0	2 .1	62 3.2	122 6.2
3	7 30.8	7 32.0	7 10.2	3 .2	63 3.2	123 6.3
4	7 31.0	7 32.3	7 10.5	4 .2	64 3.3	124 6.3
5	7 31.3	7 32.5	7 10.7	5 .3	65 3.3	125 6.4
6	7 31.5	7 32.8	7 10.9	6 .3	66 3.4	126 6.4
7	7 31.8	7 33.0	7 11.2	7 .4	67 3.4	127 6.5
8	7 32.0	7 33.3	7 11.4	8 .4	68 3.5	128 6.5
9	7 32.3	7 33.5	7 11.6	9 .5	69 3.5	129 6.6
10	7 32.5	7 33.8	7 11.9	10 .5	70 3.6	130 6.6
11	7 32.8	7 34.0	7 12.1	11 .6	71 3.6	131 6.7
12	7 33.0	7 34.3	7 12.4	12 .6	72 3.7	132 6.7
13	7 33.3	7 34.5	7 12.6	13 .7	73 3.7	133 6.8
14	7 33.5	7 34.8	7 12.8	14 .7	74 3.8	134 6.8
15	7 33.8	7 35.0	7 13.1	15 .8	75 3.8	135 6.9
16	7 34.0	7 35.3	7 13.3	16 .8	76 3.9	136 6.9
17	7 34.3	7 35.5	7 13.6	17 .9	77 3.9	137 7.0
18	7 34.5	7 35.8	7 13.8	18 .9	78 4.0	138 7.0
19	7 34.8	7 36.0	7 14.0	19 1.0	79 4.0	139 7.1
20	7 35.0	7 36.3	7 14.3	20 1.0	80 4.1	140 7.1
21	7 35.3	7 36.5	7 14.5	21 1.1	81 4.1	141 7.2
22	7 35.5	7 36.8	7 14.7	22 1.1	82 4.2	142 7.2
23	7 35.8	7 37.0	7 15.0	23 1.2	83 4.2	143 7.3
24	7 36.0	7 37.3	7 15.2	24 1.2	84 4.3	144 7.3
25	7 36.3	7 37.5	7 15.5	25 1.3	85 4.3	145 7.4
26	7 36.5	7 37.8	7 15.7	26 1.3	86 4.4	146 7.4
27	7 36.8	7 38.0	7 15.9	27 1.4	87 4.4	147 7.5
28	7 37.0	7 38.3	7 16.2	28 1.4	88 4.5	148 7.5
29	7 37.3	7 38.5	7 16.4	29 1.5	89 4.5	149 7.6
30	7 37.5	7 38.8	7 16.7	30 1.5	90 4.6	150 7.6
31	7 37.8	7 39.0	7 16.9	31 1.6	91 4.6	151 7.7
32	7 38.0	7 39.3	7 17.1	32 1.6	92 4.7	152 7.7
33	7 38.3	7 39.5	7 17.4	33 1.7	93 4.7	153 7.8
34	7 38.5	7 39.8	7 17.6	34 1.7	94 4.8	154 7.8
35	7 38.8	7 40.0	7 17.9	35 1.8	95 4.8	155 7.9
36	7 39.0	7 40.3	7 18.1	36 1.8	96 4.9	156 7.9
37	7 39.3	7 40.5	7 18.3	37 1.9	97 4.9	157 8.0
38	7 39.5	7 40.8	7 18.6	38 1.9	98 5.0	158 8.0
39	7 39.8	7 41.0	7 18.8	39 2.0	99 5.0	159 8.1
40	7 40.0	7 41.3	7 19.0	40 2.0	100 5.1	160 8.1
41	7 40.3	7 41.5	7 19.3	41 2.1	101 5.1	161 8.2
42	7 40.5	7 41.8	7 19.5	42 2.1	102 5.2	162 8.2
43	7 40.8	7 42.0	7 19.8	43 2.2	103 5.2	163 8.3
44	7 41.0	7 42.3	7 20.0	44 2.2	104 5.3	164 8.3
45	7 41.3	7 42.5	7 20.2	45 2.3	105 5.3	165 8.4
46	7 41.5	7 42.8	7 20.5	46 2.3	106 5.4	166 8.4
47	7 41.8	7 43.0	7 20.7	47 2.4	107 5.4	167 8.5
48	7 42.0	7 43.3	7 21.0	48 2.4	108 5.5	168 8.5
49	7 42.3	7 43.5	7 21.2	49 2.5	109 5.5	169 8.6
50	7 42.5	7 43.8	7 21.4	50 2.5	110 5.6	170 8.6
51	7 42.8	7 44.0	7 21.7	51 2.6	111 5.6	171 8.7
52	7 43.0	7 44.3	7 21.9	52 2.6	112 5.7	172 8.7
53	7 43.3	7 44.5	7 22.1	53 2.7	113 5.7	173 8.8
54	7 43.5	7 44.8	7 22.4	54 2.7	114 5.8	174 8.8
55	7 43.8	7 45.0	7 22.6	55 2.8	115 5.8	175 8.9
56	7 44.0	7 45.3	7 22.9	56 2.8	116 5.9	176 8.9
57	7 44.3	7 45.5	7 23.1	57 2.9	117 5.9	177 9.0
58	7 44.5	7 45.8	7 23.3	58 2.9	118 6.0	178 9.0
59	7 44.8	7 46.0	7 23.6	59 3.0	119 6.0	179 9.1
60	7 45.0	7 46.3	7 23.8	60 3.1	120 6.1	180 9.2

0 h 31 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o /	o /	o /	/	/	/
0	7 45.0	7 46.3	7 23.8	0 .0	60 3.2	120 6.3
1	7 45.3	7 46.5	7 24.1	1 .1	61 3.2	121 6.4
2	7 45.5	7 46.8	7 24.3	2 .1	62 3.3	122 6.4
3	7 45.8	7 47.0	7 24.5	3 .2	63 3.3	123 6.5
4	7 46.0	7 47.3	7 24.8	4 .2	64 3.4	124 6.5
5	7 46.3	7 47.5	7 25.0	5 .3	65 3.4	125 6.6
6	7 46.5	7 47.8	7 25.2	6 .3	66 3.5	126 6.6
7	7 46.8	7 48.0	7 25.5	7 .4	67 3.5	127 6.7
8	7 47.0	7 48.3	7 25.7	8 .4	68 3.6	128 6.7
9	7 47.3	7 48.5	7 26.0	9 .5	69 3.6	129 6.8
10	7 47.5	7 48.8	7 26.2	10 .5	70 3.7	130 6.8
11	7 47.8	7 49.0	7 26.4	11 .6	71 3.7	131 6.9
12	7 48.0	7 49.3	7 26.7	12 .6	72 3.8	132 6.9
13	7 48.3	7 49.6	7 26.9	13 .7	73 3.8	133 7.0
14	7 48.5	7 49.8	7 27.2	14 .7	74 3.9	134 7.0
15	7 48.8	7 50.1	7 27.4	15 .8	75 3.9	135 7.1
16	7 49.0	7 50.3	7 27.6	16 .8	76 4.0	136 7.1
17	7 49.3	7 50.6	7 27.9	17 .9	77 4.0	137 7.2
18	7 49.5	7 50.8	7 28.1	18 .9	78 4.1	138 7.2
19	7 49.8	7 51.1	7 28.4	19 1.0	79 4.1	139 7.3
20	7 50.0	7 51.3	7 28.6	20 1.1	80 4.2	140 7.4
21	7 50.3	7 51.6	7 28.8	21 1.1	81 4.3	141 7.4
22	7 50.5	7 51.8	7 29.1	22 1.2	82 4.3	142 7.5
23	7 50.8	7 52.1	7 29.3	23 1.2	83 4.4	143 7.5
24	7 51.0	7 52.3	7 29.5	24 1.3	84 4.4	144 7.6
25	7 51.3	7 52.6	7 29.8	25 1.3	85 4.5	145 7.6
26	7 51.5	7 52.8	7 30.0	26 1.4	86 4.5	146 7.7
27	7 51.8	7 53.1	7 30.3	27 1.4	87 4.6	147 7.7
28	7 52.0	7 53.3	7 30.5	28 1.5	88 4.6	148 7.8
29	7 52.3	7 53.6	7 30.7	29 1.5	89 4.7	149 7.8
30	7 52.5	7 53.8	7 31.0	30 1.6	90 4.7	150 7.9
31	7 52.8	7 54.1	7 31.2	31 1.6	91 4.8	151 7.9
32	7 53.0	7 54.3	7 31.5	32 1.7	92 4.8	152 8.0
33	7 53.3	7 54.6	7 31.7	33 1.7	93 4.9	153 8.0
34	7 53.5	7 54.8	7 31.9	34 1.8	94 4.9	154 8.1
35	7 53.8	7 55.1	7 32.2	35 1.8	95 5.0	155 8.1
36	7 54.0	7 55.3	7 32.4	36 1.9	96 5.0	156 8.2
37	7 54.3	7 55.6	7 32.6	37 1.9	97 5.1	157 8.2
38	7 54.5	7 55.8	7 32.9	38 2.0	98 5.1	158 8.3
39	7 54.8	7 56.1	7 33.1	39 2.0	99 5.2	159 8.3
40	7 55.0	7 56.3	7 33.4	40 2.1	100 5.3	160 8.4
41	7 55.3	7 56.6	7 33.6	41 2.2	101 5.3	161 8.5
42	7 55.5	7 56.8	7 33.8	42 2.2	102 5.4	162 8.5
43	7 55.8	7 57.1	7 34.1	43 2.3	103 5.4	163 8.6
44	7 56.0	7 57.3	7 34.3	44 2.3	104 5.5	164 8.6
45	7 56.3	7 57.6	7 34.6	45 2.4	105 5.5	165 8.7
46	7 56.5	7 57.8	7 34.8	46 2.4	106 5.6	166 8.7
47	7 56.8	7 58.1	7 35.0	47 2.5	107 5.6	167 8.8
48	7 57.0	7 58.3	7 35.3	48 2.5	108 5.7	168 8.8
49	7 57.3	7 58.6	7 35.5	49 2.6	109 5.7	169 8.9
50	7 57.5	7 58.8	7 35.7	50 2.6	110 5.8	170 8.9
51	7 57.8	7 59.1	7 36.0	51 2.7	111 5.8	171 9.0
52	7 58.0	7 59.3	7 36.2	52 2.7	112 5.9	172 9.0
53	7 58.3	7 59.6	7 36.5	53 2.8	113 5.9	173 9.1
54	7 58.5	7 59.8	7 36.7	54 2.8	114 6.0	174 9.1
55	7 58.8	8 .1	7 36.9	55 2.9	115 6.0	175 9.2
56	7 59.0	8 .3	7 37.2	56 2.9	116 6.1	176 9.2
57	7 59.3	8 .6	7 37.4	57 3.0	117 6.1	177 9.3
58	7 59.5	8 .8	7 37.7	58 3.0	118 6.2	178 9.3
59	7 59.8	8 1.1	7 37.9	59 3.1	119 6.2	179 9.4
60	8 .0	8 1.3	7 38.1	60 3.2	120 6.3	180 9.5

0 h 32 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	8	.0	8	1.3	7	38.1	0	.0	60	3.3	120	6.5
1	8	.3	8	1.6	7	38.4	1	.1	61	3.3	121	6.6
2	8	.5	8	1.8	7	38.6	2	.1	62	3.4	122	6.6
3	8	.8	8	2.1	7	38.8	3	.2	63	3.4	123	6.7
4	8	1.0	8	2.3	7	39.1	4	.2	64	3.5	124	6.7
5	8	1.3	8	2.6	7	39.3	5	.3	65	3.5	125	6.8
6	8	1.5	8	2.8	7	39.6	6	.3	66	3.6	126	6.8
7	8	1.8	8	3.1	7	39.8	7	.4	67	3.6	127	6.9
8	8	2.0	8	3.3	7	40.0	8	.4	68	3.7	128	6.9
9	8	2.3	8	3.6	7	40.3	9	.5	69	3.7	129	7.0
10	8	2.5	8	3.8	7	40.5	10	.5	70	3.8	130	7.0
11	8	2.8	8	4.1	7	40.8	11	.6	71	3.8	131	7.1
12	8	3.0	8	4.3	7	41.0	12	.7	72	3.9	132	7.2
13	8	3.3	8	4.6	7	41.2	13	.7	73	4.0	133	7.2
14	8	3.5	8	4.8	7	41.5	14	.8	74	4.0	134	7.3
15	8	3.8	8	5.1	7	41.7	15	.8	75	4.1	135	7.3
16	8	4.0	8	5.3	7	42.0	16	.9	76	4.1	136	7.4
17	8	4.3	8	5.6	7	42.2	17	.9	77	4.2	137	7.4
18	8	4.5	8	5.8	7	42.4	18	1.0	78	4.2	138	7.5
19	8	4.8	8	6.1	7	42.7	19	1.0	79	4.3	139	7.5
20	8	5.0	8	6.3	7	42.9	20	1.1	80	4.3	140	7.6
21	8	5.3	8	6.6	7	43.1	21	1.1	81	4.4	141	7.6
22	8	5.5	8	6.8	7	43.4	22	1.2	82	4.4	142	7.7
23	8	5.8	8	7.1	7	43.6	23	1.2	83	4.5	143	7.7
24	8	6.0	8	7.4	7	43.9	24	1.3	84	4.6	144	7.8
25	8	6.3	8	7.6	7	44.1	25	1.4	85	4.6	145	7.9
26	8	6.5	8	7.9	7	44.3	26	1.4	86	4.7	146	7.9
27	8	6.8	8	8.1	7	44.6	27	1.5	87	4.7	147	8.0
28	8	7.0	8	8.4	7	44.8	28	1.5	88	4.8	148	8.0
29	8	7.3	8	8.6	7	45.1	29	1.6	89	4.8	149	8.1
30	8	7.5	8	8.9	7	45.3	30	1.6	90	4.9	150	8.1
31	8	7.8	8	9.1	7	45.5	31	1.7	91	4.9	151	8.2
32	8	8.0	8	9.4	7	45.8	32	1.7	92	5.0	152	8.2
33	8	8.3	8	9.6	7	46.0	33	1.8	93	5.0	153	8.3
34	8	8.5	8	9.9	7	46.2	34	1.8	94	5.1	154	8.3
35	8	8.8	8	10.1	7	46.5	35	1.9	95	5.1	155	8.4
36	8	9.0	8	10.4	7	46.7	36	2.0	96	5.2	156	8.5
37	8	9.3	8	10.6	7	47.0	37	2.0	97	5.3	157	8.5
38	8	9.5	8	10.9	7	47.2	38	2.1	98	5.3	158	8.6
39	8	9.8	8	11.1	7	47.4	39	2.1	99	5.4	159	8.6
40	8	10.0	8	11.4	7	47.7	40	2.2	100	5.4	160	8.7
41	8	10.3	8	11.6	7	47.9	41	2.2	101	5.5	161	8.7
42	8	10.5	8	11.9	7	48.2	42	2.3	102	5.5	162	8.8
43	8	10.8	8	12.1	7	48.4	43	2.3	103	5.6	163	8.8
44	8	11.0	8	12.4	7	48.6	44	2.4	104	5.6	164	8.9
45	8	11.3	8	12.6	7	48.9	45	2.4	105	5.7	165	8.9
46	8	11.5	8	12.9	7	49.1	46	2.5	106	5.7	166	9.0
47	8	11.8	8	13.1	7	49.3	47	2.5	107	5.8	167	9.0
48	8	12.0	8	13.4	7	49.6	48	2.6	108	5.9	168	9.1
49	8	12.3	8	13.6	7	49.8	49	2.7	109	5.9	169	9.2
50	8	12.5	8	13.9	7	50.1	50	2.7	110	6.0	170	9.2
51	8	12.8	8	14.1	7	50.3	51	2.8	111	6.0	171	9.3
52	8	13.0	8	14.4	7	50.5	52	2.8	112	6.1	172	9.3
53	8	13.3	8	14.6	7	50.8	53	2.9	113	6.1	173	9.4
54	8	13.5	8	14.9	7	51.0	54	2.9	114	6.2	174	9.4
55	8	13.8	8	15.1	7	51.3	55	3.0	115	6.2	175	9.5
56	8	14.0	8	15.4	7	51.5	56	3.0	116	6.3	176	9.5
57	8	14.3	8	15.6	7	51.7	57	3.1	117	6.3	177	9.6
58	8	14.5	8	15.9	7	52.0	58	3.1	118	6.4	178	9.6
59	8	14.8	8	16.1	7	52.2	59	3.2	119	6.4	179	9.7
60	8	15.0	8	16.4	7	52.5	60	3.3	120	6.5	180	9.8

0 h 33 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.					
	o	'	o	'	'	'	'					
0	8	15.0	8	16.4	7	52.5	0	.0	60	3.4	120	6.7
1	8	15.3	8	16.6	7	52.7	1	.1	61	3.4	121	6.8
2	8	15.5	8	16.9	7	52.9	2	.1	62	3.5	122	6.8
3	8	15.8	8	17.1	7	53.2	3	.2	63	3.5	123	6.9
4	8	16.0	8	17.4	7	53.4	4	.2	64	3.6	124	6.9
5	8	16.3	8	17.6	7	53.6	5	.3	65	3.6	125	7.0
6	8	16.5	8	17.9	7	53.9	6	.3	66	3.7	126	7.0
7	8	16.8	8	18.1	7	54.1	7	.4	67	3.7	127	7.1
8	8	17.0	8	18.4	7	54.4	8	.4	68	3.8	128	7.1
9	8	17.3	8	18.6	7	54.6	9	.5	69	3.9	129	7.2
10	8	17.5	8	18.9	7	54.8	10	.6	70	3.9	130	7.3
11	8	17.8	8	19.1	7	55.1	11	.6	71	4.0	131	7.3
12	8	18.0	8	19.4	7	55.3	12	.7	72	4.0	132	7.4
13	8	18.3	8	19.6	7	55.6	13	.7	73	4.1	133	7.4
14	8	18.5	8	19.9	7	55.8	14	.8	74	4.1	134	7.5
15	8	18.8	8	20.1	7	56.0	15	.8	75	4.2	135	7.5
16	8	19.0	8	20.4	7	56.3	16	.9	76	4.2	136	7.6
17	8	19.3	8	20.6	7	56.5	17	.9	77	4.3	137	7.6
18	8	19.5	8	20.9	7	56.7	18	1.0	78	4.4	138	7.7
19	8	19.8	8	21.1	7	57.0	19	1.1	79	4.4	139	7.8
20	8	20.0	8	21.4	7	57.2	20	1.1	80	4.5	140	7.8
21	8	20.3	8	21.6	7	57.5	21	1.2	81	4.5	141	7.9
22	8	20.5	8	21.9	7	57.7	22	1.2	82	4.6	142	7.9
23	8	20.8	8	22.1	7	57.9	23	1.3	83	4.6	143	8.0
24	8	21.0	8	22.4	7	58.2	24	1.3	84	4.7	144	8.0
25	8	21.3	8	22.6	7	58.4	25	1.4	85	4.7	145	8.1
26	8	21.5	8	22.9	7	58.7	26	1.5	86	4.8	146	8.2
27	8	21.8	8	23.1	7	58.9	27	1.5	87	4.9	147	8.2
28	8	22.0	8	23.4	7	59.1	28	1.6	88	4.9	148	8.3
29	8	22.3	8	23.6	7	59.4	29	1.6	89	5.0	149	8.3
30	8	22.5	8	23.9	7	59.6	30	1.7	90	5.0	150	8.4
31	8	22.8	8	24.1	7	59.8	31	1.7	91	5.1	151	8.4
32	8	23.0	8	24.4	8	.1	32	1.8	92	5.1	152	8.5
33	8	23.3	8	24.6	8	.3	33	1.8	93	5.2	153	8.5
34	8	23.5	8	24.9	8	.6	34	1.9	94	5.2	154	8.6
35	8	23.8	8	25.1	8	.8	35	2.0	95	5.3	155	8.7
36	8	24.0	8	25.4	8	1.0	36	2.0	96	5.4	156	8.7
37	8	24.3	8	25.7	8	1.3	37	2.1	97	5.4	157	8.8
38	8	24.5	8	25.9	8	1.5	38	2.1	98	5.5	158	8.8
39	8	24.8	8	26.2	8	1.8	39	2.2	99	5.5	159	8.9
40	8	25.0	8	26.4	8	2.0	40	2.2	100	5.6	160	8.9
41	8	25.3	8	26.7	8	2.2	41	2.3	101	5.6	161	9.0
42	8	25.5	8	26.9	8	2.5	42	2.3	102	5.7	162	9.0
43	8	25.8	8	27.2	8	2.7	43	2.4	103	5.8	163	9.1
44	8	26.0	8	27.4	8	2.9	44	2.5	104	5.8	164	9.2
45	8	26.3	8	27.7	8	3.2	45	2.5	105	5.9	165	9.2
46	8	26.5	8	27.9	8	3.4	46	2.6	106	5.9	166	9.3
47	8	26.8	8	28.2	8	3.7	47	2.6	107	6.0	167	9.3
48	8	27.0	8	28.4	8	3.9	48	2.7	108	6.0	168	9.4
49	8	27.3	8	28.7	8	4.1	49	2.7	109	6.1	169	9.4
50	8	27.5	8	28.9	8	4.4	50	2.8	110	6.1	170	9.5
51	8	27.8	8	29.2	8	4.6	51	2.8	111	6.2	171	9.5
52	8	28.0	8	29.4	8	4.9	52	2.9	112	6.3	172	9.6
53	8	28.3	8	29.7	8	5.1	53	3.0	113	6.3	173	9.7
54	8	28.5	8	29.9	8	5.3	54	3.0	114	6.4	174	9.7
55	8	28.8	8	30.2	8	5.						

0 h 34 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	8 30.0	8 31.4	8 6.8	0	.0	60	3.5
1	8 30.3	8 31.7	8 7.0	1	.1	61	3.5
2	8 30.5	8 31.9	8 7.2	2	.1	62	3.6
3	8 30.8	8 32.2	8 7.5	3	.2	63	3.6
4	8 31.0	8 32.4	8 7.7	4	.2	64	3.7
5	8 31.3	8 32.7	8 8.0	5	.3	65	3.7
6	8 31.5	8 32.9	8 8.2	6	.3	66	3.8
7	8 31.8	8 33.2	8 8.4	7	.4	67	3.9
8	8 32.0	8 33.4	8 8.7	8	.5	68	3.9
9	8 32.3	8 33.7	8 8.9	9	.5	69	4.0
10	8 32.5	8 33.9	8 9.2	10	.6	70	4.0
11	8 32.8	8 34.2	8 9.4	11	.6	71	4.1
12	8 33.0	8 34.4	8 9.6	12	.7	72	4.1
13	8 33.3	8 34.7	8 9.9	13	.7	73	4.2
14	8 33.5	8 34.9	8 10.1	14	.8	74	4.3
15	8 33.8	8 35.2	8 10.3	15	.9	75	4.3
16	8 34.0	8 35.4	8 10.6	16	.9	76	4.4
17	8 34.3	8 35.7	8 10.8	17	1.0	77	4.4
18	8 34.5	8 35.9	8 11.1	18	1.0	78	4.5
19	8 34.8	8 36.2	8 11.3	19	1.1	79	4.5
20	8 35.0	8 36.4	8 11.5	20	1.2	80	4.6
21	8 35.3	8 36.7	8 11.8	21	1.2	81	4.7
22	8 35.5	8 36.9	8 12.0	22	1.3	82	4.7
23	8 35.8	8 37.2	8 12.3	23	1.3	83	4.8
24	8 36.0	8 37.4	8 12.5	24	1.4	84	4.8
25	8 36.3	8 37.7	8 12.7	25	1.4	85	4.9
26	8 36.5	8 37.9	8 13.0	26	1.5	86	4.9
27	8 36.8	8 38.2	8 13.2	27	1.6	87	5.0
28	8 37.0	8 38.4	8 13.4	28	1.6	88	5.1
29	8 37.3	8 38.7	8 13.7	29	1.7	89	5.1
30	8 37.5	8 38.9	8 13.9	30	1.7	90	5.2
31	8 37.8	8 39.2	8 14.2	31	1.8	91	5.2
32	8 38.0	8 39.4	8 14.4	32	1.8	92	5.3
33	8 38.3	8 39.7	8 14.6	33	1.9	93	5.3
34	8 38.5	8 39.9	8 14.9	34	2.0	94	5.4
35	8 38.8	8 40.2	8 15.1	35	2.0	95	5.5
36	8 39.0	8 40.4	8 15.4	36	2.1	96	5.5
37	8 39.3	8 40.7	8 15.6	37	2.1	97	5.6
38	8 39.5	8 40.9	8 15.8	38	2.2	98	5.6
39	8 39.8	8 41.2	8 16.1	39	2.2	99	5.7
40	8 40.0	8 41.4	8 16.3	40	2.3	100	5.8
41	8 40.3	8 41.7	8 16.5	41	2.4	101	5.8
42	8 40.5	8 41.9	8 16.8	42	2.4	102	5.9
43	8 40.8	8 42.2	8 17.0	43	2.5	103	5.9
44	8 41.0	8 42.4	8 17.3	44	2.5	104	6.0
45	8 41.3	8 42.7	8 17.5	45	2.6	105	6.0
46	8 41.5	8 42.9	8 17.7	46	2.6	106	6.1
47	8 41.8	8 43.2	8 18.0	47	2.7	107	6.2
48	8 42.0	8 43.5	8 18.2	48	2.8	108	6.2
49	8 42.3	8 43.7	8 18.5	49	2.8	109	6.3
50	8 42.5	8 44.0	8 18.7	50	2.9	110	6.3
51	8 42.8	8 44.2	8 18.9	51	2.9	111	6.4
52	8 43.0	8 44.5	8 19.2	52	3.0	112	6.4
53	8 43.3	8 44.7	8 19.4	53	3.0	113	6.5
54	8 43.5	8 45.0	8 19.7	54	3.1	114	6.6
55	8 43.8	8 45.2	8 19.9	55	3.2	115	6.6
56	8 44.0	8 45.5	8 20.1	56	3.2	116	6.7
57	8 44.3	8 45.7	8 20.4	57	3.3	117	6.7
58	8 44.5	8 46.0	8 20.6	58	3.3	118	6.8
59	8 44.8	8 46.2	8 20.8	59	3.4	119	6.8
60	8 45.0	8 46.5	8 21.1	60	3.5	120	6.9

0 h 35 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.		Δ popr.	
				°	'	°	'
0	8 45.0	8 46.5	8 21.1	0	.0	60	3.6
1	8 45.3	8 46.7	8 21.3	1	.1	61	3.6
2	8 45.5	8 47.0	8 21.6	2	.1	62	3.7
3	8 45.8	8 47.2	8 21.8	3	.2	63	3.7
4	8 46.0	8 47.5	8 22.0	4	.2	64	3.8
5	8 46.3	8 47.7	8 22.3	5	.3	65	3.8
6	8 46.5	8 48.0	8 22.5	6	.4	66	3.9
7	8 46.8	8 48.2	8 22.8	7	.4	67	4.0
8	8 47.0	8 48.5	8 23.0	8	.5	68	4.0
9	8 47.3	8 48.7	8 23.2	9	.5	69	4.1
10	8 47.5	8 49.0	8 23.5	10	.6	70	4.1
11	8 47.8	8 49.2	8 23.7	11	.7	71	4.2
12	8 48.0	8 49.5	8 23.9	12	.7	72	4.3
13	8 48.3	8 49.7	8 24.2	13	.8	73	4.3
14	8 48.5	8 50.0	8 24.4	14	.8	74	4.4
15	8 48.8	8 50.2	8 24.7	15	.9	75	4.4
16	8 49.0	8 50.5	8 24.9	16	.9	76	4.5
17	8 49.3	8 50.7	8 25.1	17	1.0	77	4.6
18	8 49.5	8 51.0	8 25.4	18	1.1	78	4.6
19	8 49.8	8 51.2	8 25.6	19	1.1	79	4.7
20	8 50.0	8 51.5	8 25.9	20	1.2	80	4.7
21	8 50.3	8 51.7	8 26.1	21	1.2	81	4.8
22	8 50.5	8 52.0	8 26.3	22	1.3	82	4.9
23	8 50.8	8 52.2	8 26.6	23	1.4	83	4.9
24	8 51.0	8 52.5	8 26.8	24	1.4	84	5.0
25	8 51.3	8 52.7	8 27.0	25	1.5	85	5.0
26	8 51.5	8 53.0	8 27.3	26	1.5	86	5.1
27	8 51.8	8 53.2	8 27.5	27	1.6	87	5.1
28	8 52.0	8 53.5	8 27.8	28	1.7	88	5.2
29	8 52.3	8 53.7	8 28.0	29	1.7	89	5.3
30	8 52.5	8 54.0	8 28.2	30	1.8	90	5.3
31	8 52.8	8 54.2	8 28.5	31	1.8	91	5.4
32	8 53.0	8 54.5	8 28.7	32	1.9	92	5.4
33	8 53.3	8 54.7	8 29.0	33	2.0	93	5.5
34	8 53.5	8 55.0	8 29.2	34	2.0	94	5.6
35	8 53.8	8 55.2	8 29.4	35	2.1	95	5.6
36	8 54.0	8 55.5	8 29.7	36	2.1	96	5.7
37	8 54.3	8 55.7	8 29.9	37	2.2	97	5.7
38	8 54.5	8 56.0	8 30.2	38	2.2	98	5.8
39	8 54.8	8 56.2	8 30.4	39	2.3	99	5.9
40	8 55.0	8 56.5	8 30.6	40	2.4	100	5.9
41	8 55.3	8 56.7	8 30.9	41	2.4	101	6.0
42	8 55.5	8 57.0	8 31.1	42	2.5	102	6.0
43	8 55.8	8 57.2	8 31.3	43	2.5	103	6.1
44	8 56.0	8 57.5	8 31.6	44	2.6	104	6.2
45	8 56.3	8 57.7	8 31.8	45	2.7	105	6.2
46	8 56.5	8 58.0	8 32.1	46	2.7	106	6.3
47	8 56.8	8 58.2	8 32.3	47	2.8	107	6.3
48	8 57.0	8 58.5	8 32.5	48	2.8	108	6.4
49	8 57.3	8 58.7	8 32.8	49	2.9	109	6.4
50	8 57.5	8 59.0	8 33.0	50	3.0	110	6.5
51	8 57.8	8 59.2	8 33.3	51	3.0	111	6.6
52	8 58.0	8 59.5	8 33.5	52	3.1	112	6.6
53	8 58.3	8 59.7	8 33.7	53	3.1	113	6.7
54	8 58.5	8 60.0	8 34.0	54	3.2	114	6.7
55	8 58.8	9 .2	8 34.2	55	3.3	115	6.8
56	8 59.0	9 .5	8 34.4	56	3.3	116	6.9
57	8 59.3	9 .7	8 34.7	57	3.4	117	6.9
58	8 59.5	9 1.0	8 34.9	58	3.4	118	7.0
59	8 59.8	9 1.2	8 35.2	59	3.5	119	7.0
60	9 .0	9 1.5	8 35.4	60	3.6	120	7.1

0 h 36 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	9	.0	9	1.5	8	35.4	0 .0 60 3.7 120 7.3
1	9	.3	9	1.8	8	35.6	1 .1 61 3.7 121 7.4
2	9	.5	9	2.0	8	35.9	2 .1 62 3.8 122 7.4
3	9	.8	9	2.3	8	36.1	3 .2 63 3.8 123 7.5
4	9	1.0	9	2.5	8	36.4	4 .2 64 3.9 124 7.5
5	9	1.3	9	2.8	8	36.6	5 .3 65 4.0 125 7.6
6	9	1.5	9	3.0	8	36.8	6 .4 66 4.0 126 7.7
7	9	1.8	9	3.3	8	37.1	7 .4 67 4.1 127 7.7
8	9	2.0	9	3.5	8	37.3	8 .5 68 4.1 128 7.8
9	9	2.3	9	3.8	8	37.5	9 .5 69 4.2 129 7.8
10	9	2.5	9	4.0	8	37.8	10 .6 70 4.3 130 7.9
11	9	2.8	9	4.3	8	38.0	11 .7 71 4.3 131 8.0
12	9	3.0	9	4.5	8	38.3	12 .7 72 4.4 132 8.0
13	9	3.3	9	4.8	8	38.5	13 .8 73 4.4 133 8.1
14	9	3.5	9	5.0	8	38.7	14 .9 74 4.5 134 8.2
15	9	3.8	9	5.3	8	39.0	15 .9 75 4.6 135 8.2
16	9	4.0	9	5.5	8	39.2	16 1.0 76 4.6 136 8.3
17	9	4.3	9	5.8	8	39.5	17 1.0 77 4.7 137 8.3
18	9	4.5	9	6.0	8	39.7	18 1.1 78 4.7 138 8.4
19	9	4.8	9	6.3	8	39.9	19 1.2 79 4.8 139 8.5
20	9	5.0	9	6.5	8	40.2	20 1.2 80 4.9 140 8.5
21	9	5.3	9	6.8	8	40.4	21 1.3 81 4.9 141 8.6
22	9	5.5	9	7.0	8	40.6	22 1.3 82 5.0 142 8.6
23	9	5.8	9	7.3	8	40.9	23 1.4 83 5.0 143 8.7
24	9	6.0	9	7.5	8	41.1	24 1.5 84 5.1 144 8.8
25	9	6.3	9	7.8	8	41.4	25 1.5 85 5.2 145 8.8
26	9	6.5	9	8.0	8	41.6	26 1.6 86 5.2 146 8.9
27	9	6.8	9	8.3	8	41.8	27 1.6 87 5.3 147 8.9
28	9	7.0	9	8.5	8	42.1	28 1.7 88 5.4 148 9.0
29	9	7.3	9	8.8	8	42.3	29 1.8 89 5.4 149 9.1
30	9	7.5	9	9.0	8	42.6	30 1.8 90 5.5 150 9.1
31	9	7.8	9	9.3	8	42.8	31 1.9 91 5.5 151 9.2
32	9	8.0	9	9.5	8	43.0	32 1.9 92 5.6 152 9.2
33	9	8.3	9	9.8	8	43.3	33 2.0 93 5.7 153 9.3
34	9	8.5	9	10.0	8	43.5	34 2.1 94 5.7 154 9.4
35	9	8.8	9	10.3	8	43.8	35 2.1 95 5.8 155 9.4
36	9	9.0	9	10.5	8	44.0	36 2.2 96 5.8 156 9.5
37	9	9.3	9	10.8	8	44.2	37 2.3 97 5.9 157 9.6
38	9	9.5	9	11.0	8	44.5	38 2.3 98 6.0 158 9.6
39	9	9.8	9	11.3	8	44.7	39 2.4 99 6.0 159 9.7
40	9	10.0	9	11.5	8	44.9	40 2.4 100 6.1 160 9.7
41	9	10.3	9	11.8	8	45.2	41 2.5 101 6.1 161 9.8
42	9	10.5	9	12.0	8	45.4	42 2.6 102 6.2 162 9.9
43	9	10.8	9	12.3	8	45.7	43 2.6 103 6.3 163 9.9
44	9	11.0	9	12.5	8	45.9	44 2.7 104 6.3 164 10.0
45	9	11.3	9	12.8	8	46.1	45 2.7 105 6.4 165 10.0
46	9	11.5	9	13.0	8	46.4	46 2.8 106 6.4 166 10.1
47	9	11.8	9	13.3	8	46.6	47 2.9 107 6.5 167 10.2
48	9	12.0	9	13.5	8	46.9	48 2.9 108 6.6 168 10.2
49	9	12.3	9	13.8	8	47.1	49 3.0 109 6.6 169 10.3
50	9	12.5	9	14.0	8	47.3	50 3.0 110 6.7 170 10.3
51	9	12.8	9	14.3	8	47.6	51 3.1 111 6.8 171 10.4
52	9	13.0	9	14.5	8	47.8	52 3.2 112 6.8 172 10.5
53	9	13.3	9	14.8	8	48.0	53 3.2 113 6.9 173 10.5
54	9	13.5	9	15.0	8	48.3	54 3.3 114 6.9 174 10.6
55	9	13.8	9	15.3	8	48.5	55 3.3 115 7.0 175 10.6
56	9	14.0	9	15.5	8	48.8	56 3.4 116 7.1 176 10.7
57	9	14.3	9	15.8	8	49.0	57 3.5 117 7.1 177 10.8
58	9	14.5	9	16.0	8	49.2	58 3.5 118 7.2 178 10.8
59	9	14.8	9	16.3	8	49.5	59 3.6 119 7.2 179 10.9
60	9	15.0	9	16.5	8	49.7	60 3.7 120 7.3 180 11.0

0 h 37 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	9	15.0	9	16.5	8	49.7	0 .0 60 3.8 120 7.5
1	9	15.3	9	16.8	8	50.0	1 .1 61 3.8 121 7.6
2	9	15.5	9	17.0	8	50.2	2 .1 62 3.9 122 7.6
3	9	15.8	9	17.3	8	50.4	3 .2 63 3.9 123 7.7
4	9	16.0	9	17.5	8	50.7	4 .3 64 4.0 124 7.8
5	9	16.3	9	17.8	8	50.9	5 .3 65 4.1 125 7.8
6	9	16.5	9	18.0	8	51.1	6 .4 66 4.1 126 7.9
7	9	16.8	9	18.3	8	51.4	7 .4 67 4.2 127 7.9
8	9	17.0	9	18.5	8	51.6	8 .5 68 4.3 128 8.0
9	9	17.3	9	18.8	8	51.9	9 .6 69 4.3 129 8.1
10	9	17.5	9	19.0	8	52.1	10 .6 70 4.4 130 8.1
11	9	17.8	9	19.3	8	52.3	11 .7 71 4.4 131 8.2
12	9	18.0	9	19.6	8	52.6	12 .8 72 4.5 132 8.3
13	9	18.3	9	19.8	8	52.8	13 .8 73 4.6 133 8.3
14	9	18.5	9	20.1	8	53.1	14 .9 74 4.6 134 8.4
15	9	18.8	9	20.3	8	53.3	15 .9 75 4.7 135 8.4
16	9	19.0	9	20.6	8	53.5	16 1.0 76 4.8 136 8.5
17	9	19.3	9	20.8	8	53.8	17 1.1 77 4.8 137 8.6
18	9	19.5	9	21.1	8	54.0	18 1.1 78 4.9 138 8.6
19	9	19.8	9	21.3	8	54.3	19 1.2 79 4.9 139 8.7
20	9	20.0	9	21.6	8	54.5	20 1.3 80 5.0 140 8.8
21	9	20.3	9	21.8	8	54.7	21 1.3 81 5.1 141 8.8
22	9	20.5	9	22.1	8	55.0	22 1.4 82 5.1 142 8.9
23	9	20.8	9	22.3	8	55.2	23 1.4 83 5.2 143 8.9
24	9	21.0	9	22.6	8	55.4	24 1.5 84 5.3 144 9.0
25	9	21.3	9	22.8	8	55.7	25 1.6 85 5.3 145 9.1
26	9	21.5	9	23.1	8	55.9	26 1.6 86 5.4 146 9.1
27	9	21.8	9	23.3	8	56.2	27 1.7 87 5.4 147 9.2
28	9	22.0	9	23.6	8	56.4	28 1.8 88 5.5 148 9.3
29	9	22.3	9	23.8	8	56.6	29 1.8 89 5.6 149 9.3
30	9	22.5	9	24.1	8	56.9	30 1.9 90 5.6 150 9.4
31	9	22.8	9	24.3	8	57.1	31 1.9 91 5.7 151 9.4
32	9	23.0	9	24.6	8	57.4	32 2.0 92 5.8 152 9.5
33	9	23.3	9	24.8	8	57.6	33 2.1 93 5.8 153 9.6
34	9	23.5	9	25.1	8	57.8	34 2.1 94 5.9 154 9.6
35	9	23.8	9	25.3	8	58.1	35 2.2 95 5.9 155 9.7
36	9	24.0	9	25.6	8	58.3	36 2.3 96 6.0 156 9.8
37	9	24.3	9	25.8	8	58.5	37 2.3 97 6.1 157 9.8
38	9	24.5	9	26.1	8	58.8	38 2.4 98 6.1 158 9.9
39	9	24.8	9	26.3	8	59.0	39 2.4 99 6.2 159 9.9
40	9	25.0	9	26.6	8	59.3	40 2.5 100 6.3 160 10.0
41	9	25.3	9	26.8	8	59.5	41 2.6 101 6.3 161 10.1
42	9	25.5	9	27.1	8	59.7	42 2.6 102 6.4 162 10.1
43	9	25.8	9	27.3	8	60.0	43 2.7 103 6.4 163 10.2
44	9	26.0	9	27.6	9	.2	44 2.8 104 6.5 164 10.3
45	9	26.3	9	27.8	9	.5	45 2.8 105 6.6 165 10.3
46	9	26.5	9	28.1	9	.7	46 2.9 106 6.6 166 10.4
47	9	26.8	9	28.3	9	.9	47 2.9 107 6.7 167 10.4
48	9	27.0	9	28.6	9	1.2	48 3.0 108 6.8 168 10.5
49	9	27.3	9	28.8	9	1.4	49 3.1 109 6.8 169 10.6
50	9	27.5	9	29.1	9	1.6	50 3.1 110 6.9 170 10.6
51	9	27.8	9	29.3	9	1.9	51 3.2 111 6.9 171 10.7
52	9	28.0	9	29.6	9	2.1	52 3.3 112 7.0 172 10.8
53	9	28.3	9	29.8	9	2.4	53 3.3 113 7.1 173 10.8
54	9	28.5	9	30.1	9	2.6	54 3.4 114 7.1 174 10.9
55	9	28.8	9	30.3	9	2.8	55 3.4 115 7.2 175 10.9
56	9	29.0	9	30.6	9	3.1	56 3.5 116 7.3 176 11.0
57	9	29.3	9	30.8	9	3.3	57 3.6 117 7.3 177 11.1
58	9	29.5	9	31.1	9	3.6	58 3.6 118 7.4 178 11.1
59	9	29.8	9	31.3	9	3.8	59 3.7 119 7.4 179 11.2
60	9	30.0	9	31.6	9	4.0	60 3.8 120 7.5 180 11.3

0 h 38 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	9 30.0	9 31.6	9 4.0	0 .0	60 3.9	120 7.7
1	9 30.3	9 31.8	9 4.3	1 .1	61 3.9	121 7.8
2	9 30.5	9 32.1	9 4.5	2 .1	62 4.0	122 7.8
3	9 30.8	9 32.3	9 4.7	3 .2	63 4.0	123 7.9
4	9 31.0	9 32.6	9 5.0	4 .3	64 4.1	124 8.0
5	9 31.3	9 32.8	9 5.2	5 .3	65 4.2	125 8.0
6	9 31.5	9 33.1	9 5.5	6 .4	66 4.2	126 8.1
7	9 31.8	9 33.3	9 5.7	7 .4	67 4.3	127 8.1
8	9 32.0	9 33.6	9 5.9	8 .5	68 4.4	128 8.2
9	9 32.3	9 33.8	9 6.2	9 .6	69 4.4	129 8.3
10	9 32.5	9 34.1	9 6.4	10 .6	70 4.5	130 8.3
11	9 32.8	9 34.3	9 6.7	11 .7	71 4.6	131 8.4
12	9 33.0	9 34.6	9 6.9	12 .8	72 4.6	132 8.5
13	9 33.3	9 34.8	9 7.1	13 .8	73 4.7	133 8.5
14	9 33.5	9 35.1	9 7.4	14 .9	74 4.7	134 8.6
15	9 33.8	9 35.3	9 7.6	15 1.0	75 4.8	135 8.7
16	9 34.0	9 35.6	9 7.9	16 1.0	76 4.9	136 8.7
17	9 34.3	9 35.8	9 8.1	17 1.1	77 4.9	137 8.8
18	9 34.5	9 36.1	9 8.3	18 1.2	78 5.0	138 8.9
19	9 34.8	9 36.3	9 8.6	19 1.2	79 5.1	139 8.9
20	9 35.0	9 36.6	9 8.8	20 1.3	80 5.1	140 9.0
21	9 35.3	9 36.8	9 9.0	21 1.3	81 5.2	141 9.0
22	9 35.5	9 37.1	9 9.3	22 1.4	82 5.3	142 9.1
23	9 35.8	9 37.3	9 9.5	23 1.5	83 5.3	143 9.2
24	9 36.0	9 37.6	9 9.8	24 1.5	84 5.4	144 9.2
25	9 36.3	9 37.9	9 10.0	25 1.6	85 5.5	145 9.3
26	9 36.5	9 38.1	9 10.2	26 1.7	86 5.5	146 9.4
27	9 36.8	9 38.4	9 10.5	27 1.7	87 5.6	147 9.4
28	9 37.0	9 38.6	9 10.7	28 1.8	88 5.6	148 9.5
29	9 37.3	9 38.9	9 11.0	29 1.9	89 5.7	149 9.6
30	9 37.5	9 39.1	9 11.2	30 1.9	90 5.8	150 9.6
31	9 37.8	9 39.4	9 11.4	31 2.0	91 5.8	151 9.7
32	9 38.0	9 39.6	9 11.7	32 2.1	92 5.9	152 9.8
33	9 38.3	9 39.9	9 11.9	33 2.1	93 6.0	153 9.8
34	9 38.5	9 40.1	9 12.1	34 2.2	94 6.0	154 9.9
35	9 38.8	9 40.4	9 12.4	35 2.2	95 6.1	155 9.9
36	9 39.0	9 40.6	9 12.6	36 2.3	96 6.2	156 10.0
37	9 39.3	9 40.9	9 12.9	37 2.4	97 6.2	157 10.1
38	9 39.5	9 41.1	9 13.1	38 2.4	98 6.3	158 10.1
39	9 39.8	9 41.4	9 13.3	39 2.5	99 6.4	159 10.2
40	9 40.0	9 41.6	9 13.6	40 2.6	100 6.4	160 10.3
41	9 40.3	9 41.9	9 13.8	41 2.6	101 6.5	161 10.3
42	9 40.5	9 42.1	9 14.1	42 2.7	102 6.5	162 10.4
43	9 40.8	9 42.4	9 14.3	43 2.8	103 6.6	163 10.5
44	9 41.0	9 42.6	9 14.5	44 2.8	104 6.7	164 10.5
45	9 41.3	9 42.9	9 14.8	45 2.9	105 6.7	165 10.6
46	9 41.5	9 43.1	9 15.0	46 3.0	106 6.8	166 10.7
47	9 41.8	9 43.4	9 15.2	47 3.0	107 6.9	167 10.7
48	9 42.0	9 43.6	9 15.5	48 3.1	108 6.9	168 10.8
49	9 42.3	9 43.9	9 15.7	49 3.1	109 7.0	169 10.8
50	9 42.5	9 44.1	9 16.0	50 3.2	110 7.1	170 10.9
51	9 42.8	9 44.4	9 16.2	51 3.3	111 7.1	171 11.0
52	9 43.0	9 44.6	9 16.4	52 3.3	112 7.2	172 11.0
53	9 43.3	9 44.9	9 16.7	53 3.4	113 7.3	173 11.1
54	9 43.5	9 45.1	9 16.9	54 3.5	114 7.3	174 11.2
55	9 43.8	9 45.4	9 17.2	55 3.5	115 7.4	175 11.2
56	9 44.0	9 45.6	9 17.4	56 3.6	116 7.4	176 11.3
57	9 44.3	9 45.9	9 17.6	57 3.7	117 7.5	177 11.4
58	9 44.5	9 46.1	9 17.9	58 3.7	118 7.6	178 11.4
59	9 44.8	9 46.4	9 18.1	59 3.8	119 7.6	179 11.5
60	9 45.0	9 46.6	9 18.4	60 3.9	120 7.7	180 11.6

0 h 39 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	9 45.0	9 46.6	9 18.4	0 .0	60 4.0	120 7.9
1	9 45.3	9 46.9	9 18.6	1 .1	61 4.0	121 8.0
2	9 45.5	9 47.1	9 18.8	2 .1	62 4.1	122 8.0
3	9 45.8	9 47.4	9 19.1	3 .2	63 4.1	123 8.1
4	9 46.0	9 47.6	9 19.3	4 .3	64 4.2	124 8.2
5	9 46.3	9 47.9	9 19.5	5 .3	65 4.3	125 8.2
6	9 46.5	9 48.1	9 19.8	6 .4	66 4.3	126 8.3
7	9 46.8	9 48.4	9 20.0	7 .5	67 4.4	127 8.4
8	9 47.0	9 48.6	9 20.3	8 .5	68 4.5	128 8.4
9	9 47.3	9 48.9	9 20.5	9 .6	69 4.5	129 8.5
10	9 47.5	9 49.1	9 20.7	10 .7	70 4.6	130 8.6
11	9 47.8	9 49.4	9 21.0	11 .7	71 4.7	131 8.6
12	9 48.0	9 49.6	9 21.2	12 .8	72 4.7	132 8.7
13	9 48.3	9 49.9	9 21.5	13 .9	73 4.8	133 8.8
14	9 48.5	9 50.1	9 21.7	14 .9	74 4.9	134 8.8
15	9 48.8	9 50.4	9 21.9	15 1.0	75 4.9	135 8.9
16	9 49.0	9 50.6	9 22.2	16 1.1	76 5.0	136 9.0
17	9 49.3	9 50.9	9 22.4	17 1.1	77 5.1	137 9.0
18	9 49.5	9 51.1	9 22.6	18 1.2	78 5.1	138 9.1
19	9 49.8	9 51.4	9 22.9	19 1.3	79 5.2	139 9.2
20	9 50.0	9 51.6	9 23.1	20 1.3	80 5.3	140 9.2
21	9 50.3	9 51.9	9 23.4	21 1.4	81 5.3	141 9.3
22	9 50.5	9 52.1	9 23.6	22 1.4	82 5.4	142 9.3
23	9 50.8	9 52.4	9 23.8	23 1.5	83 5.5	143 9.4
24	9 51.0	9 52.6	9 24.1	24 1.6	84 5.5	144 9.5
25	9 51.3	9 52.9	9 24.3	25 1.6	85 5.6	145 9.5
26	9 51.5	9 53.1	9 24.6	26 1.7	86 5.7	146 9.6
27	9 51.8	9 53.4	9 24.8	27 1.8	87 5.7	147 9.7
28	9 52.0	9 53.6	9 25.0	28 1.8	88 5.8	148 9.7
29	9 52.3	9 53.9	9 25.3	29 1.9	89 5.9	149 9.8
30	9 52.5	9 54.1	9 25.5	30 2.0	90 5.9	150 9.9
31	9 52.8	9 54.4	9 25.7	31 2.0	91 6.0	151 9.9
32	9 53.0	9 54.6	9 26.0	32 2.1	92 6.1	152 10.0
33	9 53.3	9 54.9	9 26.2	33 2.2	93 6.1	153 10.1
34	9 53.5	9 55.1	9 26.5	34 2.2	94 6.2	154 10.1
35	9 53.8	9 55.4	9 26.7	35 2.3	95 6.3	155 10.2
36	9 54.0	9 55.7	9 26.9	36 2.4	96 6.3	156 10.3
37	9 54.3	9 55.9	9 27.2	37 2.4	97 6.4	157 10.3
38	9 54.5	9 56.2	9 27.4	38 2.5	98 6.5	158 10.4
39	9 54.8	9 56.4	9 27.7	39 2.6	99 6.5	159 10.5
40	9 55.0	9 56.7	9 27.9	40 2.6	100 6.6	160 10.5
41	9 55.3	9 56.9	9 28.1	41 2.7	101 6.6	161 10.6
42	9 55.5	9 57.2	9 28.4	42 2.8	102 6.7	162 10.7
43	9 55.8	9 57.4	9 28.6	43 2.8	103 6.8	163 10.7
44	9 56.0	9 57.7	9 28.8	44 2.9	104 6.8	164 10.8
45	9 56.3	9 57.9	9 29.1	45 3.0	105 6.9	165 10.9
46	9 56.5	9 58.2	9 29.3	46 3.0	106 7.0	166 10.9
47	9 56.8	9 58.4	9 29.6	47 3.1	107 7.0	167 11.0
48	9 57.0	9 58.7	9 29.8	48 3.2	108 7.1	168 11.1
49	9 57.3	9 58.9	9 30.0	49 3.2	109 7.2	169 11.1
50	9 57.5	9 59.2	9 30.3	50 3.3	110 7.2	170 11.2
51	9 57.8	9 59.4	9 30.5	51 3.4	111 7.3	171 11.3
52	9 58.0	9 59.7	9 30.8	52 3.4	112 7.4	172 11.3
53	9 58.3	9 59.9	9 31.0	53 3.5	113 7.4	173 11.4
54	9 58.5	10 .2	9 31.2	54 3.6	114 7.5	174 11.5
55	9 58.8	10 .4	9 31.5	55 3.6	115 7.6	175 11.5
56	9 59.0	10 .7	9 31.7	56 3.7	116 7.6	176 11.6
57	9 59.3	10 .9	9 32.0	57 3.8	117 7.7	177 11.7
58	9 59.5	10 1.2	9 32.2	58 3.8	118 7.8	178 11.7
59	9 59.8	10 1.4	9 32.4	59 3.9	119 7.8	179 11.8
60	10 .0	10 1.7	9 32.7	60 4.0	120 7.9	180 11.9

0 h 40 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta				
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.	
	°	'	°	'	'	'	'	
0	10	.0	10	1.7	9 32.7	0 .0	60 4.1	120 8.1
1	10	.3	10	1.9	9 32.9	1 .1	61 4.1	121 8.2
2	10	.5	10	2.2	9 33.1	2 .1	62 4.2	122 8.2
3	10	.8	10	2.4	9 33.4	3 .2	63 4.3	123 8.3
4	10	1.0	10	2.7	9 33.6	4 .3	64 4.3	124 8.4
5	10	1.3	10	2.9	9 33.9	5 .3	65 4.4	125 8.4
6	10	1.5	10	3.2	9 34.1	6 .4	66 4.5	126 8.5
7	10	1.8	10	3.4	9 34.3	7 .5	67 4.5	127 8.6
8	10	2.0	10	3.7	9 34.6	8 .5	68 4.6	128 8.6
9	10	2.3	10	3.9	9 34.8	9 .6	69 4.7	129 8.7
10	10	2.5	10	4.2	9 35.1	10 .7	70 4.7	130 8.8
11	10	2.8	10	4.4	9 35.3	11 .7	71 4.8	131 8.8
12	10	3.0	10	4.7	9 35.5	12 .8	72 4.9	132 8.9
13	10	3.3	10	4.9	9 35.8	13 .9	73 4.9	133 9.0
14	10	3.5	10	5.2	9 36.0	14 .9	74 5.0	134 9.0
15	10	3.8	10	5.4	9 36.2	15 1.0	75 5.1	135 9.1
16	10	4.0	10	5.7	9 36.5	16 1.1	76 5.1	136 9.2
17	10	4.3	10	5.9	9 36.7	17 1.1	77 5.2	137 9.2
18	10	4.5	10	6.2	9 37.0	18 1.2	78 5.3	138 9.3
19	10	4.8	10	6.4	9 37.2	19 1.3	79 5.3	139 9.4
20	10	5.0	10	6.7	9 37.4	20 1.4	80 5.4	140 9.5
21	10	5.3	10	6.9	9 37.7	21 1.4	81 5.5	141 9.5
22	10	5.5	10	7.2	9 37.9	22 1.5	82 5.5	142 9.6
23	10	5.8	10	7.4	9 38.2	23 1.6	83 5.6	143 9.7
24	10	6.0	10	7.7	9 38.4	24 1.6	84 5.7	144 9.7
25	10	6.3	10	7.9	9 38.6	25 1.7	85 5.7	145 9.8
26	10	6.5	10	8.2	9 38.9	26 1.8	86 5.8	146 9.9
27	10	6.8	10	8.4	9 39.1	27 1.8	87 5.9	147 9.9
28	10	7.0	10	8.7	9 39.3	28 1.9	88 5.9	148 10.0
29	10	7.3	10	8.9	9 39.6	29 2.0	89 6.0	149 10.1
30	10	7.5	10	9.2	9 39.8	30 2.0	90 6.1	150 10.1
31	10	7.8	10	9.4	9 40.1	31 2.1	91 6.1	151 10.2
32	10	8.0	10	9.7	9 40.3	32 2.2	92 6.2	152 10.3
33	10	8.3	10	9.9	9 40.5	33 2.2	93 6.3	153 10.3
34	10	8.5	10	10.2	9 40.8	34 2.3	94 6.3	154 10.4
35	10	8.8	10	10.4	9 41.0	35 2.4	95 6.4	155 10.5
36	10	9.0	10	10.7	9 41.3	36 2.4	96 6.5	156 10.5
37	10	9.3	10	10.9	9 41.5	37 2.5	97 6.5	157 10.6
38	10	9.5	10	11.2	9 41.7	38 2.6	98 6.6	158 10.7
39	10	9.8	10	11.4	9 42.0	39 2.6	99 6.7	159 10.7
40	10	10.0	10	11.7	9 42.2	40 2.7	100 6.8	160 10.8
41	10	10.3	10	11.9	9 42.4	41 2.8	101 6.8	161 10.9
42	10	10.5	10	12.2	9 42.7	42 2.8	102 6.9	162 10.9
43	10	10.8	10	12.4	9 42.9	43 2.9	103 7.0	163 11.0
44	10	11.0	10	12.7	9 43.2	44 3.0	104 7.0	164 11.1
45	10	11.3	10	12.9	9 43.4	45 3.0	105 7.1	165 11.1
46	10	11.5	10	13.2	9 43.6	46 3.1	106 7.2	166 11.2
47	10	11.8	10	13.4	9 43.9	47 3.2	107 7.2	167 11.3
48	10	12.0	10	13.7	9 44.1	48 3.2	108 7.3	168 11.3
49	10	12.3	10	14.0	9 44.4	49 3.3	109 7.4	169 11.4
50	10	12.5	10	14.2	9 44.6	50 3.4	110 7.4	170 11.5
51	10	12.8	10	14.5	9 44.8	51 3.4	111 7.5	171 11.5
52	10	13.0	10	14.7	9 45.1	52 3.5	112 7.6	172 11.6
53	10	13.3	10	15.0	9 45.3	53 3.6	113 7.6	173 11.7
54	10	13.5	10	15.2	9 45.6	54 3.6	114 7.7	174 11.7
55	10	13.8	10	15.5	9 45.8	55 3.7	115 7.8	175 11.8
56	10	14.0	10	15.7	9 46.0	56 3.8	116 7.8	176 11.9
57	10	14.3	10	16.0	9 46.3	57 3.8	117 7.9	177 11.9
58	10	14.5	10	16.2	9 46.5	58 3.9	118 8.0	178 12.0
59	10	14.8	10	16.5	9 46.7	59 4.0	119 8.0	179 12.1
60	10	15.0	10	16.7	9 47.0	60 4.1	120 8.1	180 12.2

0 h 41 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta				
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.	
	°	'	°	'	'	'	'	
0	10	15.0	10	16.7	9 47.0	0 .0	60 4.2	120 8.3
1	10	15.3	10	17.0	9 47.2	1 .1	61 4.2	121 8.4
2	10	15.5	10	17.2	9 47.5	2 .1	62 4.3	122 8.4
3	10	15.8	10	17.5	9 47.7	3 .2	63 4.4	123 8.5
4	10	16.0	10	17.7	9 47.9	4 .3	64 4.4	124 8.6
5	10	16.3	10	18.0	9 48.2	5 .3	65 4.5	125 8.6
6	10	16.5	10	18.2	9 48.4	6 .4	66 4.6	126 8.7
7	10	16.8	10	18.5	9 48.7	7 .5	67 4.6	127 8.8
8	10	17.0	10	18.7	9 48.9	8 .6	68 4.7	128 8.9
9	10	17.3	10	19.0	9 49.1	9 .6	69 4.8	129 8.9
10	10	17.5	10	19.2	9 49.4	10 .7	70 4.8	130 9.0
11	10	17.8	10	19.5	9 49.6	11 .8	71 4.9	131 9.1
12	10	18.0	10	19.7	9 49.8	12 .8	72 5.0	132 9.1
13	10	18.3	10	20.0	9 50.1	13 .9	73 5.0	133 9.2
14	10	18.5	10	20.2	9 50.3	14 1.0	74 5.1	134 9.3
15	10	18.8	10	20.5	9 50.6	15 1.0	75 5.2	135 9.3
16	10	19.0	10	20.7	9 50.8	16 1.1	76 5.3	136 9.4
17	10	19.3	10	21.0	9 51.0	17 1.2	77 5.3	137 9.5
18	10	19.5	10	21.2	9 51.3	18 1.2	78 5.4	138 9.5
19	10	19.8	10	21.5	9 51.5	19 1.3	79 5.5	139 9.6
20	10	20.0	10	21.7	9 51.8	20 1.4	80 5.5	140 9.7
21	10	20.3	10	22.0	9 52.0	21 1.5	81 5.6	141 9.8
22	10	20.5	10	22.2	9 52.2	22 1.5	82 5.7	142 9.8
23	10	20.8	10	22.5	9 52.5	23 1.6	83 5.7	143 9.9
24	10	21.0	10	22.7	9 52.7	24 1.7	84 5.8	144 10.0
25	10	21.3	10	23.0	9 52.9	25 1.7	85 5.9	145 10.0
26	10	21.5	10	23.2	9 53.2	26 1.8	86 5.9	146 10.1
27	10	21.8	10	23.5	9 53.4	27 1.9	87 6.0	147 10.2
28	10	22.0	10	23.7	9 53.7	28 1.9	88 6.1	148 10.2
29	10	22.3	10	24.0	9 53.9	29 2.0	89 6.2	149 10.3
30	10	22.5	10	24.2	9 54.1	30 2.1	90 6.2	150 10.4
31	10	22.8	10	24.5	9 54.4	31 2.1	91 6.3	151 10.4
32	10	23.0	10	24.7	9 54.6	32 2.2	92 6.4	152 10.5
33	10	23.3	10	25.0	9 54.9	33 2.3	93 6.4	153 10.6
34	10	23.5	10	25.2	9 55.1	34 2.4	94 6.5	154 10.7
35	10	23.8	10	25.5	9 55.3	35 2.4	95 6.6	155 10.7
36	10	24.0	10	25.7	9 55.6	36 2.5	96 6.6	156 10.8
37	10	24.3	10	26.0	9 55.8	37 2.6	97 6.7	157 10.9
38	10	24.5	10	26.2	9 56.1	38 2.6	98 6.8	158 10.9
39	10	24.8	10	26.5	9 56.3	39 2.7	99 6.8	159 11.0
40	10	25.0	10	26.7	9 56.5	40 2.8	100 6.9	160 11.1
41	10	25.3	10	27.0	9 56.8	41 2.8	101 7.0	161 11.1
42	10	25.5	10	27.2	9 57.0	42 2.9	102 7.1	162 11.2
43	10	25.8	10	27.5	9 57.2	43 3.0	103 7.1	163 11.3
44	10	26.0	10	27.7	9 57.5	44 3.0	104 7.2	164 11.3
45	10	26.3	10	28.0	9 57.7	45 3.1	105 7.3	165 11.4
46	10	26.5	10	28.2	9 58.0	46 3.2	106 7.3	166 11.5
47	10	26.8	10	28.5	9 58.2	47 3.3	107 7.4	167 11.6
48	10	27.0	10	28.7	9 58.4	48 3.3	108 7.5	168 11.6
49	10	27.3	10	29.0	9 58.7	49 3.4	109 7.5	169 11.7
50	10	27.5	10	29.2	9 58.9	50 3.5	110 7.6	170 11.8
51	10	27.8	10	29.5	9 59.2	51 3.5	111 7.7	171 11.8
52	10	28.0	10	29.7	9 59.4	52 3.6	112 7.7	172 11.9
53	10	28.3	10	30.0	9 59.6	53 3.7	113 7.8	173 12.0
54	10	28.5	10	30.2	9 59.9	54 3.7	114 7.9	174 12.0
55	10	28.8	10	30.5	10 .1	55 3.8	115 8.0	175 12.1
56	10	29.0	10	30.7	10 .3	56 3.9	116 8.0	176 12.2
57	10	29.3	10	31.0	10 .6	57 3.9	117 8.1	177 12.2
58	10	29.5	10	31.2	10 .8	58 4.0	118 8.2	178 12.3
59	10	29.8	10	31.5	10 1.1	59 4.1	119 8.2	179 12.4
60	10	30.0	10	31.8	10 1.3	60 4.2	120 8.3	180 12.5

0 h 42 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	10 30.0	10 31.8	10 1.3	0 .0	60 4.3	120 8.5
1	10 30.3	10 32.0	10 1.5	1 .1	61 4.3	121 8.6
2	10 30.5	10 32.3	10 1.8	2 .1	62 4.4	122 8.6
3	10 30.8	10 32.5	10 2.0	3 .2	63 4.5	123 8.7
4	10 31.0	10 32.8	10 2.3	4 .3	64 4.5	124 8.8
5	10 31.3	10 33.0	10 2.5	5 .4	65 4.6	125 8.9
6	10 31.5	10 33.3	10 2.7	6 .4	66 4.7	126 8.9
7	10 31.8	10 33.5	10 3.0	7 .5	67 4.7	127 9.0
8	10 32.0	10 33.8	10 3.2	8 .6	68 4.8	128 9.1
9	10 32.3	10 34.0	10 3.4	9 .6	69 4.9	129 9.1
10	10 32.5	10 34.3	10 3.7	10 .7	70 5.0	130 9.2
11	10 32.8	10 34.5	10 3.9	11 .8	71 5.0	131 9.3
12	10 33.0	10 34.8	10 4.2	12 .9	72 5.1	132 9.4
13	10 33.3	10 35.0	10 4.4	13 .9	73 5.2	133 9.4
14	10 33.5	10 35.3	10 4.6	14 1.0	74 5.2	134 9.5
15	10 33.8	10 35.5	10 4.9	15 1.1	75 5.3	135 9.6
16	10 34.0	10 35.8	10 5.1	16 1.1	76 5.4	136 9.6
17	10 34.3	10 36.0	10 5.4	17 1.2	77 5.5	137 9.7
18	10 34.5	10 36.3	10 5.6	18 1.3	78 5.5	138 9.8
19	10 34.8	10 36.5	10 5.8	19 1.3	79 5.6	139 9.8
20	10 35.0	10 36.8	10 6.1	20 1.4	80 5.7	140 9.9
21	10 35.3	10 37.0	10 6.3	21 1.5	81 5.7	141 10.0
22	10 35.5	10 37.3	10 6.5	22 1.6	82 5.8	142 10.1
23	10 35.8	10 37.5	10 6.8	23 1.6	83 5.9	143 10.1
24	10 36.0	10 37.8	10 7.0	24 1.7	84 6.0	144 10.2
25	10 36.3	10 38.0	10 7.3	25 1.8	85 6.0	145 10.3
26	10 36.5	10 38.3	10 7.5	26 1.8	86 6.1	146 10.3
27	10 36.8	10 38.5	10 7.7	27 1.9	87 6.2	147 10.4
28	10 37.0	10 38.8	10 8.0	28 2.0	88 6.2	148 10.5
29	10 37.3	10 39.0	10 8.2	29 2.1	89 6.3	149 10.6
30	10 37.5	10 39.3	10 8.5	30 2.1	90 6.4	150 10.6
31	10 37.8	10 39.5	10 8.7	31 2.2	91 6.4	151 10.7
32	10 38.0	10 39.8	10 8.9	32 2.3	92 6.5	152 10.8
33	10 38.3	10 40.0	10 9.2	33 2.3	93 6.6	153 10.8
34	10 38.5	10 40.3	10 9.4	34 2.4	94 6.7	154 10.9
35	10 38.8	10 40.5	10 9.7	35 2.5	95 6.7	155 11.0
36	10 39.0	10 40.8	10 9.9	36 2.6	96 6.8	156 11.1
37	10 39.3	10 41.0	10 10.1	37 2.6	97 6.9	157 11.1
38	10 39.5	10 41.3	10 10.4	38 2.7	98 6.9	158 11.2
39	10 39.8	10 41.5	10 10.6	39 2.8	99 7.0	159 11.3
40	10 40.0	10 41.8	10 10.8	40 2.8	100 7.1	160 11.3
41	10 40.3	10 42.0	10 11.1	41 2.9	101 7.2	161 11.4
42	10 40.5	10 42.3	10 11.3	42 3.0	102 7.2	162 11.5
43	10 40.8	10 42.5	10 11.6	43 3.0	103 7.3	163 11.5
44	10 41.0	10 42.8	10 11.8	44 3.1	104 7.4	164 11.6
45	10 41.3	10 43.0	10 12.0	45 3.2	105 7.4	165 11.7
46	10 41.5	10 43.3	10 12.3	46 3.3	106 7.5	166 11.8
47	10 41.8	10 43.5	10 12.5	47 3.3	107 7.6	167 11.8
48	10 42.0	10 43.8	10 12.8	48 3.4	108 7.7	168 11.9
49	10 42.3	10 44.0	10 13.0	49 3.5	109 7.7	169 12.0
50	10 42.5	10 44.3	10 13.2	50 3.5	110 7.8	170 12.0
51	10 42.8	10 44.5	10 13.5	51 3.6	111 7.9	171 12.1
52	10 43.0	10 44.8	10 13.7	52 3.7	112 7.9	172 12.2
53	10 43.3	10 45.0	10 13.9	53 3.8	113 8.0	173 12.3
54	10 43.5	10 45.3	10 14.2	54 3.8	114 8.1	174 12.3
55	10 43.8	10 45.5	10 14.4	55 3.9	115 8.1	175 12.4
56	10 44.0	10 45.8	10 14.7	56 4.0	116 8.2	176 12.5
57	10 44.3	10 46.0	10 14.9	57 4.0	117 8.3	177 12.5
58	10 44.5	10 46.3	10 15.1	58 4.1	118 8.4	178 12.6
59	10 44.8	10 46.5	10 15.4	59 4.2	119 8.4	179 12.7
60	10 45.0	10 46.8	10 15.6	60 4.3	120 8.5	180 12.8

0 h 43 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	10 45.0	10 46.8	10 15.6	0 .0	60 4.4	120 8.7
1	10 45.3	10 47.0	10 15.9	1 .1	61 4.4	121 8.8
2	10 45.5	10 47.3	10 16.1	2 .1	62 4.5	122 8.8
3	10 45.8	10 47.5	10 16.3	3 .2	63 4.6	123 8.9
4	10 46.0	10 47.8	10 16.6	4 .3	64 4.6	124 9.0
5	10 46.3	10 48.0	10 16.8	5 .4	65 4.7	125 9.1
6	10 46.5	10 48.3	10 17.0	6 .4	66 4.8	126 9.1
7	10 46.8	10 48.5	10 17.3	7 .5	67 4.9	127 9.2
8	10 47.0	10 48.8	10 17.5	8 .6	68 4.9	128 9.3
9	10 47.3	10 49.0	10 17.8	9 .7	69 5.0	129 9.4
10	10 47.5	10 49.3	10 18.0	10 .7	70 5.1	130 9.4
11	10 47.8	10 49.5	10 18.2	11 .8	71 5.1	131 9.5
12	10 48.0	10 49.8	10 18.5	12 .9	72 5.2	132 9.6
13	10 48.3	10 50.1	10 18.7	13 .9	73 5.3	133 9.6
14	10 48.5	10 50.3	10 19.0	14 1.0	74 5.4	134 9.7
15	10 48.8	10 50.6	10 19.2	15 1.1	75 5.4	135 9.8
16	10 49.0	10 50.8	10 19.4	16 1.2	76 5.5	136 9.9
17	10 49.3	10 51.1	10 19.7	17 1.2	77 5.6	137 9.9
18	10 49.5	10 51.3	10 19.9	18 1.3	78 5.7	138 10.0
19	10 49.8	10 51.6	10 20.2	19 1.4	79 5.7	139 10.1
20	10 50.0	10 51.8	10 20.4	20 1.5	80 5.8	140 10.2
21	10 50.3	10 52.1	10 20.6	21 1.5	81 5.9	141 10.2
22	10 50.5	10 52.3	10 20.9	22 1.6	82 5.9	142 10.3
23	10 50.8	10 52.6	10 21.1	23 1.7	83 6.0	143 10.4
24	10 51.0	10 52.8	10 21.3	24 1.7	84 6.1	144 10.4
25	10 51.3	10 53.1	10 21.6	25 1.8	85 6.2	145 10.5
26	10 51.5	10 53.3	10 21.8	26 1.9	86 6.2	146 10.6
27	10 51.8	10 53.6	10 22.1	27 2.0	87 6.3	147 10.7
28	10 52.0	10 53.8	10 22.3	28 2.0	88 6.4	148 10.7
29	10 52.3	10 54.1	10 22.5	29 2.1	89 6.5	149 10.8
30	10 52.5	10 54.3	10 22.8	30 2.2	90 6.5	150 10.9
31	10 52.8	10 54.6	10 23.0	31 2.2	91 6.6	151 10.9
32	10 53.0	10 54.8	10 23.3	32 2.3	92 6.7	152 11.0
33	10 53.3	10 55.1	10 23.5	33 2.4	93 6.7	153 11.1
34	10 53.5	10 55.3	10 23.7	34 2.5	94 6.8	154 11.2
35	10 53.8	10 55.6	10 24.0	35 2.5	95 6.9	155 11.2
36	10 54.0	10 55.8	10 24.2	36 2.6	96 7.0	156 11.3
37	10 54.3	10 56.1	10 24.4	37 2.7	97 7.0	157 11.4
38	10 54.5	10 56.3	10 24.7	38 2.8	98 7.1	158 11.5
39	10 54.8	10 56.6	10 24.9	39 2.8	99 7.2	159 11.5
40	10 55.0	10 56.8	10 25.2	40 2.9	100 7.3	160 11.6
41	10 55.3	10 57.1	10 25.4	41 3.0	101 7.3	161 11.7
42	10 55.5	10 57.3	10 25.6	42 3.0	102 7.4	162 11.7
43	10 55.8	10 57.6	10 25.9	43 3.1	103 7.5	163 11.8
44	10 56.0	10 57.8	10 26.1	44 3.2	104 7.5	164 11.9
45	10 56.3	10 58.1	10 26.4	45 3.3	105 7.6	165 12.0
46	10 56.5	10 58.3	10 26.6	46 3.3	106 7.7	166 12.0
47	10 56.8	10 58.6	10 26.8	47 3.4	107 7.8	167 12.1
48	10 57.0	10 58.8	10 27.1	48 3.5	108 7.8	168 12.2
49	10 57.3	10 59.1	10 27.3	49 3.6	109 7.9	169 12.3
50	10 57.5	10 59.3	10 27.5	50 3.6	110 8.0	170 12.3
51	10 57.8	10 59.6	10 27.8	51 3.7	111 8.0	171 12.4
52	10 58.0	10 59.8	10 28.0	52 3.8	112 8.1	172 12.5
53	10 58.3	11 .1	10 28.3	53 3.8	113 8.2	173 12.5
54	10 58.5	11 .3	10 28.5	54 3.9	114 8.3	174 12.6
55	10 58.8	11 .6	10 28.7	55 4.0	115 8.3	175 12.7
56	10 59.0	11 .8	10 29.0	56 4.1	116 8.4	176 12.8
57	10 59.3	11 1.1	10 29.2	57 4.1	117 8.5	177 12.8
58	10 59.5	11 1.3	10 29.5	58 4.2	118 8.6	178 12.9
59	10 59.8	11 1.6	10 29.7	59 4.3	119 8.6	179 13.0
60	11 .0	11 1.8	10 29.9	60 4.4	120 8.7	180 13.1

0 h 44 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	11	.0	11	1.8	10	29.9	0 .0 60 4.5 120 8.9
1	11	.3	11	2.1	10	30.2	1 .1 61 4.5 121 9.0
2	11	.5	11	2.3	10	30.4	2 .1 62 4.6 122 9.0
3	11	.8	11	2.6	10	30.6	3 .2 63 4.7 123 9.1
4	11	1.0	11	2.8	10	30.9	4 .3 64 4.7 124 9.2
5	11	1.3	11	3.1	10	31.1	5 .4 65 4.8 125 9.3
6	11	1.5	11	3.3	10	31.4	6 .4 66 4.9 126 9.3
7	11	1.8	11	3.6	10	31.6	7 .5 67 5.0 127 9.4
8	11	2.0	11	3.8	10	31.8	8 .6 68 5.0 128 9.5
9	11	2.3	11	4.1	10	32.1	9 .7 69 5.1 129 9.6
10	11	2.5	11	4.3	10	32.3	10 .7 70 5.2 130 9.6
11	11	2.8	11	4.6	10	32.6	11 .8 71 5.3 131 9.7
12	11	3.0	11	4.8	10	32.8	12 .9 72 5.3 132 9.8
13	11	3.3	11	5.1	10	33.0	13 1.0 73 5.4 133 9.9
14	11	3.5	11	5.3	10	33.3	14 1.0 74 5.5 134 9.9
15	11	3.8	11	5.6	10	33.5	15 1.1 75 5.6 135 10.0
16	11	4.0	11	5.8	10	33.8	16 1.2 76 5.6 136 10.1
17	11	4.3	11	6.1	10	34.0	17 1.3 77 5.7 137 10.2
18	11	4.5	11	6.3	10	34.2	18 1.3 78 5.8 138 10.2
19	11	4.8	11	6.6	10	34.5	19 1.4 79 5.9 139 10.3
20	11	5.0	11	6.8	10	34.7	20 1.5 80 5.9 140 10.4
21	11	5.3	11	7.1	10	34.9	21 1.6 81 6.0 141 10.5
22	11	5.5	11	7.3	10	35.2	22 1.6 82 6.1 142 10.5
23	11	5.8	11	7.6	10	35.4	23 1.7 83 6.2 143 10.6
24	11	6.0	11	7.9	10	35.7	24 1.8 84 6.2 144 10.7
25	11	6.3	11	8.1	10	35.9	25 1.9 85 6.3 145 10.8
26	11	6.5	11	8.4	10	36.1	26 1.9 86 6.4 146 10.8
27	11	6.8	11	8.6	10	36.4	27 2.0 87 6.5 147 10.9
28	11	7.0	11	8.9	10	36.6	28 2.1 88 6.5 148 11.0
29	11	7.3	11	9.1	10	36.9	29 2.2 89 6.6 149 11.1
30	11	7.5	11	9.4	10	37.1	30 2.2 90 6.7 150 11.1
31	11	7.8	11	9.6	10	37.3	31 2.3 91 6.7 151 11.2
32	11	8.0	11	9.9	10	37.6	32 2.4 92 6.8 152 11.3
33	11	8.3	11	10.1	10	37.8	33 2.4 93 6.9 153 11.3
34	11	8.5	11	10.4	10	38.0	34 2.5 94 7.0 154 11.4
35	11	8.8	11	10.6	10	38.3	35 2.6 95 7.0 155 11.5
36	11	9.0	11	10.9	10	38.5	36 2.7 96 7.1 156 11.6
37	11	9.3	11	11.1	10	38.8	37 2.7 97 7.2 157 11.6
38	11	9.5	11	11.4	10	39.0	38 2.8 98 7.3 158 11.7
39	11	9.8	11	11.6	10	39.2	39 2.9 99 7.3 159 11.8
40	11	10.0	11	11.9	10	39.5	40 3.0 100 7.4 160 11.9
41	11	10.3	11	12.1	10	39.7	41 3.0 101 7.5 161 11.9
42	11	10.5	11	12.4	10	40.0	42 3.1 102 7.6 162 12.0
43	11	10.8	11	12.6	10	40.2	43 3.2 103 7.6 163 12.1
44	11	11.0	11	12.9	10	40.4	44 3.3 104 7.7 164 12.2
45	11	11.3	11	13.1	10	40.7	45 3.3 105 7.8 165 12.2
46	11	11.5	11	13.4	10	40.9	46 3.4 106 7.9 166 12.3
47	11	11.8	11	13.6	10	41.1	47 3.5 107 7.9 167 12.4
48	11	12.0	11	13.9	10	41.4	48 3.6 108 8.0 168 12.5
49	11	12.3	11	14.1	10	41.6	49 3.6 109 8.1 169 12.5
50	11	12.5	11	14.4	10	41.9	50 3.7 110 8.2 170 12.6
51	11	12.8	11	14.6	10	42.1	51 3.8 111 8.2 171 12.7
52	11	13.0	11	14.9	10	42.3	52 3.9 112 8.3 172 12.8
53	11	13.3	11	15.1	10	42.6	53 3.9 113 8.4 173 12.8
54	11	13.5	11	15.4	10	42.8	54 4.0 114 8.5 174 12.9
55	11	13.8	11	15.6	10	43.1	55 4.1 115 8.5 175 13.0
56	11	14.0	11	15.9	10	43.3	56 4.2 116 8.6 176 13.1
57	11	14.3	11	16.1	10	43.5	57 4.2 117 8.7 177 13.1
58	11	14.5	11	16.4	10	43.8	58 4.3 118 8.8 178 13.2
59	11	14.8	11	16.6	10	44.0	59 4.4 119 8.8 179 13.3
60	11	15.0	11	16.9	10	44.3	60 4.5 120 8.9 180 13.4

0 h 45 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	11	15.0	11	16.9	10	44.3	0 .0 60 4.6 120 9.1
1	11	15.3	11	17.1	10	44.5	1 .1 61 4.6 121 9.2
2	11	15.5	11	17.4	10	44.7	2 .2 62 4.7 122 9.3
3	11	15.8	11	17.6	10	45.0	3 .2 63 4.8 123 9.3
4	11	16.0	11	17.9	10	45.2	4 .3 64 4.9 124 9.4
5	11	16.3	11	18.1	10	45.4	5 .4 65 4.9 125 9.5
6	11	16.5	11	18.4	10	45.7	6 .5 66 5.0 126 9.6
7	11	16.8	11	18.6	10	45.9	7 .5 67 5.1 127 9.6
8	11	17.0	11	18.9	10	46.2	8 .6 68 5.2 128 9.7
9	11	17.3	11	19.1	10	46.4	9 .7 69 5.2 129 9.8
10	11	17.5	11	19.4	10	46.6	10 .8 70 5.3 130 9.9
11	11	17.8	11	19.6	10	46.9	11 .8 71 5.4 131 9.9
12	11	18.0	11	19.9	10	47.1	12 .9 72 5.5 132 10.0
13	11	18.3	11	20.1	10	47.4	13 1.0 73 5.5 133 10.1
14	11	18.5	11	20.4	10	47.6	14 1.1 74 5.6 134 10.2
15	11	18.8	11	20.6	10	47.8	15 1.1 75 5.7 135 10.2
16	11	19.0	11	20.9	10	48.1	16 1.2 76 5.8 136 10.3
17	11	19.3	11	21.1	10	48.3	17 1.3 77 5.8 137 10.4
18	11	19.5	11	21.4	10	48.5	18 1.4 78 5.9 138 10.5
19	11	19.8	11	21.6	10	48.8	19 1.4 79 6.0 139 10.5
20	11	20.0	11	21.9	10	49.0	20 1.5 80 6.1 140 10.6
21	11	20.3	11	22.1	10	49.3	21 1.6 81 6.1 141 10.7
22	11	20.5	11	22.4	10	49.5	22 1.7 82 6.2 142 10.8
23	11	20.8	11	22.6	10	49.7	23 1.7 83 6.3 143 10.8
24	11	21.0	11	22.9	10	50.0	24 1.8 84 6.4 144 10.9
25	11	21.3	11	23.1	10	50.2	25 1.9 85 6.4 145 11.0
26	11	21.5	11	23.4	10	50.5	26 2.0 86 6.5 146 11.1
27	11	21.8	11	23.6	10	50.7	27 2.0 87 6.6 147 11.1
28	11	22.0	11	23.9	10	50.9	28 2.1 88 6.7 148 11.2
29	11	22.3	11	24.1	10	51.2	29 2.2 89 6.7 149 11.3
30	11	22.5	11	24.4	10	51.4	30 2.3 90 6.8 150 11.4
31	11	22.8	11	24.6	10	51.6	31 2.4 91 6.9 151 11.5
32	11	23.0	11	24.9	10	51.9	32 2.4 92 7.0 152 11.5
33	11	23.3	11	25.1	10	52.1	33 2.5 93 7.1 153 11.6
34	11	23.5	11	25.4	10	52.4	34 2.6 94 7.1 154 11.7
35	11	23.8	11	25.6	10	52.6	35 2.7 95 7.2 155 11.8
36	11	24.0	11	25.9	10	52.8	36 2.7 96 7.3 156 11.8
37	11	24.3	11	26.2	10	53.1	37 2.8 97 7.4 157 11.9
38	11	24.5	11	26.4	10	53.3	38 2.9 98 7.4 158 12.0
39	11	24.8	11	26.7	10	53.6	39 3.0 99 7.5 159 12.1
40	11	25.0	11	26.9	10	53.8	40 3.0 100 7.6 160 12.1
41	11	25.3	11	27.2	10	54.0	41 3.1 101 7.7 161 12.2
42	11	25.5	11	27.4	10	54.3	42 3.2 102 7.7 162 12.3
43	11	25.8	11	27.7	10	54.5	43 3.3 103 7.8 163 12.4
44	11	26.0	11	27.9	10	54.7	44 3.3 104 7.9 164 12.4
45	11	26.3	11	28.2	10	55.0	45 3.4 105 8.0 165 12.5
46	11	26.5	11	28.4	10	55.2	46 3.5 106 8.0 166 12.6
47	11	26.8	11	28.7	10	55.5	47 3.6 107 8.1 167 12.7
48	11	27.0	11	28.9	10	55.7	48 3.6 108 8.2 168 12.7
49	11	27.3	11	29.2	10	55.9	49 3.7 109 8.3 169 12.8
50	11	27.5	11	29.4	10	56.2	50 3.8 110 8.3 170 12.9
51	11	27.8	11	29.7	10	56.4	51 3.9 111 8.4 171 13.0
52	11	28.0	11	29.9	10	56.7	52 3.9 112 8.5 172 13.0
53	11	28.3	11	30.2	10	56.9	53 4.0 113 8.6 173 13.1
54	11	28.5	11	30.4	10	57.1	54 4.1 114 8.6 174 13.2
55	11	28.8	11	30.7	10	57.4	55 4.2 115 8.7 175 13.3
56	11	29.0	11	30.9	10	57.6	56 4.2 116 8.8 176 13.3
57	11	29.3	11	31.2	10	57.9	57 4.3 117 8.9 177 13.4
58	11	29.5	11	31.4	10	58.1	58 4.4 118 8.9 178 13.5
59	11	29.8	11	31.7	10	58.3	59 4.5 119 9.0 179 13.6
60	11	30.0	11	31.9	10	58.6	60 4.6 120 9.1 180 13.7

0 h 46 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	11	30.0	11	31.9	10	58.6	0 .0	60 4.7	120 9.3
1	11	30.3	11	32.2	10	58.8	1 .1	61 4.7	121 9.4
2	11	30.5	11	32.4	10	59.0	2 .2	62 4.8	122 9.5
3	11	30.8	11	32.7	10	59.3	3 .2	63 4.9	123 9.5
4	11	31.0	11	32.9	10	59.5	4 .3	64 5.0	124 9.6
5	11	31.3	11	33.2	10	59.8	5 .4	65 5.0	125 9.7
6	11	31.5	11	33.4	10	60.0	6 .5	66 5.1	126 9.8
7	11	31.8	11	33.7	11	.2	7 .5	67 5.2	127 9.8
8	11	32.0	11	33.9	11	.5	8 .6	68 5.3	128 9.9
9	11	32.3	11	34.2	11	.7	9 .7	69 5.3	129 10.0
10	11	32.5	11	34.4	11	1.0	10 .8	70 5.4	130 10.1
11	11	32.8	11	34.7	11	1.2	11 .9	71 5.5	131 10.2
12	11	33.0	11	34.9	11	1.4	12 .9	72 5.6	132 10.2
13	11	33.3	11	35.2	11	1.7	13 1.0	73 5.7	133 10.3
14	11	33.5	11	35.4	11	1.9	14 1.1	74 5.7	134 10.4
15	11	33.8	11	35.7	11	2.1	15 1.2	75 5.8	135 10.5
16	11	34.0	11	35.9	11	2.4	16 1.2	76 5.9	136 10.5
17	11	34.3	11	36.2	11	2.6	17 1.3	77 6.0	137 10.6
18	11	34.5	11	36.4	11	2.9	18 1.4	78 6.0	138 10.7
19	11	34.8	11	36.7	11	3.1	19 1.5	79 6.1	139 10.8
20	11	35.0	11	36.9	11	3.3	20 1.6	80 6.2	140 10.9
21	11	35.3	11	37.2	11	3.6	21 1.6	81 6.3	141 10.9
22	11	35.5	11	37.4	11	3.8	22 1.7	82 6.4	142 11.0
23	11	35.8	11	37.7	11	4.1	23 1.8	83 6.4	143 11.1
24	11	36.0	11	37.9	11	4.3	24 1.9	84 6.5	144 11.2
25	11	36.3	11	38.2	11	4.5	25 1.9	85 6.6	145 11.2
26	11	36.5	11	38.4	11	4.8	26 2.0	86 6.7	146 11.3
27	11	36.8	11	38.7	11	5.0	27 2.1	87 6.7	147 11.4
28	11	37.0	11	38.9	11	5.2	28 2.2	88 6.8	148 11.5
29	11	37.3	11	39.2	11	5.5	29 2.2	89 6.9	149 11.5
30	11	37.5	11	39.4	11	5.7	30 2.3	90 7.0	150 11.6
31	11	37.8	11	39.7	11	6.0	31 2.4	91 7.1	151 11.7
32	11	38.0	11	39.9	11	6.2	32 2.5	92 7.1	152 11.8
33	11	38.3	11	40.2	11	6.4	33 2.6	93 7.2	153 11.9
34	11	38.5	11	40.4	11	6.7	34 2.6	94 7.3	154 11.9
35	11	38.8	11	40.7	11	6.9	35 2.7	95 7.4	155 12.0
36	11	39.0	11	40.9	11	7.2	36 2.8	96 7.4	156 12.1
37	11	39.3	11	41.2	11	7.4	37 2.9	97 7.5	157 12.2
38	11	39.5	11	41.4	11	7.6	38 2.9	98 7.6	158 12.2
39	11	39.8	11	41.7	11	7.9	39 3.0	99 7.7	159 12.3
40	11	40.0	11	41.9	11	8.1	40 3.1	100 7.8	160 12.4
41	11	40.3	11	42.2	11	8.3	41 3.2	101 7.8	161 12.5
42	11	40.5	11	42.4	11	8.6	42 3.3	102 7.9	162 12.6
43	11	40.8	11	42.7	11	8.8	43 3.3	103 8.0	163 12.6
44	11	41.0	11	42.9	11	9.1	44 3.4	104 8.1	164 12.7
45	11	41.3	11	43.2	11	9.3	45 3.5	105 8.1	165 12.8
46	11	41.5	11	43.4	11	9.5	46 3.6	106 8.2	166 12.9
47	11	41.8	11	43.7	11	9.8	47 3.6	107 8.3	167 12.9
48	11	42.0	11	44.0	11	10.0	48 3.7	108 8.4	168 13.0
49	11	42.3	11	44.2	11	10.3	49 3.8	109 8.4	169 13.1
50	11	42.5	11	44.5	11	10.5	50 3.9	110 8.5	170 13.2
51	11	42.8	11	44.7	11	10.7	51 4.0	111 8.6	171 13.3
52	11	43.0	11	45.0	11	11.0	52 4.0	112 8.7	172 13.3
53	11	43.3	11	45.2	11	11.2	53 4.1	113 8.8	173 13.4
54	11	43.5	11	45.5	11	11.5	54 4.2	114 8.8	174 13.5
55	11	43.8	11	45.7	11	11.7	55 4.3	115 8.9	175 13.6
56	11	44.0	11	46.0	11	11.9	56 4.3	116 9.0	176 13.6
57	11	44.3	11	46.2	11	12.2	57 4.4	117 9.1	177 13.7
58	11	44.5	11	46.5	11	12.4	58 4.5	118 9.1	178 13.8
59	11	44.8	11	46.7	11	12.6	59 4.6	119 9.2	179 13.9
60	11	45.0	11	47.0	11	12.9	60 4.7	120 9.3	180 14.0

0 h 47 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	'	'	'		
0	11	45.0	11	47.0	11	12.9	0 .0	60 4.8	120 9.5
1	11	45.3	11	47.2	11	13.1	1 .1	61 4.8	121 9.6
2	11	45.5	11	47.5	11	13.4	2 .2	62 4.9	122 9.7
3	11	45.8	11	47.7	11	13.6	3 .2	63 5.0	123 9.7
4	11	46.0	11	48.0	11	13.8	4 .3	64 5.1	124 9.8
5	11	46.3	11	48.2	11	14.1	5 .4	65 5.1	125 9.9
6	11	46.5	11	48.5	11	14.3	6 .5	66 5.2	126 10.0
7	11	46.8	11	48.7	11	14.6	7 .6	67 5.3	127 10.1
8	11	47.0	11	49.0	11	14.8	8 .6	68 5.4	128 10.1
9	11	47.3	11	49.2	11	15.0	9 .7	69 5.5	129 10.2
10	11	47.5	11	49.5	11	15.3	10 .8	70 5.5	130 10.3
11	11	47.8	11	49.7	11	15.5	11 .9	71 5.6	131 10.4
12	11	48.0	11	50.0	11	15.7	12 1.0	72 5.7	132 10.5
13	11	48.3	11	50.2	11	16.0	13 1.0	73 5.8	133 10.5
14	11	48.5	11	50.5	11	16.2	14 1.1	74 5.9	134 10.6
15	11	48.8	11	50.7	11	16.5	15 1.2	75 5.9	135 10.7
16	11	49.0	11	51.0	11	16.7	16 1.3	76 6.0	136 10.8
17	11	49.3	11	51.2	11	16.9	17 1.3	77 6.1	137 10.8
18	11	49.5	11	51.5	11	17.2	18 1.4	78 6.2	138 10.9
19	11	49.8	11	51.7	11	17.4	19 1.5	79 6.3	139 11.0
20	11	50.0	11	52.0	11	17.7	20 1.6	80 6.3	140 11.1
21	11	50.3	11	52.2	11	17.9	21 1.7	81 6.4	141 11.2
22	11	50.5	11	52.5	11	18.1	22 1.7	82 6.5	142 11.2
23	11	50.8	11	52.7	11	18.4	23 1.8	83 6.6	143 11.3
24	11	51.0	11	53.0	11	18.6	24 1.9	84 6.7	144 11.4
25	11	51.3	11	53.2	11	18.8	25 2.0	85 6.7	145 11.5
26	11	51.5	11	53.5	11	19.1	26 2.1	86 6.8	146 11.6
27	11	51.8	11	53.7	11	19.3	27 2.1	87 6.9	147 11.6
28	11	52.0	11	54.0	11	19.6	28 2.2	88 7.0	148 11.7
29	11	52.3	11	54.2	11	19.8	29 2.3	89 7.0	149 11.8
30	11	52.5	11	54.5	11	20.0	30 2.4	90 7.1	150 11.9
31	11	52.8	11	54.7	11	20.3	31 2.5	91 7.2	151 12.0
32	11	53.0	11	55.0	11	20.5	32 2.5	92 7.3	152 12.0
33	11	53.3	11	55.2	11	20.8	33 2.6	93 7.4	153 12.1
34	11	53.5	11	55.5	11	21.0	34 2.7	94 7.4	154 12.2
35	11	53.8	11	55.7	11	21.2	35 2.8	95 7.5	155 12.3
36	11	54.0	11	56.0	11	21.5	36 2.9	96 7.6	156 12.4
37	11	54.3	11	56.2	11	21.7	37 2.9	97 7.7	157 12.4
38	11	54.5	11	56.5	11	22.0	38 3.0	98 7.8	158 12.5
39	11	54.8	11	56.7	11	22.2	39 3.1	99 7.8	159 12.6
40	11	55.0	11	57.0	11	22.4	40 3.2	100 7.9	160 12.7
41	11	55.3	11	57.2	11	22.7	41 3.2	101 8.0	161 12.7
42	11	55.5	11	57.5	11	22.9	42 3.3	102 8.1	162 12.8
43	11	55.8	11	57.7	11	23.1	43 3.4	103 8.2	163 12.9
44	11	56.0	11	58.0	11	23.4	44 3.5	104 8.2	164 13.0
45	11	56.3	11	58.2	11	23.6	45 3.6	105 8.3	165 13.1
46	11	56.5	11	58.5	11	23.9	46 3.6	106 8.4	166 13.1
47	11	56.8	11	58.7	11	24.1	47 3.7	107 8.5	167 13.2
48	11	57.0	11	59.0	11	24.3	48 3.8	108 8.6	168 13.3
49	11	57.3	11	59.2	11	24.6	49 3.9	109 8.6	169 13.4
50	11	57.5	11	59.5	11	24.8	50 4.0	110 8.7	170 13.5
51	11	57.8	11	59.7	11	25.1	51 4.0	111 8.8	171 13.5
52	11	58.0	11	60.0	11	25.3	52 4.1	112 8.9	172 13.6
53	11	58.3	12	.2	11	25.5	53 4.2	113 8.9	173 13.7
54	11	58.5	12	.5	11	25.8	54 4.3	114 9.0	174 13.8
55	11	58.8	12	.7	11	26.0	55 4.4	115 9.1	175 13.9
56	11	59.0	12	1.0	11	26.2	56 4.4	116 9.2	176 13.9
57	11	59.3	12	1.2	11	26.5	57 4.5	117 9.3	177 14.0
58	11	59.5	12	1.5	11	26.7	58 4.6	118 9.3	178 14.1
59	11	59.8	12	1.7	11	27.0	59 4.7	119 9.4	179 14.2
60	12	.0	12	2.0	11	27.2	60 4.8	120 9.5	180 14.3

0 h 48 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	'	'	'
0	12	.0	12	2.0	11	27.2	0 .0 60 4.9 120 9.7
1	12	.3	12	2.3	11	27.4	1 .1 61 4.9 121 9.8
2	12	.5	12	2.5	11	27.7	2 .2 62 5.0 122 9.9
3	12	.8	12	2.8	11	27.9	3 .2 63 5.1 123 9.9
4	12	1.0	12	3.0	11	28.2	4 .3 64 5.2 124 10.0
5	12	1.3	12	3.3	11	28.4	5 .4 65 5.3 125 10.1
6	12	1.5	12	3.5	11	28.6	6 .5 66 5.3 126 10.2
7	12	1.8	12	3.8	11	28.9	7 .6 67 5.4 127 10.3
8	12	2.0	12	4.0	11	29.1	8 .6 68 5.5 128 10.3
9	12	2.3	12	4.3	11	29.3	9 .7 69 5.6 129 10.4
10	12	2.5	12	4.5	11	29.6	10 .8 70 5.7 130 10.5
11	12	2.8	12	4.8	11	29.8	11 .9 71 5.7 131 10.6
12	12	3.0	12	5.0	11	30.1	12 1.0 72 5.8 132 10.7
13	12	3.3	12	5.3	11	30.3	13 1.1 73 5.9 133 10.8
14	12	3.5	12	5.5	11	30.5	14 1.1 74 6.0 134 10.8
15	12	3.8	12	5.8	11	30.8	15 1.2 75 6.1 135 10.9
16	12	4.0	12	6.0	11	31.0	16 1.3 76 6.1 136 11.0
17	12	4.3	12	6.3	11	31.3	17 1.4 77 6.2 137 11.1
18	12	4.5	12	6.5	11	31.5	18 1.5 78 6.3 138 11.2
19	12	4.8	12	6.8	11	31.7	19 1.5 79 6.4 139 11.2
20	12	5.0	12	7.0	11	32.0	20 1.6 80 6.5 140 11.3
21	12	5.3	12	7.3	11	32.2	21 1.7 81 6.5 141 11.4
22	12	5.5	12	7.5	11	32.4	22 1.8 82 6.6 142 11.5
23	12	5.8	12	7.8	11	32.7	23 1.9 83 6.7 143 11.6
24	12	6.0	12	8.0	11	32.9	24 1.9 84 6.8 144 11.6
25	12	6.3	12	8.3	11	33.2	25 2.0 85 6.9 145 11.7
26	12	6.5	12	8.5	11	33.4	26 2.1 86 7.0 146 11.8
27	12	6.8	12	8.8	11	33.6	27 2.2 87 7.0 147 11.9
28	12	7.0	12	9.0	11	33.9	28 2.3 88 7.1 148 12.0
29	12	7.3	12	9.3	11	34.1	29 2.3 89 7.2 149 12.0
30	12	7.5	12	9.5	11	34.4	30 2.4 90 7.3 150 12.1
31	12	7.8	12	9.8	11	34.6	31 2.5 91 7.4 151 12.2
32	12	8.0	12	10.0	11	34.8	32 2.6 92 7.4 152 12.3
33	12	8.3	12	10.3	11	35.1	33 2.7 93 7.5 153 12.4
34	12	8.5	12	10.5	11	35.3	34 2.7 94 7.6 154 12.4
35	12	8.8	12	10.8	11	35.6	35 2.8 95 7.7 155 12.5
36	12	9.0	12	11.0	11	35.8	36 2.9 96 7.8 156 12.6
37	12	9.3	12	11.3	11	36.0	37 3.0 97 7.8 157 12.7
38	12	9.5	12	11.5	11	36.3	38 3.1 98 7.9 158 12.8
39	12	9.8	12	11.8	11	36.5	39 3.2 99 8.0 159 12.9
40	12	10.0	12	12.0	11	36.7	40 3.2 100 8.1 160 12.9
41	12	10.3	12	12.3	11	37.0	41 3.3 101 8.2 161 13.0
42	12	10.5	12	12.5	11	37.2	42 3.4 102 8.2 162 13.1
43	12	10.8	12	12.8	11	37.5	43 3.5 103 8.3 163 13.2
44	12	11.0	12	13.0	11	37.7	44 3.6 104 8.4 164 13.3
45	12	11.3	12	13.3	11	37.9	45 3.6 105 8.5 165 13.3
46	12	11.5	12	13.5	11	38.2	46 3.7 106 8.6 166 13.4
47	12	11.8	12	13.8	11	38.4	47 3.8 107 8.6 167 13.5
48	12	12.0	12	14.0	11	38.7	48 3.9 108 8.7 168 13.6
49	12	12.3	12	14.3	11	38.9	49 4.0 109 8.8 169 13.7
50	12	12.5	12	14.5	11	39.1	50 4.0 110 8.9 170 13.7
51	12	12.8	12	14.8	11	39.4	51 4.1 111 9.0 171 13.8
52	12	13.0	12	15.0	11	39.6	52 4.2 112 9.1 172 13.9
53	12	13.3	12	15.3	11	39.8	53 4.3 113 9.1 173 14.0
54	12	13.5	12	15.5	11	40.1	54 4.4 114 9.2 174 14.1
55	12	13.8	12	15.8	11	40.3	55 4.4 115 9.3 175 14.1
56	12	14.0	12	16.0	11	40.6	56 4.5 116 9.4 176 14.2
57	12	14.3	12	16.3	11	40.8	57 4.6 117 9.5 177 14.3
58	12	14.5	12	16.5	11	41.0	58 4.7 118 9.5 178 14.4
59	12	14.8	12	16.8	11	41.3	59 4.8 119 9.6 179 14.5
60	12	15.0	12	17.0	11	41.5	60 4.9 120 9.7 180 14.6

0 h 49 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	'	'	'
0	12	15.0	12	17.0	11	41.5	0 .0 60 5.0 120 9.9
1	12	15.3	12	17.3	11	41.8	1 .1 61 5.0 121 10.0
2	12	15.5	12	17.5	11	42.0	2 .2 62 5.1 122 10.1
3	12	15.8	12	17.8	11	42.2	3 .2 63 5.2 123 10.1
4	12	16.0	12	18.0	11	42.5	4 .3 64 5.3 124 10.2
5	12	16.3	12	18.3	11	42.7	5 .4 65 5.4 125 10.3
6	12	16.5	12	18.5	11	42.9	6 .5 66 5.4 126 10.4
7	12	16.8	12	18.8	11	43.2	7 .6 67 5.5 127 10.5
8	12	17.0	12	19.0	11	43.4	8 .7 68 5.6 128 10.6
9	12	17.3	12	19.3	11	43.7	9 .7 69 5.7 129 10.6
10	12	17.5	12	19.5	11	43.9	10 .8 70 5.8 130 10.7
11	12	17.8	12	19.8	11	44.1	11 .9 71 5.9 131 10.8
12	12	18.0	12	20.1	11	44.4	12 1.0 72 5.9 132 10.9
13	12	18.3	12	20.3	11	44.6	13 1.1 73 6.0 133 11.0
14	12	18.5	12	20.6	11	44.9	14 1.2 74 6.1 134 11.1
15	12	18.8	12	20.8	11	45.1	15 1.2 75 6.2 135 11.1
16	12	19.0	12	21.1	11	45.3	16 1.3 76 6.3 136 11.2
17	12	19.3	12	21.3	11	45.6	17 1.4 77 6.4 137 11.3
18	12	19.5	12	21.6	11	45.8	18 1.5 78 6.4 138 11.4
19	12	19.8	12	21.8	11	46.1	19 1.6 79 6.5 139 11.5
20	12	20.0	12	22.1	11	46.3	20 1.7 80 6.6 140 11.6
21	12	20.3	12	22.3	11	46.5	21 1.7 81 6.7 141 11.6
22	12	20.5	12	22.6	11	46.8	22 1.8 82 6.8 142 11.7
23	12	20.8	12	22.8	11	47.0	23 1.9 83 6.8 143 11.8
24	12	21.0	12	23.1	11	47.2	24 2.0 84 6.9 144 11.9
25	12	21.3	12	23.3	11	47.5	25 2.1 85 7.0 145 12.0
26	12	21.5	12	23.6	11	47.7	26 2.1 86 7.1 146 12.0
27	12	21.8	12	23.8	11	48.0	27 2.2 87 7.2 147 12.1
28	12	22.0	12	24.1	11	48.2	28 2.3 88 7.3 148 12.2
29	12	22.3	12	24.3	11	48.4	29 2.4 89 7.3 149 12.3
30	12	22.5	12	24.6	11	48.7	30 2.5 90 7.4 150 12.4
31	12	22.8	12	24.8	11	48.9	31 2.6 91 7.5 151 12.5
32	12	23.0	12	25.1	11	49.2	32 2.6 92 7.6 152 12.5
33	12	23.3	12	25.3	11	49.4	33 2.7 93 7.7 153 12.6
34	12	23.5	12	25.6	11	49.6	34 2.8 94 7.8 154 12.7
35	12	23.8	12	25.8	11	49.9	35 2.9 95 7.8 155 12.8
36	12	24.0	12	26.1	11	50.1	36 3.0 96 7.9 156 12.9
37	12	24.3	12	26.3	11	50.3	37 3.1 97 8.0 157 13.0
38	12	24.5	12	26.6	11	50.6	38 3.1 98 8.1 158 13.0
39	12	24.8	12	26.8	11	50.8	39 3.2 99 8.2 159 13.1
40	12	25.0	12	27.1	11	51.1	40 3.3 100 8.3 160 13.2
41	12	25.3	12	27.3	11	51.3	41 3.4 101 8.3 161 13.3
42	12	25.5	12	27.6	11	51.5	42 3.5 102 8.4 162 13.4
43	12	25.8	12	27.8	11	51.8	43 3.5 103 8.5 163 13.4
44	12	26.0	12	28.1	11	52.0	44 3.6 104 8.6 164 13.5
45	12	26.3	12	28.3	11	52.3	45 3.7 105 8.7 165 13.6
46	12	26.5	12	28.6	11	52.5	46 3.8 106 8.7 166 13.7
47	12	26.8	12	28.8	11	52.7	47 3.9 107 8.8 167 13.8
48	12	27.0	12	29.1	11	53.0	48 4.0 108 8.9 168 13.9
49	12	27.3	12	29.3	11	53.2	49 4.0 109 9.0 169 13.9
50	12	27.5	12	29.6	11	53.4	50 4.1 110 9.1 170 14.0
51	12	27.8	12	29.8	11	53.7	51 4.2 111 9.2 171 14.1
52	12	28.0	12	30.1	11	53.9	52 4.3 112 9.2 172 14.2
53	12	28.3	12	30.3	11	54.2	53 4.4 113 9.3 173 14.3
54	12	28.5	12	30.6	11	54.4	54 4.5 114 9.4 174 14.4
55	12	28.8	12	30.8	11	54.6	55 4.5 115 9.5 175 14.4
56	12	29.0	12	31.1	11	54.9	56 4.6 116 9.6 176 14.5
57	12	29.3	12	31.3	11	55.1	57 4.7 117 9.7 177 14.6
58	12	29.5	12	31.6	11	55.4	58 4.8 118 9.7 178 14.7
59	12	29.8	12	31.8	11	55.6	59 4.9 119 9.8 179 14.8
60	12	30.0	12	32.1	11	55.8	60 5.0 120 9.9 180 14.9

0 h 50 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	12	30.0	12	32.1	11	55.8	0 .0	60 5.1	120 10.1
1	12	30.3	12	32.3	11	56.1	1 .1	61 5.1	121 10.2
2	12	30.5	12	32.6	11	56.3	2 .2	62 5.2	122 10.3
3	12	30.8	12	32.8	11	56.5	3 .3	63 5.3	123 10.4
4	12	31.0	12	33.1	11	56.8	4 .3	64 5.4	124 10.4
5	12	31.3	12	33.3	11	57.0	5 .4	65 5.5	125 10.5
6	12	31.5	12	33.6	11	57.3	6 .5	66 5.6	126 10.6
7	12	31.8	12	33.8	11	57.5	7 .6	67 5.6	127 10.7
8	12	32.0	12	34.1	11	57.7	8 .7	68 5.7	128 10.8
9	12	32.3	12	34.3	11	58.0	9 .8	69 5.8	129 10.9
10	12	32.5	12	34.6	11	58.2	10 .8	70 5.9	130 10.9
11	12	32.8	12	34.8	11	58.5	11 .9	71 6.0	131 11.0
12	12	33.0	12	35.1	11	58.7	12 1.0	72 6.1	132 11.1
13	12	33.3	12	35.3	11	58.9	13 1.1	73 6.1	133 11.2
14	12	33.5	12	35.6	11	59.2	14 1.2	74 6.2	134 11.3
15	12	33.8	12	35.8	11	59.4	15 1.3	75 6.3	135 11.4
16	12	34.0	12	36.1	11	59.7	16 1.3	76 6.4	136 11.4
17	12	34.3	12	36.3	11	59.9	17 1.4	77 6.5	137 11.5
18	12	34.5	12	36.6	12	.1	18 1.5	78 6.6	138 11.6
19	12	34.8	12	36.8	12	.4	19 1.6	79 6.6	139 11.7
20	12	35.0	12	37.1	12	.6	20 1.7	80 6.7	140 11.8
21	12	35.3	12	37.3	12	.8	21 1.8	81 6.8	141 11.9
22	12	35.5	12	37.6	12	1.1	22 1.9	82 6.9	142 12.0
23	12	35.8	12	37.8	12	1.3	23 1.9	83 7.0	143 12.0
24	12	36.0	12	38.1	12	1.6	24 2.0	84 7.1	144 12.1
25	12	36.3	12	38.4	12	1.8	25 2.1	85 7.2	145 12.2
26	12	36.5	12	38.6	12	2.0	26 2.2	86 7.2	146 12.3
27	12	36.8	12	38.9	12	2.3	27 2.3	87 7.3	147 12.4
28	12	37.0	12	39.1	12	2.5	28 2.4	88 7.4	148 12.5
29	12	37.3	12	39.4	12	2.8	29 2.4	89 7.5	149 12.5
30	12	37.5	12	39.6	12	3.0	30 2.5	90 7.6	150 12.6
31	12	37.8	12	39.9	12	3.2	31 2.6	91 7.7	151 12.7
32	12	38.0	12	40.1	12	3.5	32 2.7	92 7.7	152 12.8
33	12	38.3	12	40.4	12	3.7	33 2.8	93 7.8	153 12.9
34	12	38.5	12	40.6	12	3.9	34 2.9	94 7.9	154 13.0
35	12	38.8	12	40.9	12	4.2	35 2.9	95 8.0	155 13.0
36	12	39.0	12	41.1	12	4.4	36 3.0	96 8.1	156 13.1
37	12	39.3	12	41.4	12	4.7	37 3.1	97 8.2	157 13.2
38	12	39.5	12	41.6	12	4.9	38 3.2	98 8.2	158 13.3
39	12	39.8	12	41.9	12	5.1	39 3.3	99 8.3	159 13.4
40	12	40.0	12	42.1	12	5.4	40 3.4	100 8.4	160 13.5
41	12	40.3	12	42.4	12	5.6	41 3.5	101 8.5	161 13.6
42	12	40.5	12	42.6	12	5.9	42 3.5	102 8.6	162 13.6
43	12	40.8	12	42.9	12	6.1	43 3.6	103 8.7	163 13.7
44	12	41.0	12	43.1	12	6.3	44 3.7	104 8.8	164 13.8
45	12	41.3	12	43.4	12	6.6	45 3.8	105 8.8	165 13.9
46	12	41.5	12	43.6	12	6.8	46 3.9	106 8.9	166 14.0
47	12	41.8	12	43.9	12	7.0	47 4.0	107 9.0	167 14.1
48	12	42.0	12	44.1	12	7.3	48 4.0	108 9.1	168 14.1
49	12	42.3	12	44.4	12	7.5	49 4.1	109 9.2	169 14.2
50	12	42.5	12	44.6	12	7.8	50 4.2	110 9.3	170 14.3
51	12	42.8	12	44.9	12	8.0	51 4.3	111 9.3	171 14.4
52	12	43.0	12	45.1	12	8.2	52 4.4	112 9.4	172 14.5
53	12	43.3	12	45.4	12	8.5	53 4.5	113 9.5	173 14.6
54	12	43.5	12	45.6	12	8.7	54 4.5	114 9.6	174 14.6
55	12	43.8	12	45.9	12	9.0	55 4.6	115 9.7	175 14.7
56	12	44.0	12	46.1	12	9.2	56 4.7	116 9.8	176 14.8
57	12	44.3	12	46.4	12	9.4	57 4.8	117 9.8	177 14.9
58	12	44.5	12	46.6	12	9.7	58 4.9	118 9.9	178 15.0
59	12	44.8	12	46.9	12	9.9	59 5.0	119 10.0	179 15.1
60	12	45.0	12	47.1	12	10.2	60 5.1	120 10.1	180 15.2

0 h 51 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	12	45.0	12	47.1	12	10.2	0 .0	60 5.2	120 10.3
1	12	45.3	12	47.4	12	10.4	1 .1	61 5.2	121 10.4
2	12	45.5	12	47.6	12	10.6	2 .2	62 5.3	122 10.5
3	12	45.8	12	47.9	12	10.9	3 .3	63 5.4	123 10.6
4	12	46.0	12	48.1	12	11.1	4 .3	64 5.5	124 10.6
5	12	46.3	12	48.4	12	11.3	5 .4	65 5.6	125 10.7
6	12	46.5	12	48.6	12	11.6	6 .5	66 5.7	126 10.8
7	12	46.8	12	48.9	12	11.8	7 .6	67 5.8	127 10.9
8	12	47.0	12	49.1	12	12.1	8 .7	68 5.8	128 11.0
9	12	47.3	12	49.4	12	12.3	9 .8	69 5.9	129 11.1
10	12	47.5	12	49.6	12	12.5	10 .9	70 6.0	130 11.2
11	12	47.8	12	49.9	12	12.8	11 .9	71 6.1	131 11.2
12	12	48.0	12	50.1	12	13.0	12 1.0	72 6.2	132 11.3
13	12	48.3	12	50.4	12	13.3	13 1.1	73 6.3	133 11.4
14	12	48.5	12	50.6	12	13.5	14 1.2	74 6.4	134 11.5
15	12	48.8	12	50.9	12	13.7	15 1.3	75 6.4	135 11.6
16	12	49.0	12	51.1	12	14.0	16 1.4	76 6.5	136 11.7
17	12	49.3	12	51.4	12	14.2	17 1.5	77 6.6	137 11.8
18	12	49.5	12	51.6	12	14.4	18 1.5	78 6.7	138 11.8
19	12	49.8	12	51.9	12	14.7	19 1.6	79 6.8	139 11.9
20	12	50.0	12	52.1	12	14.9	20 1.7	80 6.9	140 12.0
21	12	50.3	12	52.4	12	15.2	21 1.8	81 7.0	141 12.1
22	12	50.5	12	52.6	12	15.4	22 1.9	82 7.0	142 12.2
23	12	50.8	12	52.9	12	15.6	23 2.0	83 7.1	143 12.3
24	12	51.0	12	53.1	12	15.9	24 2.1	84 7.2	144 12.4
25	12	51.3	12	53.4	12	16.1	25 2.1	85 7.3	145 12.4
26	12	51.5	12	53.6	12	16.4	26 2.2	86 7.4	146 12.5
27	12	51.8	12	53.9	12	16.6	27 2.3	87 7.5	147 12.6
28	12	52.0	12	54.1	12	16.8	28 2.4	88 7.6	148 12.7
29	12	52.3	12	54.4	12	17.1	29 2.5	89 7.6	149 12.8
30	12	52.5	12	54.6	12	17.3	30 2.6	90 7.7	150 12.9
31	12	52.8	12	54.9	12	17.5	31 2.7	91 7.8	151 13.0
32	12	53.0	12	55.1	12	17.8	32 2.7	92 7.9	152 13.0
33	12	53.3	12	55.4	12	18.0	33 2.8	93 8.0	153 13.1
34	12	53.5	12	55.6	12	18.3	34 2.9	94 8.1	154 13.2
35	12	53.8	12	55.9	12	18.5	35 3.0	95 8.2	155 13.3
36	12	54.0	12	56.2	12	18.7	36 3.1	96 8.2	156 13.4
37	12	54.3	12	56.4	12	19.0	37 3.2	97 8.3	157 13.5
38	12	54.5	12	56.7	12	19.2	38 3.3	98 8.4	158 13.6
39	12	54.8	12	56.9	12	19.5	39 3.3	99 8.5	159 13.6
40	12	55.0	12	57.2	12	19.7	40 3.4	100 8.6	160 13.7
41	12	55.3	12	57.4	12	19.9	41 3.5	101 8.7	161 13.8
42	12	55.5	12	57.7	12	20.2	42 3.6	102 8.8	162 13.9
43	12	55.8	12	57.9	12	20.4	43 3.7	103 8.8	163 14.0
44	12	56.0	12	58.2	12	20.6	44 3.8	104 8.9	164 14.1
45	12	56.3	12	58.4	12	20.9	45 3.9	105 9.0	165 14.2
46	12	56.5	12	58.7	12	21.1	46 3.9	106 9.1	166 14.2
47	12	56.8	12	58.9	12	21.4	47 4.0	107 9.2	167 14.3
48	12	57.0	12	59.2	12	21.6	48 4.1	108 9.3	168 14.4
49	12	57.3	12	59.4	12	21.8	49 4.2	109 9.4	169 14.5
50	12	57.5	12	59.7	12	22.1	50 4.3	110 9.4	170 14.6
51	12	57.8	12	59.9	12	22.3	51 4.4	111 9.5	171 14.7
52	12	58.0	13	.2	12	22.6	52 4.5	112 9.6	172 14.8
53	12	58.3	13	.4	12	22.8	53 4.5	113 9.7	173 14.8
54	12	58.5	13	.7	12	23.0	54 4.6	114 9.8	174 14.9
55	12	58.8	13	.9	12	23.3	55 4.7	115 9.9	175 15.0
56	12	59.0	13	1.2	12	23.5	56 4.8	116 10.0	176 15.1
57	12	59.3	13	1.4	12	23.8	57 4.9	117 10.0	177 15.2
58	12	59.5	13	1.7	12	24.0	58 5.0	118 10.1	178 15.3
59	12	59.8	13	1.9	12	24.2	59 5.1	119 10.2	179 15.4
60	13	.0	13	2.2	12	24.5	60 5.2	120 10.3	180 15.5

0 h 52 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	13	.0	13	2.2	12	24.5	0	.0	60	5.3	120	10.5
1	13	.3	13	2.4	12	24.7	1	.1	61	5.3	121	10.6
2	13	.5	13	2.7	12	24.9	2	.2	62	5.4	122	10.7
3	13	.8	13	2.9	12	25.2	3	.3	63	5.5	123	10.8
4	13	1.0	13	3.2	12	25.4	4	.4	64	5.6	124	10.9
5	13	1.3	13	3.4	12	25.7	5	.4	65	5.7	125	10.9
6	13	1.5	13	3.7	12	25.9	6	.5	66	5.8	126	11.0
7	13	1.8	13	3.9	12	26.1	7	.6	67	5.9	127	11.1
8	13	2.0	13	4.2	12	26.4	8	.7	68	6.0	128	11.2
9	13	2.3	13	4.4	12	26.6	9	.8	69	6.0	129	11.3
10	13	2.5	13	4.7	12	26.9	10	.9	70	6.1	130	11.4
11	13	2.8	13	4.9	12	27.1	11	1.0	71	6.2	131	11.5
12	13	3.0	13	5.2	12	27.3	12	1.1	72	6.3	132	11.6
13	13	3.3	13	5.4	12	27.6	13	1.1	73	6.4	133	11.6
14	13	3.5	13	5.7	12	27.8	14	1.2	74	6.5	134	11.7
15	13	3.8	13	5.9	12	28.0	15	1.3	75	6.6	135	11.8
16	13	4.0	13	6.2	12	28.3	16	1.4	76	6.7	136	11.9
17	13	4.3	13	6.4	12	28.5	17	1.5	77	6.7	137	12.0
18	13	4.5	13	6.7	12	28.8	18	1.6	78	6.8	138	12.1
19	13	4.8	13	6.9	12	29.0	19	1.7	79	6.9	139	12.2
20	13	5.0	13	7.2	12	29.2	20	1.8	80	7.0	140	12.3
21	13	5.3	13	7.4	12	29.5	21	1.8	81	7.1	141	12.3
22	13	5.5	13	7.7	12	29.7	22	1.9	82	7.2	142	12.4
23	13	5.8	13	7.9	12	30.0	23	2.0	83	7.3	143	12.5
24	13	6.0	13	8.2	12	30.2	24	2.1	84	7.4	144	12.6
25	13	6.3	13	8.4	12	30.4	25	2.2	85	7.4	145	12.7
26	13	6.5	13	8.7	12	30.7	26	2.3	86	7.5	146	12.8
27	13	6.8	13	8.9	12	30.9	27	2.4	87	7.6	147	12.9
28	13	7.0	13	9.2	12	31.1	28	2.5	88	7.7	148	13.0
29	13	7.3	13	9.4	12	31.4	29	2.5	89	7.8	149	13.0
30	13	7.5	13	9.7	12	31.6	30	2.6	90	7.9	150	13.1
31	13	7.8	13	9.9	12	31.9	31	2.7	91	8.0	151	13.2
32	13	8.0	13	10.2	12	32.1	32	2.8	92	8.1	152	13.3
33	13	8.3	13	10.4	12	32.3	33	2.9	93	8.1	153	13.4
34	13	8.5	13	10.7	12	32.6	34	3.0	94	8.2	154	13.5
35	13	8.8	13	10.9	12	32.8	35	3.1	95	8.3	155	13.6
36	13	9.0	13	11.2	12	33.1	36	3.2	96	8.4	156	13.7
37	13	9.3	13	11.4	12	33.3	37	3.2	97	8.5	157	13.7
38	13	9.5	13	11.7	12	33.5	38	3.3	98	8.6	158	13.8
39	13	9.8	13	11.9	12	33.8	39	3.4	99	8.7	159	13.9
40	13	10.0	13	12.2	12	34.0	40	3.5	100	8.8	160	14.0
41	13	10.3	13	12.4	12	34.2	41	3.6	101	8.8	161	14.1
42	13	10.5	13	12.7	12	34.5	42	3.7	102	8.9	162	14.2
43	13	10.8	13	12.9	12	34.7	43	3.8	103	9.0	163	14.3
44	13	11.0	13	13.2	12	35.0	44	3.9	104	9.1	164	14.4
45	13	11.3	13	13.4	12	35.2	45	3.9	105	9.2	165	14.4
46	13	11.5	13	13.7	12	35.4	46	4.0	106	9.3	166	14.5
47	13	11.8	13	13.9	12	35.7	47	4.1	107	9.4	167	14.6
48	13	12.0	13	14.2	12	35.9	48	4.2	108	9.5	168	14.7
49	13	12.3	13	14.5	12	36.2	49	4.3	109	9.5	169	14.8
50	13	12.5	13	14.7	12	36.4	50	4.4	110	9.6	170	14.9
51	13	12.8	13	15.0	12	36.6	51	4.5	111	9.7	171	15.0
52	13	13.0	13	15.2	12	36.9	52	4.6	112	9.8	172	15.1
53	13	13.3	13	15.5	12	37.1	53	4.6	113	9.9	173	15.1
54	13	13.5	13	15.7	12	37.4	54	4.7	114	10.0	174	15.2
55	13	13.8	13	16.0	12	37.6	55	4.8	115	10.1	175	15.3
56	13	14.0	13	16.2	12	37.8	56	4.9	116	10.2	176	15.4
57	13	14.3	13	16.5	12	38.1	57	5.0	117	10.2	177	15.5
58	13	14.5	13	16.7	12	38.3	58	5.1	118	10.3	178	15.6
59	13	14.8	13	17.0	12	38.5	59	5.2	119	10.4	179	15.7
60	13	15.0	13	17.2	12	38.8	60	5.3	120	10.5	180	15.8

0 h 53 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	13	15.0	13	17.2	12	38.8	0	.0	60	5.4	120	10.7
1	13	15.3	13	17.5	12	39.0	1	.1	61	5.4	121	10.8
2	13	15.5	13	17.7	12	39.3	2	.2	62	5.5	122	10.9
3	13	15.8	13	18.0	12	39.5	3	.3	63	5.6	123	11.0
4	13	16.0	13	18.2	12	39.7	4	.4	64	5.7	124	11.1
5	13	16.3	13	18.5	12	40.0	5	.4	65	5.8	125	11.1
6	13	16.5	13	18.7	12	40.2	6	.5	66	5.9	126	11.2
7	13	16.8	13	19.0	12	40.5	7	.6	67	6.0	127	11.3
8	13	17.0	13	19.2	12	40.7	8	.7	68	6.1	128	11.4
9	13	17.3	13	19.5	12	40.9	9	.8	69	6.2	129	11.5
10	13	17.5	13	19.7	12	41.2	10	.9	70	6.2	130	11.6
11	13	17.8	13	20.0	12	41.4	11	1.0	71	6.3	131	11.7
12	13	18.0	13	20.2	12	41.6	12	1.1	72	6.4	132	11.8
13	13	18.3	13	20.5	12	41.9	13	1.2	73	6.5	133	11.9
14	13	18.5	13	20.7	12	42.1	14	1.2	74	6.6	134	11.9
15	13	18.8	13	21.0	12	42.4	15	1.3	75	6.7	135	12.0
16	13	19.0	13	21.2	12	42.6	16	1.4	76	6.8	136	12.1
17	13	19.3	13	21.5	12	42.8	17	1.5	77	6.9	137	12.2
18	13	19.5	13	21.7	12	43.1	18	1.6	78	7.0	138	12.3
19	13	19.8	13	22.0	12	43.3	19	1.7	79	7.0	139	12.4
20	13	20.0	13	22.2	12	43.6	20	1.8	80	7.1	140	12.5
21	13	20.3	13	22.5	12	43.8	21	1.9	81	7.2	141	12.6
22	13	20.5	13	22.7	12	44.0	22	2.0	82	7.3	142	12.7
23	13	20.8	13	23.0	12	44.3	23	2.1	83	7.4	143	12.8
24	13	21.0	13	23.2	12	44.5	24	2.1	84	7.5	144	12.8
25	13	21.3	13	23.5	12	44.7	25	2.2	85	7.6	145	12.9
26	13	21.5	13	23.7	12	45.0	26	2.3	86	7.7	146	13.0
27	13	21.8	13	24.0	12	45.2	27	2.4	87	7.8	147	13.1
28	13	22.0	13	24.2	12	45.5	28	2.5	88	7.8	148	13.2
29	13	22.3	13	24.5	12	45.7	29	2.6	89	7.9	149	13.3
30	13	22.5	13	24.7	12	45.9	30	2.7	90	8.0	150	13.4
31	13	22.8	13	25.0	12	46.2	31	2.8	91	8.1	151	13.5
32	13	23.0	13	25.2	12	46.4	32	2.9	92	8.2	152	13.6
33	13	23.3	13	25.5	12	46.7	33	2.9	93	8.3	153	13.6
34	13	23.5	13	25.7	12	46.9	34	3.0	94	8.4	154	13.7
35	13	23.8	13	26.0	12	47.1	35	3.1	95	8.5	155	13.8
36	13	24.0	13	26.2	12	47.4	36	3.2	96	8.6	156	13.9
37	13	24.3	13	26.5	12	47.6	37	3.3	97	8.6	157	14.0
38	13	24.5	13	26.7	12	47.9	38	3.4	98	8.7	158	14.1
39	13	24.8	13	27.0	12	48.1	39	3.5	99	8.8	159	14.2
40	13	25.0	13	27.2	12	48.3	40	3.6	100	8.9	160	14.3
41	13	25.3	13	27.5	12	48.6	41	3.7	101	9.0	161	14.4
42	13	25.5	13	27.7	12	48.8	42	3.7	102	9.1	162	14.4
43	13	25.8	13	28.0	12	49.0	43	3.8	103	9.2	163	14.5
44	13	26.0	13	28.2	12	49.3	44	3.9	104	9.3	164	14.6
45	13	26.3	13	28.5	12	49.5	45	4.0	105	9.4	165	14.7
46	13	26.5	13	28.7	12	49.8	46	4.1	106	9.5	166	14.8
47	13	26.8	13	29.0	12	50.0	47	4.2	107	9.5	167	14.9
48	13	27.0	13	29.2	12	50.2	48	4.3	108	9.6	168	15.0
49	13	27.3	13	29.5	12	50.5	49	4.4	109	9.7	169	15.1
50	13	27.5	13	29								

0 h 54 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	13 30.0	13 32.3	12 53.1	0 .0	60 5.5	120 10.9
1	13 30.3	13 32.5	12 53.3	1 .1	61 5.5	121 11.0
2	13 30.5	13 32.8	12 53.6	2 .2	62 5.6	122 11.1
3	13 30.8	13 33.0	12 53.8	3 .3	63 5.7	123 11.2
4	13 31.0	13 33.3	12 54.1	4 .4	64 5.8	124 11.3
5	13 31.3	13 33.5	12 54.3	5 .5	65 5.9	125 11.4
6	13 31.5	13 33.8	12 54.5	6 .5	66 6.0	126 11.4
7	13 31.8	13 34.0	12 54.8	7 .6	67 6.1	127 11.5
8	13 32.0	13 34.3	12 55.0	8 .7	68 6.2	128 11.6
9	13 32.3	13 34.5	12 55.2	9 .8	69 6.3	129 11.7
10	13 32.5	13 34.8	12 55.5	10 .9	70 6.4	130 11.8
11	13 32.8	13 35.0	12 55.7	11 1.0	71 6.4	131 11.9
12	13 33.0	13 35.3	12 56.0	12 1.1	72 6.5	132 12.0
13	13 33.3	13 35.5	12 56.2	13 1.2	73 6.6	133 12.1
14	13 33.5	13 35.8	12 56.4	14 1.3	74 6.7	134 12.2
15	13 33.8	13 36.0	12 56.7	15 1.4	75 6.8	135 12.3
16	13 34.0	13 36.3	12 56.9	16 1.5	76 6.9	136 12.4
17	13 34.3	13 36.5	12 57.2	17 1.5	77 7.0	137 12.4
18	13 34.5	13 36.8	12 57.4	18 1.6	78 7.1	138 12.5
19	13 34.8	13 37.0	12 57.6	19 1.7	79 7.2	139 12.6
20	13 35.0	13 37.3	12 57.9	20 1.8	80 7.3	140 12.7
21	13 35.3	13 37.5	12 58.1	21 1.9	81 7.4	141 12.8
22	13 35.5	13 37.8	12 58.3	22 2.0	82 7.4	142 12.9
23	13 35.8	13 38.0	12 58.6	23 2.1	83 7.5	143 13.0
24	13 36.0	13 38.3	12 58.8	24 2.2	84 7.6	144 13.1
25	13 36.3	13 38.5	12 59.1	25 2.3	85 7.7	145 13.2
26	13 36.5	13 38.8	12 59.3	26 2.4	86 7.8	146 13.3
27	13 36.8	13 39.0	12 59.5	27 2.5	87 7.9	147 13.4
28	13 37.0	13 39.3	12 59.8	28 2.5	88 8.0	148 13.4
29	13 37.3	13 39.5	13 .0	29 2.6	89 8.1	149 13.5
30	13 37.5	13 39.8	13 .3	30 2.7	90 8.2	150 13.6
31	13 37.8	13 40.0	13 .5	31 2.8	91 8.3	151 13.7
32	13 38.0	13 40.3	13 .7	32 2.9	92 8.4	152 13.8
33	13 38.3	13 40.5	13 1.0	33 3.0	93 8.4	153 13.9
34	13 38.5	13 40.8	13 1.2	34 3.1	94 8.5	154 14.0
35	13 38.8	13 41.0	13 1.5	35 3.2	95 8.6	155 14.1
36	13 39.0	13 41.3	13 1.7	36 3.3	96 8.7	156 14.2
37	13 39.3	13 41.5	13 1.9	37 3.4	97 8.8	157 14.3
38	13 39.5	13 41.8	13 2.2	38 3.5	98 8.9	158 14.4
39	13 39.8	13 42.0	13 2.4	39 3.5	99 9.0	159 14.4
40	13 40.0	13 42.3	13 2.6	40 3.6	100 9.1	160 14.5
41	13 40.3	13 42.5	13 2.9	41 3.7	101 9.2	161 14.6
42	13 40.5	13 42.8	13 3.1	42 3.8	102 9.3	162 14.7
43	13 40.8	13 43.0	13 3.4	43 3.9	103 9.4	163 14.8
44	13 41.0	13 43.3	13 3.6	44 4.0	104 9.4	164 14.9
45	13 41.3	13 43.5	13 3.8	45 4.1	105 9.5	165 15.0
46	13 41.5	13 43.8	13 4.1	46 4.2	106 9.6	166 15.1
47	13 41.8	13 44.0	13 4.3	47 4.3	107 9.7	167 15.2
48	13 42.0	13 44.3	13 4.6	48 4.4	108 9.8	168 15.3
49	13 42.3	13 44.5	13 4.8	49 4.5	109 9.9	169 15.4
50	13 42.5	13 44.8	13 5.0	50 4.5	110 10.0	170 15.4
51	13 42.8	13 45.0	13 5.3	51 4.6	111 10.1	171 15.5
52	13 43.0	13 45.3	13 5.5	52 4.7	112 10.2	172 15.6
53	13 43.3	13 45.5	13 5.7	53 4.8	113 10.3	173 15.7
54	13 43.5	13 45.8	13 6.0	54 4.9	114 10.4	174 15.8
55	13 43.8	13 46.0	13 6.2	55 5.0	115 10.4	175 15.9
56	13 44.0	13 46.3	13 6.5	56 5.1	116 10.5	176 16.0
57	13 44.3	13 46.5	13 6.7	57 5.2	117 10.6	177 16.1
58	13 44.5	13 46.8	13 6.9	58 5.3	118 10.7	178 16.2
59	13 44.8	13 47.0	13 7.2	59 5.4	119 10.8	179 16.3
60	13 45.0	13 47.3	13 7.4	60 5.5	120 10.9	180 16.4

0 h 55 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	13 45.0	13 47.3	13 7.4	0 .0	60 5.6	120 11.1
1	13 45.3	13 47.5	13 7.7	1 .1	61 5.6	121 11.2
2	13 45.5	13 47.8	13 7.9	2 .2	62 5.7	122 11.3
3	13 45.8	13 48.0	13 8.1	3 .3	63 5.8	123 11.4
4	13 46.0	13 48.3	13 8.4	4 .4	64 5.9	124 11.5
5	13 46.3	13 48.5	13 8.6	5 .5	65 6.0	125 11.6
6	13 46.5	13 48.8	13 8.8	6 .6	66 6.1	126 11.7
7	13 46.8	13 49.0	13 9.1	7 .6	67 6.2	127 11.7
8	13 47.0	13 49.3	13 9.3	8 .7	68 6.3	128 11.8
9	13 47.3	13 49.5	13 9.6	9 .8	69 6.4	129 11.9
10	13 47.5	13 49.8	13 9.8	10 .9	70 6.5	130 12.0
11	13 47.8	13 50.0	13 10.0	11 1.0	71 6.6	131 12.1
12	13 48.0	13 50.3	13 10.3	12 1.1	72 6.7	132 12.2
13	13 48.3	13 50.6	13 10.5	13 1.2	73 6.8	133 12.3
14	13 48.5	13 50.8	13 10.8	14 1.3	74 6.8	134 12.4
15	13 48.8	13 51.1	13 11.0	15 1.4	75 6.9	135 12.5
16	13 49.0	13 51.3	13 11.2	16 1.5	76 7.0	136 12.6
17	13 49.3	13 51.6	13 11.5	17 1.6	77 7.1	137 12.7
18	13 49.5	13 51.8	13 11.7	18 1.7	78 7.2	138 12.8
19	13 49.8	13 52.1	13 12.0	19 1.8	79 7.3	139 12.9
20	13 50.0	13 52.3	13 12.2	20 1.9	80 7.4	140 13.0
21	13 50.3	13 52.6	13 12.4	21 1.9	81 7.5	141 13.0
22	13 50.5	13 52.8	13 12.7	22 2.0	82 7.6	142 13.1
23	13 50.8	13 53.1	13 12.9	23 2.1	83 7.7	143 13.2
24	13 51.0	13 53.3	13 13.1	24 2.2	84 7.8	144 13.3
25	13 51.3	13 53.6	13 13.4	25 2.3	85 7.9	145 13.4
26	13 51.5	13 53.8	13 13.6	26 2.4	86 8.0	146 13.5
27	13 51.8	13 54.1	13 13.9	27 2.5	87 8.0	147 13.6
28	13 52.0	13 54.3	13 14.1	28 2.6	88 8.1	148 13.7
29	13 52.3	13 54.6	13 14.3	29 2.7	89 8.2	149 13.8
30	13 52.5	13 54.8	13 14.6	30 2.8	90 8.3	150 13.9
31	13 52.8	13 55.1	13 14.8	31 2.9	91 8.4	151 14.0
32	13 53.0	13 55.3	13 15.1	32 3.0	92 8.5	152 14.1
33	13 53.3	13 55.6	13 15.3	33 3.1	93 8.6	153 14.2
34	13 53.5	13 55.8	13 15.5	34 3.1	94 8.7	154 14.2
35	13 53.8	13 56.1	13 15.8	35 3.2	95 8.8	155 14.3
36	13 54.0	13 56.3	13 16.0	36 3.3	96 8.9	156 14.4
37	13 54.3	13 56.6	13 16.2	37 3.4	97 9.0	157 14.5
38	13 54.5	13 56.8	13 16.5	38 3.5	98 9.1	158 14.6
39	13 54.8	13 57.1	13 16.7	39 3.6	99 9.2	159 14.7
40	13 55.0	13 57.3	13 17.0	40 3.7	100 9.3	160 14.8
41	13 55.3	13 57.6	13 17.2	41 3.8	101 9.3	161 14.9
42	13 55.5	13 57.8	13 17.4	42 3.9	102 9.4	162 15.0
43	13 55.8	13 58.1	13 17.7	43 4.0	103 9.5	163 15.1
44	13 56.0	13 58.3	13 17.9	44 4.1	104 9.6	164 15.2
45	13 56.3	13 58.6	13 18.2	45 4.2	105 9.7	165 15.3
46	13 56.5	13 58.8	13 18.4	46 4.3	106 9.8	166 15.4
47	13 56.8	13 59.1	13 18.6	47 4.3	107 9.9	167 15.4
48	13 57.0	13 59.3	13 18.9	48 4.4	108 10.0	168 15.5
49	13 57.3	13 59.6	13 19.1	49 4.5	109 10.1	169 15.6
50	13 57.5	13 59.8	13 19.3	50 4.6	110 10.2	170 15.7
51	13 57.8	14 .1	13 19.6	51 4.7	111 10.3	171 15.8
52	13 58.0	14 .3	13 19.8	52 4.8	112 10.4	172 15.9
53	13 58.3	14 .6	13 20.1	53 4.9	113 10.5	173 16.0
54	13 58.5	14 .8	13 20.3	54 5.0	114 10.5	174 16.1
55	13 58.8	14 1.1	13 20.5	55 5.1	115 10.6	175 16.2
56	13 59.0	14 1.3	13 20.8	56 5.2	116 10.7	176 16.3
57	13 59.3	14 1.6	13 21.0	57 5.3	117 10.8	177 16.4
58	13 59.5	14 1.8	13 21.3	58 5.4	118 10.9	178 16.5
59	13 59.8	14 2.1	13 21.5	59 5.5	119 11.0	179 16.6
60	14 .0	14 2.3	13 21.7	60 5.6	120 11.1	180 16.7

0 h 56 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	'	'	'
0	14	.0	14	2.3	13	21.7	0 .0 60 5.7 120 11.3
1	14	.3	14	2.6	13	22.0	1 .1 61 5.7 121 11.4
2	14	.5	14	2.8	13	22.2	2 .2 62 5.8 122 11.5
3	14	.8	14	3.1	13	22.4	3 .3 63 5.9 123 11.6
4	14	1.0	14	3.3	13	22.7	4 .4 64 6.0 124 11.7
5	14	1.3	14	3.6	13	22.9	5 .5 65 6.1 125 11.8
6	14	1.5	14	3.8	13	23.2	6 .6 66 6.2 126 11.9
7	14	1.8	14	4.1	13	23.4	7 .7 67 6.3 127 12.0
8	14	2.0	14	4.3	13	23.6	8 .8 68 6.4 128 12.1
9	14	2.3	14	4.6	13	23.9	9 .8 69 6.5 129 12.1
10	14	2.5	14	4.8	13	24.1	10 .9 70 6.6 130 12.2
11	14	2.8	14	5.1	13	24.4	11 1.0 71 6.7 131 12.3
12	14	3.0	14	5.3	13	24.6	12 1.1 72 6.8 132 12.4
13	14	3.3	14	5.6	13	24.8	13 1.2 73 6.9 133 12.5
14	14	3.5	14	5.8	13	25.1	14 1.3 74 7.0 134 12.6
15	14	3.8	14	6.1	13	25.3	15 1.4 75 7.1 135 12.7
16	14	4.0	14	6.3	13	25.6	16 1.5 76 7.2 136 12.8
17	14	4.3	14	6.6	13	25.8	17 1.6 77 7.3 137 12.9
18	14	4.5	14	6.8	13	26.0	18 1.7 78 7.3 138 13.0
19	14	4.8	14	7.1	13	26.3	19 1.8 79 7.4 139 13.1
20	14	5.0	14	7.3	13	26.5	20 1.9 80 7.5 140 13.2
21	14	5.3	14	7.6	13	26.7	21 2.0 81 7.6 141 13.3
22	14	5.5	14	7.8	13	27.0	22 2.1 82 7.7 142 13.4
23	14	5.8	14	8.1	13	27.2	23 2.2 83 7.8 143 13.5
24	14	6.0	14	8.4	13	27.5	24 2.3 84 7.9 144 13.6
25	14	6.3	14	8.6	13	27.7	25 2.4 85 8.0 145 13.7
26	14	6.5	14	8.9	13	27.9	26 2.4 86 8.1 146 13.7
27	14	6.8	14	9.1	13	28.2	27 2.5 87 8.2 147 13.8
28	14	7.0	14	9.4	13	28.4	28 2.6 88 8.3 148 13.9
29	14	7.3	14	9.6	13	28.7	29 2.7 89 8.4 149 14.0
30	14	7.5	14	9.9	13	28.9	30 2.8 90 8.5 150 14.1
31	14	7.8	14	10.1	13	29.1	31 2.9 91 8.6 151 14.2
32	14	8.0	14	10.4	13	29.4	32 3.0 92 8.7 152 14.3
33	14	8.3	14	10.6	13	29.6	33 3.1 93 8.8 153 14.4
34	14	8.5	14	10.9	13	29.8	34 3.2 94 8.9 154 14.5
35	14	8.8	14	11.1	13	30.1	35 3.3 95 8.9 155 14.6
36	14	9.0	14	11.4	13	30.3	36 3.4 96 9.0 156 14.7
37	14	9.3	14	11.6	13	30.6	37 3.5 97 9.1 157 14.8
38	14	9.5	14	11.9	13	30.8	38 3.6 98 9.2 158 14.9
39	14	9.8	14	12.1	13	31.0	39 3.7 99 9.3 159 15.0
40	14	10.0	14	12.4	13	31.3	40 3.8 100 9.4 160 15.1
41	14	10.3	14	12.6	13	31.5	41 3.9 101 9.5 161 15.2
42	14	10.5	14	12.9	13	31.8	42 4.0 102 9.6 162 15.3
43	14	10.8	14	13.1	13	32.0	43 4.0 103 9.7 163 15.3
44	14	11.0	14	13.4	13	32.2	44 4.1 104 9.8 164 15.4
45	14	11.3	14	13.6	13	32.5	45 4.2 105 9.9 165 15.5
46	14	11.5	14	13.9	13	32.7	46 4.3 106 10.0 166 15.6
47	14	11.8	14	14.1	13	32.9	47 4.4 107 10.1 167 15.7
48	14	12.0	14	14.4	13	33.2	48 4.5 108 10.2 168 15.8
49	14	12.3	14	14.6	13	33.4	49 4.6 109 10.3 169 15.9
50	14	12.5	14	14.9	13	33.7	50 4.7 110 10.4 170 16.0
51	14	12.8	14	15.1	13	33.9	51 4.8 111 10.5 171 16.1
52	14	13.0	14	15.4	13	34.1	52 4.9 112 10.5 172 16.2
53	14	13.3	14	15.6	13	34.4	53 5.0 113 10.6 173 16.3
54	14	13.5	14	15.9	13	34.6	54 5.1 114 10.7 174 16.4
55	14	13.8	14	16.1	13	34.9	55 5.2 115 10.8 175 16.5
56	14	14.0	14	16.4	13	35.1	56 5.3 116 10.9 176 16.6
57	14	14.3	14	16.6	13	35.3	57 5.4 117 11.0 177 16.7
58	14	14.5	14	16.9	13	35.6	58 5.5 118 11.1 178 16.8
59	14	14.8	14	17.1	13	35.8	59 5.6 119 11.2 179 16.9
60	14	15.0	14	17.4	13	36.1	60 5.7 120 11.3 180 17.0

0 h 57 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	'	'	'
0	14	15.0	14	17.4	13	36.1	0 .0 60 5.8 120 11.5
1	14	15.3	14	17.6	13	36.3	1 .1 61 5.8 121 11.6
2	14	15.5	14	17.9	13	36.5	2 .2 62 5.9 122 11.7
3	14	15.8	14	18.1	13	36.8	3 .3 63 6.0 123 11.8
4	14	16.0	14	18.4	13	37.0	4 .4 64 6.1 124 11.9
5	14	16.3	14	18.6	13	37.2	5 .5 65 6.2 125 12.0
6	14	16.5	14	18.9	13	37.5	6 .6 66 6.3 126 12.1
7	14	16.8	14	19.1	13	37.7	7 .7 67 6.4 127 12.2
8	14	17.0	14	19.4	13	38.0	8 .8 68 6.5 128 12.3
9	14	17.3	14	19.6	13	38.2	9 .9 69 6.6 129 12.4
10	14	17.5	14	19.9	13	38.4	10 1.0 70 6.7 130 12.5
11	14	17.8	14	20.1	13	38.7	11 1.1 71 6.8 131 12.6
12	14	18.0	14	20.4	13	38.9	12 1.2 72 6.9 132 12.7
13	14	18.3	14	20.6	13	39.2	13 1.2 73 7.0 133 12.7
14	14	18.5	14	20.9	13	39.4	14 1.3 74 7.1 134 12.8
15	14	18.8	14	21.1	13	39.6	15 1.4 75 7.2 135 12.9
16	14	19.0	14	21.4	13	39.9	16 1.5 76 7.3 136 13.0
17	14	19.3	14	21.6	13	40.1	17 1.6 77 7.4 137 13.1
18	14	19.5	14	21.9	13	40.3	18 1.7 78 7.5 138 13.2
19	14	19.8	14	22.1	13	40.6	19 1.8 79 7.6 139 13.3
20	14	20.0	14	22.4	13	40.8	20 1.9 80 7.7 140 13.4
21	14	20.3	14	22.6	13	41.1	21 2.0 81 7.8 141 13.5
22	14	20.5	14	22.9	13	41.3	22 2.1 82 7.9 142 13.6
23	14	20.8	14	23.1	13	41.5	23 2.2 83 8.0 143 13.7
24	14	21.0	14	23.4	13	41.8	24 2.3 84 8.1 144 13.8
25	14	21.3	14	23.6	13	42.0	25 2.4 85 8.1 145 13.9
26	14	21.5	14	23.9	13	42.3	26 2.5 86 8.2 146 14.0
27	14	21.8	14	24.1	13	42.5	27 2.6 87 8.3 147 14.1
28	14	22.0	14	24.4	13	42.7	28 2.7 88 8.4 148 14.2
29	14	22.3	14	24.6	13	43.0	29 2.8 89 8.5 149 14.3
30	14	22.5	14	24.9	13	43.2	30 2.9 90 8.6 150 14.4
31	14	22.8	14	25.1	13	43.4	31 3.0 91 8.7 151 14.5
32	14	23.0	14	25.4	13	43.7	32 3.1 92 8.8 152 14.6
33	14	23.3	14	25.6	13	43.9	33 3.2 93 8.9 153 14.7
34	14	23.5	14	25.9	13	44.2	34 3.3 94 9.0 154 14.8
35	14	23.8	14	26.1	13	44.4	35 3.4 95 9.1 155 14.9
36	14	24.0	14	26.4	13	44.6	36 3.5 96 9.2 156 15.0
37	14	24.3	14	26.7	13	44.9	37 3.5 97 9.3 157 15.0
38	14	24.5	14	26.9	13	45.1	38 3.6 98 9.4 158 15.1
39	14	24.8	14	27.2	13	45.4	39 3.7 99 9.5 159 15.2
40	14	25.0	14	27.4	13	45.6	40 3.8 100 9.6 160 15.3
41	14	25.3	14	27.7	13	45.8	41 3.9 101 9.7 161 15.4
42	14	25.5	14	27.9	13	46.1	42 4.0 102 9.8 162 15.5
43	14	25.8	14	28.2	13	46.3	43 4.1 103 9.9 163 15.6
44	14	26.0	14	28.4	13	46.5	44 4.2 104 10.0 164 15.7
45	14	26.3	14	28.7	13	46.8	45 4.3 105 10.1 165 15.8
46	14	26.5	14	28.9	13	47.0	46 4.4 106 10.2 166 15.9
47	14	26.8	14	29.2	13	47.3	47 4.5 107 10.3 167 16.0
48	14	27.0	14	29.4	13	47.5	48 4.6 108 10.4 168 16.1
49	14	27.3	14	29.7	13	47.7	49 4.7 109 10.4 169 16.2
50	14	27.5	14	29.9	13	48.0	50 4.8 110 10.5 170 16.3
51	14	27.8	14	30.2	13	48.2	51 4.9 111 10.6 171 16.4
52	14	28.0	14	30.4	13	48.5	52 5.0 112 10.7 172 16.5
53	14	28.3	14	30.7	13	48.7	53 5.1 113 10.8 173 16.6
54	14	28.5	14	30.9	13	48.9	54 5.2 114 10.9 174 16.7
55	14	28.8	14	31.2	13	49.2	55 5.3 115 11.0 175 16.8
56	14	29.0	14	31.4	13	49.4	56 5.4 116 11.1 176 16.9
57	14	29.3	14	31.7	13	49.7	57 5.5 117 11.2 177 17.0
58	14	29.5	14	31.9	13	49.9	58 5.6 118 11.3 178 17.1
59	14	29.8	14	32.2	13	50.1	59 5.7 119 11.4 179 17.2
60	14	30.0	14	32.4	13	50.4	60 5.8 120 11.5 180 17.3

0 h 58 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	14 30.0	14 32.4	13 50.4	0 .0	60 5.9	120 11.7
1	14 30.3	14 32.7	13 50.6	1 .1	61 5.9	121 11.8
2	14 30.5	14 32.9	13 50.8	2 .2	62 6.0	122 11.9
3	14 30.8	14 33.2	13 51.1	3 .3	63 6.1	123 12.0
4	14 31.0	14 33.4	13 51.3	4 .4	64 6.2	124 12.1
5	14 31.3	14 33.7	13 51.6	5 .5	65 6.3	125 12.2
6	14 31.5	14 33.9	13 51.8	6 .6	66 6.4	126 12.3
7	14 31.8	14 34.2	13 52.0	7 .7	67 6.5	127 12.4
8	14 32.0	14 34.4	13 52.3	8 .8	68 6.6	128 12.5
9	14 32.3	14 34.7	13 52.5	9 .9	69 6.7	129 12.6
10	14 32.5	14 34.9	13 52.8	10 1.0	70 6.8	130 12.7
11	14 32.8	14 35.2	13 53.0	11 1.1	71 6.9	131 12.8
12	14 33.0	14 35.4	13 53.2	12 1.2	72 7.0	132 12.9
13	14 33.3	14 35.7	13 53.5	13 1.3	73 7.1	133 13.0
14	14 33.5	14 35.9	13 53.7	14 1.4	74 7.2	134 13.1
15	14 33.8	14 36.2	13 53.9	15 1.5	75 7.3	135 13.2
16	14 34.0	14 36.4	13 54.2	16 1.6	76 7.4	136 13.3
17	14 34.3	14 36.7	13 54.4	17 1.7	77 7.5	137 13.4
18	14 34.5	14 36.9	13 54.7	18 1.8	78 7.6	138 13.5
19	14 34.8	14 37.2	13 54.9	19 1.9	79 7.7	139 13.6
20	14 35.0	14 37.4	13 55.1	20 2.0	80 7.8	140 13.7
21	14 35.3	14 37.7	13 55.4	21 2.0	81 7.9	141 13.7
22	14 35.5	14 37.9	13 55.6	22 2.1	82 8.0	142 13.8
23	14 35.8	14 38.2	13 55.9	23 2.2	83 8.1	143 13.9
24	14 36.0	14 38.4	13 56.1	24 2.3	84 8.2	144 14.0
25	14 36.3	14 38.7	13 56.3	25 2.4	85 8.3	145 14.1
26	14 36.5	14 38.9	13 56.6	26 2.5	86 8.4	146 14.2
27	14 36.8	14 39.2	13 56.8	27 2.6	87 8.5	147 14.3
28	14 37.0	14 39.4	13 57.0	28 2.7	88 8.6	148 14.4
29	14 37.3	14 39.7	13 57.3	29 2.8	89 8.7	149 14.5
30	14 37.5	14 39.9	13 57.5	30 2.9	90 8.8	150 14.6
31	14 37.8	14 40.2	13 57.8	31 3.0	91 8.9	151 14.7
32	14 38.0	14 40.4	13 58.0	32 3.1	92 9.0	152 14.8
33	14 38.3	14 40.7	13 58.2	33 3.2	93 9.1	153 14.9
34	14 38.5	14 40.9	13 58.5	34 3.3	94 9.2	154 15.0
35	14 38.8	14 41.2	13 58.7	35 3.4	95 9.3	155 15.1
36	14 39.0	14 41.4	13 59.0	36 3.5	96 9.4	156 15.2
37	14 39.3	14 41.7	13 59.2	37 3.6	97 9.5	157 15.3
38	14 39.5	14 41.9	13 59.4	38 3.7	98 9.6	158 15.4
39	14 39.8	14 42.2	13 59.7	39 3.8	99 9.7	159 15.5
40	14 40.0	14 42.4	13 59.9	40 3.9	100 9.8	160 15.6
41	14 40.3	14 42.7	14 .1	41 4.0	101 9.8	161 15.7
42	14 40.5	14 42.9	14 .4	42 4.1	102 9.9	162 15.8
43	14 40.8	14 43.2	14 .6	43 4.2	103 10.0	163 15.9
44	14 41.0	14 43.4	14 .9	44 4.3	104 10.1	164 16.0
45	14 41.3	14 43.7	14 1.1	45 4.4	105 10.2	165 16.1
46	14 41.5	14 43.9	14 1.3	46 4.5	106 10.3	166 16.2
47	14 41.8	14 44.2	14 1.6	47 4.6	107 10.4	167 16.3
48	14 42.0	14 44.5	14 1.8	48 4.7	108 10.5	168 16.4
49	14 42.3	14 44.7	14 2.1	49 4.8	109 10.6	169 16.5
50	14 42.5	14 45.0	14 2.3	50 4.9	110 10.7	170 16.6
51	14 42.8	14 45.2	14 2.5	51 5.0	111 10.8	171 16.7
52	14 43.0	14 45.5	14 2.8	52 5.1	112 10.9	172 16.8
53	14 43.3	14 45.7	14 3.0	53 5.2	113 11.0	173 16.9
54	14 43.5	14 46.0	14 3.3	54 5.3	114 11.1	174 17.0
55	14 43.8	14 46.2	14 3.5	55 5.4	115 11.2	175 17.1
56	14 44.0	14 46.5	14 3.7	56 5.5	116 11.3	176 17.2
57	14 44.3	14 46.7	14 4.0	57 5.6	117 11.4	177 17.3
58	14 44.5	14 47.0	14 4.2	58 5.7	118 11.5	178 17.4
59	14 44.8	14 47.2	14 4.4	59 5.8	119 11.6	179 17.5
60	14 45.0	14 47.5	14 4.7	60 5.9	120 11.7	180 17.6

0 h 59 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	14 45.0	14 47.5	14 4.7	0 .0	60 6.0	120 11.9
1	14 45.3	14 47.7	14 4.9	1 .1	61 6.0	121 12.0
2	14 45.5	14 48.0	14 5.2	2 .2	62 6.1	122 12.1
3	14 45.8	14 48.2	14 5.4	3 .3	63 6.2	123 12.2
4	14 46.0	14 48.5	14 5.6	4 .4	64 6.3	124 12.3
5	14 46.3	14 48.7	14 5.9	5 .5	65 6.4	125 12.4
6	14 46.5	14 49.0	14 6.1	6 .6	66 6.5	126 12.5
7	14 46.8	14 49.2	14 6.4	7 .7	67 6.6	127 12.6
8	14 47.0	14 49.5	14 6.6	8 .8	68 6.7	128 12.7
9	14 47.3	14 49.7	14 6.8	9 .9	69 6.8	129 12.8
10	14 47.5	14 50.0	14 7.1	10 1.0	70 6.9	130 12.9
11	14 47.8	14 50.2	14 7.3	11 1.1	71 7.0	131 13.0
12	14 48.0	14 50.5	14 7.5	12 1.2	72 7.1	132 13.1
13	14 48.3	14 50.7	14 7.8	13 1.3	73 7.2	133 13.2
14	14 48.5	14 51.0	14 8.0	14 1.4	74 7.3	134 13.3
15	14 48.8	14 51.2	14 8.3	15 1.5	75 7.4	135 13.4
16	14 49.0	14 51.5	14 8.5	16 1.6	76 7.5	136 13.5
17	14 49.3	14 51.7	14 8.7	17 1.7	77 7.6	137 13.6
18	14 49.5	14 52.0	14 9.0	18 1.8	78 7.7	138 13.7
19	14 49.8	14 52.2	14 9.2	19 1.9	79 7.8	139 13.8
20	14 50.0	14 52.5	14 9.5	20 2.0	80 7.9	140 13.9
21	14 50.3	14 52.7	14 9.7	21 2.1	81 8.0	141 14.0
22	14 50.5	14 53.0	14 9.9	22 2.2	82 8.1	142 14.1
23	14 50.8	14 53.2	14 10.2	23 2.3	83 8.2	143 14.2
24	14 51.0	14 53.5	14 10.4	24 2.4	84 8.3	144 14.3
25	14 51.3	14 53.7	14 10.6	25 2.5	85 8.4	145 14.4
26	14 51.5	14 54.0	14 10.9	26 2.6	86 8.5	146 14.5
27	14 51.8	14 54.2	14 11.1	27 2.7	87 8.6	147 14.6
28	14 52.0	14 54.5	14 11.4	28 2.8	88 8.7	148 14.7
29	14 52.3	14 54.7	14 11.6	29 2.9	89 8.8	149 14.8
30	14 52.5	14 55.0	14 11.8	30 3.0	90 8.9	150 14.9
31	14 52.8	14 55.2	14 12.1	31 3.1	91 9.0	151 15.0
32	14 53.0	14 55.5	14 12.3	32 3.2	92 9.1	152 15.1
33	14 53.3	14 55.7	14 12.6	33 3.3	93 9.2	153 15.2
34	14 53.5	14 56.0	14 12.8	34 3.4	94 9.3	154 15.3
35	14 53.8	14 56.2	14 13.0	35 3.5	95 9.4	155 15.4
36	14 54.0	14 56.5	14 13.3	36 3.6	96 9.5	156 15.5
37	14 54.3	14 56.7	14 13.5	37 3.7	97 9.6	157 15.6
38	14 54.5	14 57.0	14 13.8	38 3.8	98 9.7	158 15.7
39	14 54.8	14 57.2	14 14.0	39 3.9	99 9.8	159 15.8
40	14 55.0	14 57.5	14 14.2	40 4.0	100 9.9	160 15.9
41	14 55.3	14 57.7	14 14.5	41 4.1	101 10.0	161 16.0
42	14 55.5	14 58.0	14 14.7	42 4.2	102 10.1	162 16.1
43	14 55.8	14 58.2	14 14.9	43 4.3	103 10.2	163 16.2
44	14 56.0	14 58.5	14 15.2	44 4.4	104 10.3	164 16.3
45	14 56.3	14 58.7	14 15.4	45 4.5	105 10.4	165 16.4
46	14 56.5	14 59.0	14 15.7	46 4.6	106 10.5	166 16.5
47	14 56.8	14 59.2	14 15.9	47 4.7	107 10.6	167 16.6
48	14 57.0	14 59.5	14 16.1	48 4.8	108 10.7	168 16.7
49	14 57.3	14 59.7	14 16.4	49 4.9	109 10.8	169 16.8
50	14 57.5	14 60.0	14 16.6	50 5.0	110 10.9	170 16.9
51	14 57.8	15 .2	14 16.9	51 5.1	111 11.0	171 17.0
52	14 58.0	15 .5	14 17.1	52 5.2	112 11.1	172 17.1
53	14 58.3	15 .7	14 17.3	53 5.3	113 11.2	173 17.2
54	14 58.5	15 1.0	14 17.6	54 5.4	114 11.3	174 17.3
55	14 58.8	15 1.2	14 17.8	55 5.5	115 11.4	175 17.4
56	14 59.0	15 1.5	14 18.0	56 5.6	116 11.5	176 17.5
57	14 59.3	15 1.7	14 18.3	57 5.7	117 11.6	177 17.6
58	14 59.5	15 2.0	14 18.5	58 5.8	118 11.7	178 17.7
59	14 59.8	15 2.2	14 18.8	59 5.9	119 11.8	179 17.8
60	15 .0	15 2.5	14 19.0	60 6.0	120 11.9	180 17.9

1 h 0 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (°)		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	15	.0	15	2.5	14	19.0	0	.0	60	6.1	120	12.1
1	15	.3	15	2.8	14	19.2	1	.1	61	6.2	121	12.2
2	15	.5	15	3.0	14	19.5	2	.2	62	6.3	122	12.3
3	15	.8	15	3.3	14	19.7	3	.3	63	6.4	123	12.4
4	15	1.0	15	3.5	14	20.0	4	.4	64	6.5	124	12.5
5	15	1.3	15	3.8	14	20.2	5	.5	65	6.6	125	12.6
6	15	1.5	15	4.0	14	20.4	6	.6	66	6.7	126	12.7
7	15	1.8	15	4.3	14	20.7	7	.7	67	6.8	127	12.8
8	15	2.0	15	4.5	14	20.9	8	.8	68	6.9	128	12.9
9	15	2.3	15	4.8	14	21.1	9	.9	69	7.0	129	13.0
10	15	2.5	15	5.0	14	21.4	10	1.0	70	7.1	130	13.1
11	15	2.8	15	5.3	14	21.6	11	1.1	71	7.2	131	13.2
12	15	3.0	15	5.5	14	21.9	12	1.2	72	7.3	132	13.3
13	15	3.3	15	5.8	14	22.1	13	1.3	73	7.4	133	13.4
14	15	3.5	15	6.0	14	22.3	14	1.4	74	7.5	134	13.5
15	15	3.8	15	6.3	14	22.6	15	1.5	75	7.6	135	13.6
16	15	4.0	15	6.5	14	22.8	16	1.6	76	7.7	136	13.7
17	15	4.3	15	6.8	14	23.1	17	1.7	77	7.8	137	13.8
18	15	4.5	15	7.0	14	23.3	18	1.8	78	7.9	138	13.9
19	15	4.8	15	7.3	14	23.5	19	1.9	79	8.0	139	14.0
20	15	5.0	15	7.5	14	23.8	20	2.0	80	8.1	140	14.1
21	15	5.3	15	7.8	14	24.0	21	2.1	81	8.2	141	14.2
22	15	5.5	15	8.0	14	24.2	22	2.2	82	8.3	142	14.3
23	15	5.8	15	8.3	14	24.5	23	2.3	83	8.4	143	14.4
24	15	6.0	15	8.5	14	24.7	24	2.4	84	8.5	144	14.5
25	15	6.3	15	8.8	14	25.0	25	2.5	85	8.6	145	14.6
26	15	6.5	15	9.0	14	25.2	26	2.6	86	8.7	146	14.7
27	15	6.8	15	9.3	14	25.4	27	2.7	87	8.8	147	14.8
28	15	7.0	15	9.5	14	25.7	28	2.8	88	8.9	148	14.9
29	15	7.3	15	9.8	14	25.9	29	2.9	89	9.0	149	15.0
30	15	7.5	15	10.0	14	26.2	30	3.0	90	9.1	150	15.1
31	15	7.8	15	10.3	14	26.4	31	3.1	91	9.2	151	15.2
32	15	8.0	15	10.5	14	26.6	32	3.2	92	9.3	152	15.3
33	15	8.3	15	10.8	14	26.9	33	3.3	93	9.4	153	15.4
34	15	8.5	15	11.0	14	27.1	34	3.4	94	9.5	154	15.5
35	15	8.8	15	11.3	14	27.4	35	3.5	95	9.6	155	15.6
36	15	9.0	15	11.5	14	27.6	36	3.6	96	9.7	156	15.7
37	15	9.3	15	11.8	14	27.8	37	3.7	97	9.8	157	15.8
38	15	9.5	15	12.0	14	28.1	38	3.8	98	9.9	158	15.9
39	15	9.8	15	12.3	14	28.3	39	3.9	99	10.0	159	16.0
40	15	10.0	15	12.5	14	28.5	40	4.0	100	10.1	160	16.1
41	15	10.3	15	12.8	14	28.8	41	4.1	101	10.2	161	16.2
42	15	10.5	15	13.0	14	29.0	42	4.2	102	10.3	162	16.3
43	15	10.8	15	13.3	14	29.3	43	4.3	103	10.4	163	16.4
44	15	11.0	15	13.5	14	29.5	44	4.4	104	10.5	164	16.5
45	15	11.3	15	13.8	14	29.7	45	4.5	105	10.6	165	16.6
46	15	11.5	15	14.0	14	30.0	46	4.6	106	10.7	166	16.7
47	15	11.8	15	14.3	14	30.2	47	4.7	107	10.8	167	16.8
48	15	12.0	15	14.5	14	30.5	48	4.8	108	10.9	168	16.9
49	15	12.3	15	14.8	14	30.7	49	4.9	109	11.0	169	17.0
50	15	12.5	15	15.0	14	30.9	50	5.0	110	11.1	170	17.1
51	15	12.8	15	15.3	14	31.2	51	5.1	111	11.2	171	17.2
52	15	13.0	15	15.5	14	31.4	52	5.2	112	11.3	172	17.3
53	15	13.3	15	15.8	14	31.6	53	5.3	113	11.4	173	17.4
54	15	13.5	15	16.0	14	31.9	54	5.4	114	11.5	174	17.5
55	15	13.8	15	16.3	14	32.1	55	5.5	115	11.6	175	17.6
56	15	14.0	15	16.5	14	32.4	56	5.6	116	11.7	176	17.7
57	15	14.3	15	16.8	14	32.6	57	5.7	117	11.8	177	17.8
58	15	14.5	15	17.0	14	32.8	58	5.8	118	11.9	178	17.9
59	15	14.8	15	17.3	14	33.1	59	5.9	119	12.0	179	18.0
60	15	15.0	15	17.5	14	33.3	60	6.1	120	12.1	180	18.2

1 h 1 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (°)		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	15	15.0	15	17.5	14	33.3	0	.0	60	6.2	120	12.3
1	15	15.3	15	17.8	14	33.6	1	.1	61	6.3	121	12.4
2	15	15.5	15	18.0	14	33.8	2	.2	62	6.4	122	12.5
3	15	15.8	15	18.3	14	34.0	3	.3	63	6.5	123	12.6
4	15	16.0	15	18.5	14	34.3	4	.4	64	6.6	124	12.7
5	15	16.3	15	18.8	14	34.5	5	.5	65	6.7	125	12.8
6	15	16.5	15	19.0	14	34.7	6	.6	66	6.8	126	12.9
7	15	16.8	15	19.3	14	35.0	7	.7	67	6.9	127	13.0
8	15	17.0	15	19.5	14	35.2	8	.8	68	7.0	128	13.1
9	15	17.3	15	19.8	14	35.5	9	.9	69	7.1	129	13.2
10	15	17.5	15	20.0	14	35.7	10	1.0	70	7.2	130	13.3
11	15	17.8	15	20.3	14	35.9	11	1.1	71	7.3	131	13.4
12	15	18.0	15	20.6	14	36.2	12	1.2	72	7.4	132	13.5
13	15	18.3	15	20.8	14	36.4	13	1.3	73	7.5	133	13.6
14	15	18.5	15	21.1	14	36.7	14	1.4	74	7.6	134	13.7
15	15	18.8	15	21.3	14	36.9	15	1.5	75	7.7	135	13.8
16	15	19.0	15	21.6	14	37.1	16	1.6	76	7.8	136	13.9
17	15	19.3	15	21.8	14	37.4	17	1.7	77	7.9	137	14.0
18	15	19.5	15	22.1	14	37.6	18	1.8	78	8.0	138	14.1
19	15	19.8	15	22.3	14	37.9	19	1.9	79	8.1	139	14.2
20	15	20.0	15	22.6	14	38.1	20	2.1	80	8.2	140	14.4
21	15	20.3	15	22.8	14	38.3	21	2.2	81	8.3	141	14.5
22	15	20.5	15	23.1	14	38.6	22	2.3	82	8.4	142	14.6
23	15	20.8	15	23.3	14	38.8	23	2.4	83	8.5	143	14.7
24	15	21.0	15	23.6	14	39.0	24	2.5	84	8.6	144	14.8
25	15	21.3	15	23.8	14	39.3	25	2.6	85	8.7	145	14.9
26	15	21.5	15	24.1	14	39.5	26	2.7	86	8.8	146	15.0
27	15	21.8	15	24.3	14	39.8	27	2.8	87	8.9	147	15.1
28	15	22.0	15	24.6	14	40.0	28	2.9	88	9.0	148	15.2
29	15	22.3	15	24.8	14	40.2	29	3.0	89	9.1	149	15.3
30	15	22.5	15	25.1	14	40.5	30	3.1	90	9.2	150	15.4
31	15	22.8	15	25.3	14	40.7	31	3.2	91	9.3	151	15.5
32	15	23.0	15	25.6	14	41.0	32	3.3	92	9.4	152	15.6
33	15	23.3	15	25.8	14	41.2	33	3.4	93	9.5	153	15.7
34	15	23.5	15	26.1	14	41.4	34	3.5	94	9.6	154	15.8
35	15	23.8	15	26.3	14	41.7	35	3.6	95	9.7	155	15.9
36	15	24.0	15	26.6	14	41.9	36	3.7	96	9.8	156	16.0
37	15	24.3	15	26.8	14	42.1	37	3.8	97	9.9	157	16.1
38	15	24.5	15	27.1	14	42.4	38	3.9	98	10.0	158	16.2
39	15	24.8	15	27.3	14	42.6	39	4.0	99	10.1	159	16.3
40	15	25.0	15	27.6	14	42.9	40	4.1	100	10.3	160	16.4
41	15	25.3	15	27.8	14	43.1	41	4.2	101	10.4	161	16.5
42	15	25.5	15	28.1	14	43.3	42	4.3	102	10.5	162	16.6
43	15	25.8	15	28.3	14	43.6	43	4.4	103	10.6	163	16.7
44	15	26.0	15	28.6	14	43.8	44	4.5	104	10.7	164	16.8
45	15	26.3	15	28.8	14	44.1	45	4.6	105	10.8	165	16.9
46	15	26.5	15	29.1	14	44.3	46	4.7	106	10.9	166	17.0
47	15	26.8	15	29.3	14	44.5	47	4.8	107	11.0	167	17.1
48	15	27.0	15	29.6	14	44.8	48	4.9	108	11.1	168	17.2
49	15	27.3	15	29.8	14	45.0	49	5.0	109	11.2	169	17.3

1 h 2 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	15 30.0	15 32.6	14 47.6	0 .0	60 6.3	120 12.5
1	15 30.3	15 32.8	14 47.9	1 .1	61 6.4	121 12.6
2	15 30.5	15 33.1	14 48.1	2 .2	62 6.5	122 12.7
3	15 30.8	15 33.3	14 48.3	3 .3	63 6.6	123 12.8
4	15 31.0	15 33.6	14 48.6	4 .4	64 6.7	124 12.9
5	15 31.3	15 33.8	14 48.8	5 .5	65 6.8	125 13.0
6	15 31.5	15 34.1	14 49.1	6 .6	66 6.9	126 13.1
7	15 31.8	15 34.3	14 49.3	7 .7	67 7.0	127 13.2
8	15 32.0	15 34.6	14 49.5	8 .8	68 7.1	128 13.3
9	15 32.3	15 34.8	14 49.8	9 .9	69 7.2	129 13.4
10	15 32.5	15 35.1	14 50.0	10 1.0	70 7.3	130 13.5
11	15 32.8	15 35.3	14 50.3	11 1.1	71 7.4	131 13.6
12	15 33.0	15 35.6	14 50.5	12 1.3	72 7.5	132 13.8
13	15 33.3	15 35.8	14 50.7	13 1.4	73 7.6	133 13.9
14	15 33.5	15 36.1	14 51.0	14 1.5	74 7.7	134 14.0
15	15 33.8	15 36.3	14 51.2	15 1.6	75 7.8	135 14.1
16	15 34.0	15 36.6	14 51.5	16 1.7	76 7.9	136 14.2
17	15 34.3	15 36.8	14 51.7	17 1.8	77 8.0	137 14.3
18	15 34.5	15 37.1	14 51.9	18 1.9	78 8.1	138 14.4
19	15 34.8	15 37.3	14 52.2	19 2.0	79 8.2	139 14.5
20	15 35.0	15 37.6	14 52.4	20 2.1	80 8.3	140 14.6
21	15 35.3	15 37.8	14 52.6	21 2.2	81 8.4	141 14.7
22	15 35.5	15 38.1	14 52.9	22 2.3	82 8.5	142 14.8
23	15 35.8	15 38.3	14 53.1	23 2.4	83 8.6	143 14.9
24	15 36.0	15 38.6	14 53.4	24 2.5	84 8.8	144 15.0
25	15 36.3	15 38.9	14 53.6	25 2.6	85 8.9	145 15.1
26	15 36.5	15 39.1	14 53.8	26 2.7	86 9.0	146 15.2
27	15 36.8	15 39.4	14 54.1	27 2.8	87 9.1	147 15.3
28	15 37.0	15 39.6	14 54.3	28 2.9	88 9.2	148 15.4
29	15 37.3	15 39.9	14 54.6	29 3.0	89 9.3	149 15.5
30	15 37.5	15 40.1	14 54.8	30 3.1	90 9.4	150 15.6
31	15 37.8	15 40.4	14 55.0	31 3.2	91 9.5	151 15.7
32	15 38.0	15 40.6	14 55.3	32 3.3	92 9.6	152 15.8
33	15 38.3	15 40.9	14 55.5	33 3.4	93 9.7	153 15.9
34	15 38.5	15 41.1	14 55.7	34 3.5	94 9.8	154 16.0
35	15 38.8	15 41.4	14 56.0	35 3.6	95 9.9	155 16.1
36	15 39.0	15 41.6	14 56.2	36 3.8	96 10.0	156 16.3
37	15 39.3	15 41.9	14 56.5	37 3.9	97 10.1	157 16.4
38	15 39.5	15 42.1	14 56.7	38 4.0	98 10.2	158 16.5
39	15 39.8	15 42.4	14 56.9	39 4.1	99 10.3	159 16.6
40	15 40.0	15 42.6	14 57.2	40 4.2	100 10.4	160 16.7
41	15 40.3	15 42.9	14 57.4	41 4.3	101 10.5	161 16.8
42	15 40.5	15 43.1	14 57.7	42 4.4	102 10.6	162 16.9
43	15 40.8	15 43.4	14 57.9	43 4.5	103 10.7	163 17.0
44	15 41.0	15 43.6	14 58.1	44 4.6	104 10.8	164 17.1
45	15 41.3	15 43.9	14 58.4	45 4.7	105 10.9	165 17.2
46	15 41.5	15 44.1	14 58.6	46 4.8	106 11.0	166 17.3
47	15 41.8	15 44.4	14 58.8	47 4.9	107 11.1	167 17.4
48	15 42.0	15 44.6	14 59.1	48 5.0	108 11.3	168 17.5
49	15 42.3	15 44.9	14 59.3	49 5.1	109 11.4	169 17.6
50	15 42.5	15 45.1	14 59.6	50 5.2	110 11.5	170 17.7
51	15 42.8	15 45.4	14 59.8	51 5.3	111 11.6	171 17.8
52	15 43.0	15 45.6	15 .0	52 5.4	112 11.7	172 17.9
53	15 43.3	15 45.9	15 .3	53 5.5	113 11.8	173 18.0
54	15 43.5	15 46.1	15 .5	54 5.6	114 11.9	174 18.1
55	15 43.8	15 46.4	15 .8	55 5.7	115 12.0	175 18.2
56	15 44.0	15 46.6	15 1.0	56 5.8	116 12.1	176 18.3
57	15 44.3	15 46.9	15 1.2	57 5.9	117 12.2	177 18.4
58	15 44.5	15 47.1	15 1.5	58 6.0	118 12.3	178 18.5
59	15 44.8	15 47.4	15 1.7	59 6.1	119 12.4	179 18.6
60	15 45.0	15 47.6	15 2.0	60 6.3	120 12.5	180 18.8

1 h 3 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	15 45.0	15 47.6	15 2.0	0 .0	60 6.4	120 12.7
1	15 45.3	15 47.9	15 2.2	1 .1	61 6.5	121 12.8
2	15 45.5	15 48.1	15 2.4	2 .2	62 6.6	122 12.9
3	15 45.8	15 48.4	15 2.7	3 .3	63 6.7	123 13.0
4	15 46.0	15 48.6	15 2.9	4 .4	64 6.8	124 13.1
5	15 46.3	15 48.9	15 3.1	5 .5	65 6.9	125 13.2
6	15 46.5	15 49.1	15 3.4	6 .6	66 7.0	126 13.3
7	15 46.8	15 49.4	15 3.6	7 .7	67 7.1	127 13.4
8	15 47.0	15 49.6	15 3.9	8 .8	68 7.2	128 13.5
9	15 47.3	15 49.9	15 4.1	9 1.0	69 7.3	129 13.7
10	15 47.5	15 50.1	15 4.3	10 1.1	70 7.4	130 13.8
11	15 47.8	15 50.4	15 4.6	11 1.2	71 7.5	131 13.9
12	15 48.0	15 50.6	15 4.8	12 1.3	72 7.6	132 14.0
13	15 48.3	15 50.9	15 5.1	13 1.4	73 7.7	133 14.1
14	15 48.5	15 51.1	15 5.3	14 1.5	74 7.8	134 14.2
15	15 48.8	15 51.4	15 5.5	15 1.6	75 7.9	135 14.3
16	15 49.0	15 51.6	15 5.8	16 1.7	76 8.0	136 14.4
17	15 49.3	15 51.9	15 6.0	17 1.8	77 8.1	137 14.5
18	15 49.5	15 52.1	15 6.2	18 1.9	78 8.3	138 14.6
19	15 49.8	15 52.4	15 6.5	19 2.0	79 8.4	139 14.7
20	15 50.0	15 52.6	15 6.7	20 2.1	80 8.5	140 14.8
21	15 50.3	15 52.9	15 7.0	21 2.2	81 8.6	141 14.9
22	15 50.5	15 53.1	15 7.2	22 2.3	82 8.7	142 15.0
23	15 50.8	15 53.4	15 7.4	23 2.4	83 8.8	143 15.1
24	15 51.0	15 53.6	15 7.7	24 2.5	84 8.9	144 15.2
25	15 51.3	15 53.9	15 7.9	25 2.6	85 9.0	145 15.3
26	15 51.5	15 54.1	15 8.2	26 2.8	86 9.1	146 15.5
27	15 51.8	15 54.4	15 8.4	27 2.9	87 9.2	147 15.6
28	15 52.0	15 54.6	15 8.6	28 3.0	88 9.3	148 15.7
29	15 52.3	15 54.9	15 8.9	29 3.1	89 9.4	149 15.8
30	15 52.5	15 55.1	15 9.1	30 3.2	90 9.5	150 15.9
31	15 52.8	15 55.4	15 9.3	31 3.3	91 9.6	151 16.0
32	15 53.0	15 55.6	15 9.6	32 3.4	92 9.7	152 16.1
33	15 53.3	15 55.9	15 9.8	33 3.5	93 9.8	153 16.2
34	15 53.5	15 56.1	15 10.1	34 3.6	94 9.9	154 16.3
35	15 53.8	15 56.4	15 10.3	35 3.7	95 10.1	155 16.4
36	15 54.0	15 56.7	15 10.5	36 3.8	96 10.2	156 16.5
37	15 54.3	15 56.9	15 10.8	37 3.9	97 10.3	157 16.6
38	15 54.5	15 57.2	15 11.0	38 4.0	98 10.4	158 16.7
39	15 54.8	15 57.4	15 11.3	39 4.1	99 10.5	159 16.8
40	15 55.0	15 57.7	15 11.5	40 4.2	100 10.6	160 16.9
41	15 55.3	15 57.9	15 11.7	41 4.3	101 10.7	161 17.0
42	15 55.5	15 58.2	15 12.0	42 4.4	102 10.8	162 17.1
43	15 55.8	15 58.4	15 12.2	43 4.6	103 10.9	163 17.3
44	15 56.0	15 58.7	15 12.4	44 4.7	104 11.0	164 17.4
45	15 56.3	15 58.9	15 12.7	45 4.8	105 11.1	165 17.5
46	15 56.5	15 59.2	15 12.9	46 4.9	106 11.2	166 17.6
47	15 56.8	15 59.4	15 13.2	47 5.0	107 11.3	167 17.7
48	15 57.0	15 59.7	15 13.4	48 5.1	108 11.4	168 17.8
49	15 57.3	15 59.9	15 13.6	49 5.2	109 11.5	169 17.9
50	15 57.5	16 .2	15 13.9	50 5.3	110 11.6	170 18.0
51	15 57.8	16 .4	15 14.1	51 5.4	111 11.7	171 18.1
52	15 58.0	16 .7	15 14.4	52 5.5	112 11.9	172 18.2
53	15 58.3	16 .9	15 14.6	53 5.6	113 12.0	173 18.3
54	15 58.5	16 1.2	15 14.8	54 5.7	114 12.1	174 18.4
55	15 58.8	16 1.4	15 15.1	55 5.8	115 12.2	175 18.5
56	15 59.0	16 1.7	15 15.3	56 5.9	116 12.3	176 18.6
57	15 59.3	16 1.9	15 15.6	57 6.0	117 12.4	177 18.7
58	15 59.5	16 2.2	15 15.8	58 6.1	118 12.5	178 18.8
59	15 59.8	16 2.4	15 16.0	59 6.2	119 12.6	179 18.9
60	16 .0	16 2.7	15 16.3	60 6.4	120 12.7	180 19.1

1 h 4 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	16	.0	16	2.7	15	16.3	0	.0	60	6.5	120	12.9
1	16	.3	16	2.9	15	16.5	1	.1	61	6.6	121	13.0
2	16	.5	16	3.2	15	16.7	2	.2	62	6.7	122	13.1
3	16	.8	16	3.4	15	17.0	3	.3	63	6.8	123	13.2
4	16	1.0	16	3.7	15	17.2	4	.4	64	6.9	124	13.3
5	16	1.3	16	3.9	15	17.5	5	.5	65	7.0	125	13.4
6	16	1.5	16	4.2	15	17.7	6	.6	66	7.1	126	13.5
7	16	1.8	16	4.4	15	17.9	7	.8	67	7.2	127	13.7
8	16	2.0	16	4.7	15	18.2	8	.9	68	7.3	128	13.8
9	16	2.3	16	4.9	15	18.4	9	1.0	69	7.4	129	13.9
10	16	2.5	16	5.2	15	18.7	10	1.1	70	7.5	130	14.0
11	16	2.8	16	5.4	15	18.9	11	1.2	71	7.6	131	14.1
12	16	3.0	16	5.7	15	19.1	12	1.3	72	7.7	132	14.2
13	16	3.3	16	5.9	15	19.4	13	1.4	73	7.8	133	14.3
14	16	3.5	16	6.2	15	19.6	14	1.5	74	8.0	134	14.4
15	16	3.8	16	6.4	15	19.8	15	1.6	75	8.1	135	14.5
16	16	4.0	16	6.7	15	20.1	16	1.7	76	8.2	136	14.6
17	16	4.3	16	6.9	15	20.3	17	1.8	77	8.3	137	14.7
18	16	4.5	16	7.2	15	20.6	18	1.9	78	8.4	138	14.8
19	16	4.8	16	7.4	15	20.8	19	2.0	79	8.5	139	14.9
20	16	5.0	16	7.7	15	21.0	20	2.2	80	8.6	140	15.1
21	16	5.3	16	7.9	15	21.3	21	2.3	81	8.7	141	15.2
22	16	5.5	16	8.2	15	21.5	22	2.4	82	8.8	142	15.3
23	16	5.8	16	8.4	15	21.8	23	2.5	83	8.9	143	15.4
24	16	6.0	16	8.7	15	22.0	24	2.6	84	9.0	144	15.5
25	16	6.3	16	8.9	15	22.2	25	2.7	85	9.1	145	15.6
26	16	6.5	16	9.2	15	22.5	26	2.8	86	9.2	146	15.7
27	16	6.8	16	9.4	15	22.7	27	2.9	87	9.4	147	15.8
28	16	7.0	16	9.7	15	22.9	28	3.0	88	9.5	148	15.9
29	16	7.3	16	9.9	15	23.2	29	3.1	89	9.6	149	16.0
30	16	7.5	16	10.2	15	23.4	30	3.2	90	9.7	150	16.1
31	16	7.8	16	10.4	15	23.7	31	3.3	91	9.8	151	16.2
32	16	8.0	16	10.7	15	23.9	32	3.4	92	9.9	152	16.3
33	16	8.3	16	10.9	15	24.1	33	3.5	93	10.0	153	16.4
34	16	8.5	16	11.2	15	24.4	34	3.7	94	10.1	154	16.6
35	16	8.8	16	11.4	15	24.6	35	3.8	95	10.2	155	16.7
36	16	9.0	16	11.7	15	24.9	36	3.9	96	10.3	156	16.8
37	16	9.3	16	11.9	15	25.1	37	4.0	97	10.4	157	16.9
38	16	9.5	16	12.2	15	25.3	38	4.1	98	10.5	158	17.0
39	16	9.8	16	12.4	15	25.6	39	4.2	99	10.6	159	17.1
40	16	10.0	16	12.7	15	25.8	40	4.3	100	10.8	160	17.2
41	16	10.3	16	12.9	15	26.0	41	4.4	101	10.9	161	17.3
42	16	10.5	16	13.2	15	26.3	42	4.5	102	11.0	162	17.4
43	16	10.8	16	13.4	15	26.5	43	4.6	103	11.1	163	17.5
44	16	11.0	16	13.7	15	26.8	44	4.7	104	11.2	164	17.6
45	16	11.3	16	13.9	15	27.0	45	4.8	105	11.3	165	17.7
46	16	11.5	16	14.2	15	27.2	46	4.9	106	11.4	166	17.8
47	16	11.8	16	14.4	15	27.5	47	5.1	107	11.5	167	18.0
48	16	12.0	16	14.7	15	27.7	48	5.2	108	11.6	168	18.1
49	16	12.3	16	15.0	15	28.0	49	5.3	109	11.7	169	18.2
50	16	12.5	16	15.2	15	28.2	50	5.4	110	11.8	170	18.3
51	16	12.8	16	15.5	15	28.4	51	5.5	111	11.9	171	18.4
52	16	13.0	16	15.7	15	28.7	52	5.6	112	12.0	172	18.5
53	16	13.3	16	16.0	15	28.9	53	5.7	113	12.1	173	18.6
54	16	13.5	16	16.2	15	29.2	54	5.8	114	12.3	174	18.7
55	16	13.8	16	16.5	15	29.4	55	5.9	115	12.4	175	18.8
56	16	14.0	16	16.7	15	29.6	56	6.0	116	12.5	176	18.9
57	16	14.3	16	17.0	15	29.9	57	6.1	117	12.6	177	19.0
58	16	14.5	16	17.2	15	30.1	58	6.2	118	12.7	178	19.1
59	16	14.8	16	17.5	15	30.3	59	6.3	119	12.8	179	19.2
60	16	15.0	16	17.7	15	30.6	60	6.5	120	12.9	180	19.4

1 h 5 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	16	15.0	16	17.7	15	30.6	0	.0	60	6.6	120	13.1
1	16	15.3	16	18.0	15	30.8	1	.1	61	6.7	121	13.2
2	16	15.5	16	18.2	15	31.1	2	.2	62	6.8	122	13.3
3	16	15.8	16	18.5	15	31.3	3	.3	63	6.9	123	13.4
4	16	16.0	16	18.7	15	31.5	4	.4	64	7.0	124	13.5
5	16	16.3	16	19.0	15	31.8	5	.5	65	7.1	125	13.6
6	16	16.5	16	19.2	15	32.0	6	.7	66	7.2	126	13.8
7	16	16.8	16	19.5	15	32.3	7	.8	67	7.3	127	13.9
8	16	17.0	16	19.7	15	32.5	8	.9	68	7.4	128	14.0
9	16	17.3	16	20.0	15	32.7	9	1.0	69	7.5	129	14.1
10	16	17.5	16	20.2	15	33.0	10	1.1	70	7.6	130	14.2
11	16	17.8	16	20.5	15	33.2	11	1.2	71	7.8	131	14.3
12	16	18.0	16	20.7	15	33.4	12	1.3	72	7.9	132	14.4
13	16	18.3	16	21.0	15	33.7	13	1.4	73	8.0	133	14.5
14	16	18.5	16	21.2	15	33.9	14	1.5	74	8.1	134	14.6
15	16	18.8	16	21.5	15	34.2	15	1.6	75	8.2	135	14.7
16	16	19.0	16	21.7	15	34.4	16	1.7	76	8.3	136	14.8
17	16	19.3	16	22.0	15	34.6	17	1.9	77	8.4	137	15.0
18	16	19.5	16	22.2	15	34.9	18	2.0	78	8.5	138	15.1
19	16	19.8	16	22.5	15	35.1	19	2.1	79	8.6	139	15.2
20	16	20.0	16	22.7	15	35.4	20	2.2	80	8.7	140	15.3
21	16	20.3	16	23.0	15	35.6	21	2.3	81	8.8	141	15.4
22	16	20.5	16	23.2	15	35.8	22	2.4	82	9.0	142	15.5
23	16	20.8	16	23.5	15	36.1	23	2.5	83	9.1	143	15.6
24	16	21.0	16	23.7	15	36.3	24	2.6	84	9.2	144	15.7
25	16	21.3	16	24.0	15	36.5	25	2.7	85	9.3	145	15.8
26	16	21.5	16	24.2	15	36.8	26	2.8	86	9.4	146	15.9
27	16	21.8	16	24.5	15	37.0	27	2.9	87	9.5	147	16.0
28	16	22.0	16	24.7	15	37.3	28	3.1	88	9.6	148	16.2
29	16	22.3	16	25.0	15	37.5	29	3.2	89	9.7	149	16.3
30	16	22.5	16	25.2	15	37.7	30	3.3	90	9.8	150	16.4
31	16	22.8	16	25.5	15	38.0	31	3.4	91	9.9	151	16.5
32	16	23.0	16	25.7	15	38.2	32	3.5	92	10.0	152	16.6
33	16	23.3	16	26.0	15	38.5	33	3.6	93	10.2	153	16.7
34	16	23.5	16	26.2	15	38.7	34	3.7	94	10.3	154	16.8
35	16	23.8	16	26.5	15	38.9	35	3.8	95	10.4	155	16.9
36	16	24.0	16	26.7	15	39.2	36	3.9	96	10.5	156	17.0
37	16	24.3	16	27.0	15	39.4	37	4.0	97	10.6	157	17.1
38	16	24.5	16	27.2	15	39.7	38	4.1	98	10.7	158	17.2
39	16	24.8	16	27.5	15	39.9	39	4.3	99	10.8	159	17.4
40	16	25.0	16	27.7	15	40.1	40	4.4	100	10.9	160	17.5
41	16	25.3	16	28.0	15	40.4	41	4.5	101	11.0	161	17.6
42	16	25.5	16	28.2	15	40.6	42	4.6	102	11.1	162	17.7
43	16	25.8	16	28.5	15	40.8	43	4.7	103	11.2	163	17.8
44	16	26.0	16	28.7	15	41.1	44	4.8	104	11.4	164	17.9
45	16	26.3	16	29.0	15	41.3	45	4.9	105	11.5	165	18.0
46	16	26.5	16	29.2	15	41.6	46	5.0	106	11.6	166	18.1
47	16	26.8	16	29.5	15	41.8	47	5.1	107	11.7	167	18.2
48	16	27.0	16	29.7	15	42.0	48	5.2	108	11.8	168	18.3
49	16	27.3	16	30.0	15	42.3	49	5.3	109	11.9	169	

1 h 6 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	16 30.0	16 32.8	15 44.9	0 .0	60 6.7	120 13.3
1	16 30.3	16 33.0	15 45.1	1 .1	61 6.8	121 13.4
2	16 30.5	16 33.3	15 45.4	2 .2	62 6.9	122 13.5
3	16 30.8	16 33.5	15 45.6	3 .3	63 7.0	123 13.6
4	16 31.0	16 33.8	15 45.9	4 .4	64 7.1	124 13.7
5	16 31.3	16 34.0	15 46.1	5 .6	65 7.2	125 13.9
6	16 31.5	16 34.3	15 46.3	6 .7	66 7.3	126 14.0
7	16 31.8	16 34.5	15 46.6	7 .8	67 7.4	127 14.1
8	16 32.0	16 34.8	15 46.8	8 .9	68 7.5	128 14.2
9	16 32.3	16 35.0	15 47.0	9 1.0	69 7.6	129 14.3
10	16 32.5	16 35.3	15 47.3	10 1.1	70 7.8	130 14.4
11	16 32.8	16 35.5	15 47.5	11 1.2	71 7.9	131 14.5
12	16 33.0	16 35.8	15 47.8	12 1.3	72 8.0	132 14.6
13	16 33.3	16 36.0	15 48.0	13 1.4	73 8.1	133 14.7
14	16 33.5	16 36.3	15 48.2	14 1.6	74 8.2	134 14.9
15	16 33.8	16 36.5	15 48.5	15 1.7	75 8.3	135 15.0
16	16 34.0	16 36.8	15 48.7	16 1.8	76 8.4	136 15.1
17	16 34.3	16 37.0	15 49.0	17 1.9	77 8.5	137 15.2
18	16 34.5	16 37.3	15 49.2	18 2.0	78 8.6	138 15.3
19	16 34.8	16 37.5	15 49.4	19 2.1	79 8.8	139 15.4
20	16 35.0	16 37.8	15 49.7	20 2.2	80 8.9	140 15.5
21	16 35.3	16 38.0	15 49.9	21 2.3	81 9.0	141 15.6
22	16 35.5	16 38.3	15 50.1	22 2.4	82 9.1	142 15.7
23	16 35.8	16 38.5	15 50.4	23 2.5	83 9.2	143 15.8
24	16 36.0	16 38.8	15 50.6	24 2.7	84 9.3	144 16.0
25	16 36.3	16 39.0	15 50.9	25 2.8	85 9.4	145 16.1
26	16 36.5	16 39.3	15 51.1	26 2.9	86 9.5	146 16.2
27	16 36.8	16 39.5	15 51.3	27 3.0	87 9.6	147 16.3
28	16 37.0	16 39.8	15 51.6	28 3.1	88 9.8	148 16.4
29	16 37.3	16 40.0	15 51.8	29 3.2	89 9.9	149 16.5
30	16 37.5	16 40.3	15 52.1	30 3.3	90 10.0	150 16.6
31	16 37.8	16 40.5	15 52.3	31 3.4	91 10.1	151 16.7
32	16 38.0	16 40.8	15 52.5	32 3.5	92 10.2	152 16.8
33	16 38.3	16 41.0	15 52.8	33 3.7	93 10.3	153 17.0
34	16 38.5	16 41.3	15 53.0	34 3.8	94 10.4	154 17.1
35	16 38.8	16 41.5	15 53.3	35 3.9	95 10.5	155 17.2
36	16 39.0	16 41.8	15 53.5	36 4.0	96 10.6	156 17.3
37	16 39.3	16 42.0	15 53.7	37 4.1	97 10.8	157 17.4
38	16 39.5	16 42.3	15 54.0	38 4.2	98 10.9	158 17.5
39	16 39.8	16 42.5	15 54.2	39 4.3	99 11.0	159 17.6
40	16 40.0	16 42.8	15 54.4	40 4.4	100 11.1	160 17.7
41	16 40.3	16 43.0	15 54.7	41 4.5	101 11.2	161 17.8
42	16 40.5	16 43.3	15 54.9	42 4.7	102 11.3	162 18.0
43	16 40.8	16 43.5	15 55.2	43 4.8	103 11.4	163 18.1
44	16 41.0	16 43.8	15 55.4	44 4.9	104 11.5	164 18.2
45	16 41.3	16 44.0	15 55.6	45 5.0	105 11.6	165 18.3
46	16 41.5	16 44.3	15 55.9	46 5.1	106 11.7	166 18.4
47	16 41.8	16 44.5	15 56.1	47 5.2	107 11.9	167 18.5
48	16 42.0	16 44.8	15 56.4	48 5.3	108 12.0	168 18.6
49	16 42.3	16 45.0	15 56.6	49 5.4	109 12.1	169 18.7
50	16 42.5	16 45.3	15 56.8	50 5.5	110 12.2	170 18.8
51	16 42.8	16 45.5	15 57.1	51 5.7	111 12.3	171 19.0
52	16 43.0	16 45.8	15 57.3	52 5.8	112 12.4	172 19.1
53	16 43.3	16 46.0	15 57.5	53 5.9	113 12.5	173 19.2
54	16 43.5	16 46.3	15 57.8	54 6.0	114 12.6	174 19.3
55	16 43.8	16 46.5	15 58.0	55 6.1	115 12.7	175 19.4
56	16 44.0	16 46.8	15 58.3	56 6.2	116 12.9	176 19.5
57	16 44.3	16 47.0	15 58.5	57 6.3	117 13.0	177 19.6
58	16 44.5	16 47.3	15 58.7	58 6.4	118 13.1	178 19.7
59	16 44.8	16 47.5	15 59.0	59 6.5	119 13.2	179 19.8
60	16 45.0	16 47.8	15 59.2	60 6.7	120 13.3	180 20.0

1 h 7 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	16 45.0	16 47.8	15 59.2	0 .0	60 6.8	120 13.5
1	16 45.3	16 48.0	15 59.5	1 .1	61 6.9	121 13.6
2	16 45.5	16 48.3	15 59.7	2 .2	62 7.0	122 13.7
3	16 45.8	16 48.5	15 59.9	3 .3	63 7.1	123 13.8
4	16 46.0	16 48.8	16 .2	4 .5	64 7.2	124 14.0
5	16 46.3	16 49.0	16 .4	5 .6	65 7.3	125 14.1
6	16 46.5	16 49.3	16 .6	6 .7	66 7.4	126 14.2
7	16 46.8	16 49.5	16 .9	7 .8	67 7.5	127 14.3
8	16 47.0	16 49.8	16 1.1	8 .9	68 7.7	128 14.4
9	16 47.3	16 50.0	16 1.4	9 1.0	69 7.8	129 14.5
10	16 47.5	16 50.3	16 1.6	10 1.1	70 7.9	130 14.6
11	16 47.8	16 50.5	16 1.8	11 1.2	71 8.0	131 14.7
12	16 48.0	16 50.8	16 2.1	12 1.4	72 8.1	132 14.9
13	16 48.3	16 51.1	16 2.3	13 1.5	73 8.2	133 15.0
14	16 48.5	16 51.3	16 2.6	14 1.6	74 8.3	134 15.1
15	16 48.8	16 51.6	16 2.8	15 1.7	75 8.4	135 15.2
16	16 49.0	16 51.8	16 3.0	16 1.8	76 8.6	136 15.3
17	16 49.3	16 52.1	16 3.3	17 1.9	77 8.7	137 15.4
18	16 49.5	16 52.3	16 3.5	18 2.0	78 8.8	138 15.5
19	16 49.8	16 52.6	16 3.8	19 2.1	79 8.9	139 15.6
20	16 50.0	16 52.8	16 4.0	20 2.3	80 9.0	140 15.8
21	16 50.3	16 53.1	16 4.2	21 2.4	81 9.1	141 15.9
22	16 50.5	16 53.3	16 4.5	22 2.5	82 9.2	142 16.0
23	16 50.8	16 53.6	16 4.7	23 2.6	83 9.3	143 16.1
24	16 51.0	16 53.8	16 4.9	24 2.7	84 9.5	144 16.2
25	16 51.3	16 54.1	16 5.2	25 2.8	85 9.6	145 16.3
26	16 51.5	16 54.3	16 5.4	26 2.9	86 9.7	146 16.4
27	16 51.8	16 54.6	16 5.7	27 3.0	87 9.8	147 16.5
28	16 52.0	16 54.8	16 5.9	28 3.2	88 9.9	148 16.7
29	16 52.3	16 55.1	16 6.1	29 3.3	89 10.0	149 16.8
30	16 52.5	16 55.3	16 6.4	30 3.4	90 10.1	150 16.9
31	16 52.8	16 55.6	16 6.6	31 3.5	91 10.2	151 17.0
32	16 53.0	16 55.8	16 6.9	32 3.6	92 10.4	152 17.1
33	16 53.3	16 56.1	16 7.1	33 3.7	93 10.5	153 17.2
34	16 53.5	16 56.3	16 7.3	34 3.8	94 10.6	154 17.3
35	16 53.8	16 56.6	16 7.6	35 3.9	95 10.7	155 17.4
36	16 54.0	16 56.8	16 7.8	36 4.1	96 10.8	156 17.6
37	16 54.3	16 57.1	16 8.0	37 4.2	97 10.9	157 17.7
38	16 54.5	16 57.3	16 8.3	38 4.3	98 11.0	158 17.8
39	16 54.8	16 57.6	16 8.5	39 4.4	99 11.1	159 17.9
40	16 55.0	16 57.8	16 8.8	40 4.5	100 11.3	160 18.0
41	16 55.3	16 58.1	16 9.0	41 4.6	101 11.4	161 18.1
42	16 55.5	16 58.3	16 9.2	42 4.7	102 11.5	162 18.2
43	16 55.8	16 58.6	16 9.5	43 4.8	103 11.6	163 18.3
44	16 56.0	16 58.8	16 9.7	44 5.0	104 11.7	164 18.5
45	16 56.3	16 59.1	16 10.0	45 5.1	105 11.8	165 18.6
46	16 56.5	16 59.3	16 10.2	46 5.2	106 11.9	166 18.7
47	16 56.8	16 59.6	16 10.4	47 5.3	107 12.0	167 18.8
48	16 57.0	16 59.8	16 10.7	48 5.4	108 12.2	168 18.9
49	16 57.3	17 .1	16 10.9	49 5.5	109 12.3	169 19.0
50	16 57.5	17 .3	16 11.1	50 5.6	110 12.4	170 19.1
51	16 57.8	17 .6	16 11.4	51 5.7	111 12.5	171 19.2
52	16 58.0	17 .8	16 11.6	52 5.9	112 12.6	172 19.4
53	16 58.3	17 1.1	16 11.9	53 6.0	113 12.7	173 19.5
54	16 58.5	17 1.3	16 12.1	54 6.1	114 12.8	174 19.6
55	16 58.8	17 1.6	16 12.3	55 6.2	115 12.9	175 19.7
56	16 59.0	17 1.8	16 12.6	56 6.3	116 13.1	176 19.8
57	16 59.3	17 2.1	16 12.8	57 6.4	117 13.2	177 19.9
58	16 59.5	17 2.3	16 13.1	58 6.5	118 13.3	178 20.0
59	16 59.8	17 2.6	16 13.3	59 6.6	119 13.4	179 20.1
60	17 .0	17 2.8	16 13.5	60 6.8	120 13.5	180 20.3

1 h 8 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	17	.0	17	2.8	16	13.5	0 .0 60 6.9 120 13.7
1	17	.3	17	3.1	16	13.8	1 .1 61 7.0 121 13.8
2	17	.5	17	3.3	16	14.0	2 .2 62 7.1 122 13.9
3	17	.8	17	3.6	16	14.2	3 .3 63 7.2 123 14.0
4	17	1.0	17	3.8	16	14.5	4 .5 64 7.3 124 14.2
5	17	1.3	17	4.1	16	14.7	5 .6 65 7.4 125 14.3
6	17	1.5	17	4.3	16	15.0	6 .7 66 7.5 126 14.4
7	17	1.8	17	4.6	16	15.2	7 .8 67 7.6 127 14.5
8	17	2.0	17	4.8	16	15.4	8 .9 68 7.8 128 14.6
9	17	2.3	17	5.1	16	15.7	9 1.0 69 7.9 129 14.7
10	17	2.5	17	5.3	16	15.9	10 1.1 70 8.0 130 14.8
11	17	2.8	17	5.6	16	16.2	11 1.3 71 8.1 131 15.0
12	17	3.0	17	5.8	16	16.4	12 1.4 72 8.2 132 15.1
13	17	3.3	17	6.1	16	16.6	13 1.5 73 8.3 133 15.2
14	17	3.5	17	6.3	16	16.9	14 1.6 74 8.4 134 15.3
15	17	3.8	17	6.6	16	17.1	15 1.7 75 8.6 135 15.4
16	17	4.0	17	6.8	16	17.4	16 1.8 76 8.7 136 15.5
17	17	4.3	17	7.1	16	17.6	17 1.9 77 8.8 137 15.6
18	17	4.5	17	7.3	16	17.8	18 2.1 78 8.9 138 15.8
19	17	4.8	17	7.6	16	18.1	19 2.2 79 9.0 139 15.9
20	17	5.0	17	7.8	16	18.3	20 2.3 80 9.1 140 16.0
21	17	5.3	17	8.1	16	18.5	21 2.4 81 9.2 141 16.1
22	17	5.5	17	8.3	16	18.8	22 2.5 82 9.4 142 16.2
23	17	5.8	17	8.6	16	19.0	23 2.6 83 9.5 143 16.3
24	17	6.0	17	8.9	16	19.3	24 2.7 84 9.6 144 16.4
25	17	6.3	17	9.1	16	19.5	25 2.9 85 9.7 145 16.6
26	17	6.5	17	9.4	16	19.7	26 3.0 86 9.8 146 16.7
27	17	6.8	17	9.6	16	20.0	27 3.1 87 9.9 147 16.8
28	17	7.0	17	9.9	16	20.2	28 3.2 88 10.0 148 16.9
29	17	7.3	17	10.1	16	20.5	29 3.3 89 10.2 149 17.0
30	17	7.5	17	10.4	16	20.7	30 3.4 90 10.3 150 17.1
31	17	7.8	17	10.6	16	20.9	31 3.5 91 10.4 151 17.2
32	17	8.0	17	10.9	16	21.2	32 3.7 92 10.5 152 17.4
33	17	8.3	17	11.1	16	21.4	33 3.8 93 10.6 153 17.5
34	17	8.5	17	11.4	16	21.6	34 3.9 94 10.7 154 17.6
35	17	8.8	17	11.6	16	21.9	35 4.0 95 10.8 155 17.7
36	17	9.0	17	11.9	16	22.1	36 4.1 96 11.0 156 17.8
37	17	9.3	17	12.1	16	22.4	37 4.2 97 11.1 157 17.9
38	17	9.5	17	12.4	16	22.6	38 4.3 98 11.2 158 18.0
39	17	9.8	17	12.6	16	22.8	39 4.5 99 11.3 159 18.2
40	17	10.0	17	12.9	16	23.1	40 4.6 100 11.4 160 18.3
41	17	10.3	17	13.1	16	23.3	41 4.7 101 11.5 161 18.4
42	17	10.5	17	13.4	16	23.6	42 4.8 102 11.6 162 18.5
43	17	10.8	17	13.6	16	23.8	43 4.9 103 11.8 163 18.6
44	17	11.0	17	13.9	16	24.0	44 5.0 104 11.9 164 18.7
45	17	11.3	17	14.1	16	24.3	45 5.1 105 12.0 165 18.8
46	17	11.5	17	14.4	16	24.5	46 5.3 106 12.1 166 19.0
47	17	11.8	17	14.6	16	24.7	47 5.4 107 12.2 167 19.1
48	17	12.0	17	14.9	16	25.0	48 5.5 108 12.3 168 19.2
49	17	12.3	17	15.1	16	25.2	49 5.6 109 12.4 169 19.3
50	17	12.5	17	15.4	16	25.5	50 5.7 110 12.6 170 19.4
51	17	12.8	17	15.6	16	25.7	51 5.8 111 12.7 171 19.5
52	17	13.0	17	15.9	16	25.9	52 5.9 112 12.8 172 19.6
53	17	13.3	17	16.1	16	26.2	53 6.1 113 12.9 173 19.8
54	17	13.5	17	16.4	16	26.4	54 6.2 114 13.0 174 19.9
55	17	13.8	17	16.6	16	26.7	55 6.3 115 13.1 175 20.0
56	17	14.0	17	16.9	16	26.9	56 6.4 116 13.2 176 20.1
57	17	14.3	17	17.1	16	27.1	57 6.5 117 13.4 177 20.2
58	17	14.5	17	17.4	16	27.4	58 6.6 118 13.5 178 20.3
59	17	14.8	17	17.6	16	27.6	59 6.7 119 13.6 179 20.4
60	17	15.0	17	17.9	16	27.9	60 6.9 120 13.7 180 20.6

1 h 9 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	17	15.0	17	17.9	16	27.9	0 .0 60 7.0 120 13.9
1	17	15.3	17	18.1	16	28.1	1 .1 61 7.1 121 14.0
2	17	15.5	17	18.4	16	28.3	2 .2 62 7.2 122 14.1
3	17	15.8	17	18.6	16	28.6	3 .3 63 7.3 123 14.2
4	17	16.0	17	18.9	16	28.8	4 .5 64 7.4 124 14.4
5	17	16.3	17	19.1	16	29.0	5 .6 65 7.5 125 14.5
6	17	16.5	17	19.4	16	29.3	6 .7 66 7.6 126 14.6
7	17	16.8	17	19.6	16	29.5	7 .8 67 7.8 127 14.7
8	17	17.0	17	19.9	16	29.8	8 .9 68 7.9 128 14.8
9	17	17.3	17	20.1	16	30.0	9 1.0 69 8.0 129 14.9
10	17	17.5	17	20.4	16	30.2	10 1.2 70 8.1 130 15.1
11	17	17.8	17	20.6	16	30.5	11 1.3 71 8.2 131 15.2
12	17	18.0	17	20.9	16	30.7	12 1.4 72 8.3 132 15.3
13	17	18.3	17	21.1	16	31.0	13 1.5 73 8.5 133 15.4
14	17	18.5	17	21.4	16	31.2	14 1.6 74 8.6 134 15.5
15	17	18.8	17	21.6	16	31.4	15 1.7 75 8.7 135 15.6
16	17	19.0	17	21.9	16	31.7	16 1.9 76 8.8 136 15.8
17	17	19.3	17	22.1	16	31.9	17 2.0 77 8.9 137 15.9
18	17	19.5	17	22.4	16	32.1	18 2.1 78 9.0 138 16.0
19	17	19.8	17	22.6	16	32.4	19 2.2 79 9.2 139 16.1
20	17	20.0	17	22.9	16	32.6	20 2.3 80 9.3 140 16.2
21	17	20.3	17	23.1	16	32.9	21 2.4 81 9.4 141 16.3
22	17	20.5	17	23.4	16	33.1	22 2.5 82 9.5 142 16.4
23	17	20.8	17	23.6	16	33.3	23 2.7 83 9.6 143 16.6
24	17	21.0	17	23.9	16	33.6	24 2.8 84 9.7 144 16.7
25	17	21.3	17	24.1	16	33.8	25 2.9 85 9.8 145 16.8
26	17	21.5	17	24.4	16	34.1	26 3.0 86 10.0 146 16.9
27	17	21.8	17	24.6	16	34.3	27 3.1 87 10.1 147 17.0
28	17	22.0	17	24.9	16	34.5	28 3.2 88 10.2 148 17.1
29	17	22.3	17	25.1	16	34.8	29 3.4 89 10.3 149 17.3
30	17	22.5	17	25.4	16	35.0	30 3.5 90 10.4 150 17.4
31	17	22.8	17	25.6	16	35.2	31 3.6 91 10.5 151 17.5
32	17	23.0	17	25.9	16	35.5	32 3.7 92 10.7 152 17.6
33	17	23.3	17	26.1	16	35.7	33 3.8 93 10.8 153 17.7
34	17	23.5	17	26.4	16	36.0	34 3.9 94 10.9 154 17.8
35	17	23.8	17	26.6	16	36.2	35 4.1 95 11.0 155 18.0
36	17	24.0	17	26.9	16	36.4	36 4.2 96 11.1 156 18.1
37	17	24.3	17	27.2	16	36.7	37 4.3 97 11.2 157 18.2
38	17	24.5	17	27.4	16	36.9	38 4.4 98 11.4 158 18.3
39	17	24.8	17	27.7	16	37.2	39 4.5 99 11.5 159 18.4
40	17	25.0	17	27.9	16	37.4	40 4.6 100 11.6 160 18.5
41	17	25.3	17	28.2	16	37.6	41 4.7 101 11.7 161 18.6
42	17	25.5	17	28.4	16	37.9	42 4.9 102 11.8 162 18.8
43	17	25.8	17	28.7	16	38.1	43 5.0 103 11.9 163 18.9
44	17	26.0	17	28.9	16	38.3	44 5.1 104 12.0 164 19.0
45	17	26.3	17	29.2	16	38.6	45 5.2 105 12.2 165 19.1
46	17	26.5	17	29.4	16	38.8	46 5.3 106 12.3 166 19.2
47	17	26.8	17	29.7	16	39.1	47 5.4 107 12.4 167 19.3
48	17	27.0	17	29.9	16	39.3	48 5.6 108 12.5 168 19.5
49	17	27.3	17	30.2	16	39.5	49 5.7 109 12.6 169 19.6
50	17	27.5	17	30.4	16	39.8	50 5.8 110 12.7 170 19.7
51	17	27.8	17	30.7	16	40.0	51 5.9 111 12.9 171 19.8
52	17	28.0	17	30.9	16	40.3	52 6.0 112 13.0 172 19.9
53	17	28.3	17	31.2	16	40.5	53 6.1 113 13.1 173 20.0
54	17	28.5	17	31.4	16	40.7	54 6.3 114 13.2 174 20.2
55	17	28.8	17	31.7	16	41.0	55 6.4 115 13.3 175 20.3
56	17	29.0	17	31.9	16	41.2	56 6.5 116 13.4 176 20.4
57	17	29.3	17	32.2	16	41.5	57 6.6 117 13.6 177 20.5
58	17	29.5	17	32.4	16	41.7	58 6.7 118 13.7 178 20.6
59	17	29.8	17	32.7	16	41.9	59 6.8 119 13.8 179 20.7
60	17	30.0	17	32.9	16	42.2	60 7.0 120 13.9 180 20.9

1 h 10 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	17 30.0	17 32.9	16 42.2	0 .0	60 7.1	120 14.1
1	17 30.3	17 33.2	16 42.4	1 .1	61 7.2	121 14.2
2	17 30.5	17 33.4	16 42.6	2 .2	62 7.3	122 14.3
3	17 30.8	17 33.7	16 42.9	3 .4	63 7.4	123 14.5
4	17 31.0	17 33.9	16 43.1	4 .5	64 7.5	124 14.6
5	17 31.3	17 34.2	16 43.4	5 .6	65 7.6	125 14.7
6	17 31.5	17 34.4	16 43.6	6 .7	66 7.8	126 14.8
7	17 31.8	17 34.7	16 43.8	7 .8	67 7.9	127 14.9
8	17 32.0	17 34.9	16 44.1	8 .9	68 8.0	128 15.0
9	17 32.3	17 35.2	16 44.3	9 1.1	69 8.1	129 15.2
10	17 32.5	17 35.4	16 44.6	10 1.2	70 8.2	130 15.3
11	17 32.8	17 35.7	16 44.8	11 1.3	71 8.3	131 15.4
12	17 33.0	17 35.9	16 45.0	12 1.4	72 8.5	132 15.5
13	17 33.3	17 36.2	16 45.3	13 1.5	73 8.6	133 15.6
14	17 33.5	17 36.4	16 45.5	14 1.6	74 8.7	134 15.7
15	17 33.8	17 36.7	16 45.7	15 1.8	75 8.8	135 15.9
16	17 34.0	17 36.9	16 46.0	16 1.9	76 8.9	136 16.0
17	17 34.3	17 37.2	16 46.2	17 2.0	77 9.0	137 16.1
18	17 34.5	17 37.4	16 46.5	18 2.1	78 9.2	138 16.2
19	17 34.8	17 37.7	16 46.7	19 2.2	79 9.3	139 16.3
20	17 35.0	17 37.9	16 46.9	20 2.4	80 9.4	140 16.5
21	17 35.3	17 38.2	16 47.2	21 2.5	81 9.5	141 16.6
22	17 35.5	17 38.4	16 47.4	22 2.6	82 9.6	142 16.7
23	17 35.8	17 38.7	16 47.7	23 2.7	83 9.8	143 16.8
24	17 36.0	17 38.9	16 47.9	24 2.8	84 9.9	144 16.9
25	17 36.3	17 39.2	16 48.1	25 2.9	85 10.0	145 17.0
26	17 36.5	17 39.4	16 48.4	26 3.1	86 10.1	146 17.2
27	17 36.8	17 39.7	16 48.6	27 3.2	87 10.2	147 17.3
28	17 37.0	17 39.9	16 48.8	28 3.3	88 10.3	148 17.4
29	17 37.3	17 40.2	16 49.1	29 3.4	89 10.5	149 17.5
30	17 37.5	17 40.4	16 49.3	30 3.5	90 10.6	150 17.6
31	17 37.8	17 40.7	16 49.6	31 3.6	91 10.7	151 17.7
32	17 38.0	17 40.9	16 49.8	32 3.8	92 10.8	152 17.9
33	17 38.3	17 41.2	16 50.0	33 3.9	93 10.9	153 18.0
34	17 38.5	17 41.4	16 50.3	34 4.0	94 11.0	154 18.1
35	17 38.8	17 41.7	16 50.5	35 4.1	95 11.2	155 18.2
36	17 39.0	17 41.9	16 50.8	36 4.2	96 11.3	156 18.3
37	17 39.3	17 42.2	16 51.0	37 4.3	97 11.4	157 18.4
38	17 39.5	17 42.4	16 51.2	38 4.5	98 11.5	158 18.6
39	17 39.8	17 42.7	16 51.5	39 4.6	99 11.6	159 18.7
40	17 40.0	17 42.9	16 51.7	40 4.7	100 11.8	160 18.8
41	17 40.3	17 43.2	16 51.9	41 4.8	101 11.9	161 18.9
42	17 40.5	17 43.4	16 52.2	42 4.9	102 12.0	162 19.0
43	17 40.8	17 43.7	16 52.4	43 5.1	103 12.1	163 19.2
44	17 41.0	17 43.9	16 52.7	44 5.2	104 12.2	164 19.3
45	17 41.3	17 44.2	16 52.9	45 5.3	105 12.3	165 19.4
46	17 41.5	17 44.4	16 53.1	46 5.4	106 12.5	166 19.5
47	17 41.8	17 44.7	16 53.4	47 5.5	107 12.6	167 19.6
48	17 42.0	17 45.0	16 53.6	48 5.6	108 12.7	168 19.7
49	17 42.3	17 45.2	16 53.9	49 5.8	109 12.8	169 19.9
50	17 42.5	17 45.5	16 54.1	50 5.9	110 12.9	170 20.0
51	17 42.8	17 45.7	16 54.3	51 6.0	111 13.0	171 20.1
52	17 43.0	17 46.0	16 54.6	52 6.1	112 13.2	172 20.2
53	17 43.3	17 46.2	16 54.8	53 6.2	113 13.3	173 20.3
54	17 43.5	17 46.5	16 55.1	54 6.3	114 13.4	174 20.4
55	17 43.8	17 46.7	16 55.3	55 6.5	115 13.5	175 20.6
56	17 44.0	17 47.0	16 55.5	56 6.6	116 13.6	176 20.7
57	17 44.3	17 47.2	16 55.8	57 6.7	117 13.7	177 20.8
58	17 44.5	17 47.5	16 56.0	58 6.8	118 13.9	178 20.9
59	17 44.8	17 47.7	16 56.2	59 6.9	119 14.0	179 21.0
60	17 45.0	17 48.0	16 56.5	60 7.1	120 14.1	180 21.2

1 h 11 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	17 45.0	17 48.0	16 56.5	0 .0	60 7.2	120 14.3
1	17 45.3	17 48.2	16 56.7	1 .1	61 7.3	121 14.4
2	17 45.5	17 48.5	16 57.0	2 .2	62 7.4	122 14.5
3	17 45.8	17 48.7	16 57.2	3 .4	63 7.5	123 14.7
4	17 46.0	17 49.0	16 57.4	4 .5	64 7.6	124 14.8
5	17 46.3	17 49.2	16 57.7	5 .6	65 7.7	125 14.9
6	17 46.5	17 49.5	16 57.9	6 .7	66 7.9	126 15.0
7	17 46.8	17 49.7	16 58.2	7 .8	67 8.0	127 15.1
8	17 47.0	17 50.0	16 58.4	8 1.0	68 8.1	128 15.3
9	17 47.3	17 50.2	16 58.6	9 1.1	69 8.2	129 15.4
10	17 47.5	17 50.5	16 58.9	10 1.2	70 8.3	130 15.5
11	17 47.8	17 50.7	16 59.1	11 1.3	71 8.5	131 15.6
12	17 48.0	17 51.0	16 59.3	12 1.4	72 8.6	132 15.7
13	17 48.3	17 51.2	16 59.6	13 1.5	73 8.7	133 15.8
14	17 48.5	17 51.5	16 59.8	14 1.7	74 8.8	134 16.0
15	17 48.8	17 51.7	17 .1	15 1.8	75 8.9	135 16.1
16	17 49.0	17 52.0	17 .3	16 1.9	76 9.1	136 16.2
17	17 49.3	17 52.2	17 .5	17 2.0	77 9.2	137 16.3
18	17 49.5	17 52.5	17 .8	18 2.1	78 9.3	138 16.4
19	17 49.8	17 52.7	17 1.0	19 2.3	79 9.4	139 16.6
20	17 50.0	17 53.0	17 1.3	20 2.4	80 9.5	140 16.7
21	17 50.3	17 53.2	17 1.5	21 2.5	81 9.7	141 16.8
22	17 50.5	17 53.5	17 1.7	22 2.6	82 9.8	142 16.9
23	17 50.8	17 53.7	17 2.0	23 2.7	83 9.9	143 17.0
24	17 51.0	17 54.0	17 2.2	24 2.9	84 10.0	144 17.2
25	17 51.3	17 54.2	17 2.4	25 3.0	85 10.1	145 17.3
26	17 51.5	17 54.5	17 2.7	26 3.1	86 10.2	146 17.4
27	17 51.8	17 54.7	17 2.9	27 3.2	87 10.4	147 17.5
28	17 52.0	17 55.0	17 3.2	28 3.3	88 10.5	148 17.6
29	17 52.3	17 55.2	17 3.4	29 3.5	89 10.6	149 17.8
30	17 52.5	17 55.5	17 3.6	30 3.6	90 10.7	150 17.9
31	17 52.8	17 55.7	17 3.9	31 3.7	91 10.8	151 18.0
32	17 53.0	17 56.0	17 4.1	32 3.8	92 11.0	152 18.1
33	17 53.3	17 56.2	17 4.4	33 3.9	93 11.1	153 18.2
34	17 53.5	17 56.5	17 4.6	34 4.1	94 11.2	154 18.4
35	17 53.8	17 56.7	17 4.8	35 4.2	95 11.3	155 18.5
36	17 54.0	17 57.0	17 5.1	36 4.3	96 11.4	156 18.6
37	17 54.3	17 57.2	17 5.3	37 4.4	97 11.6	157 18.7
38	17 54.5	17 57.5	17 5.6	38 4.5	98 11.7	158 18.8
39	17 54.8	17 57.7	17 5.8	39 4.6	99 11.8	159 18.9
40	17 55.0	17 58.0	17 6.0	40 4.8	100 11.9	160 19.1
41	17 55.3	17 58.2	17 6.3	41 4.9	101 12.0	161 19.2
42	17 55.5	17 58.5	17 6.5	42 5.0	102 12.2	162 19.3
43	17 55.8	17 58.7	17 6.7	43 5.1	103 12.3	163 19.4
44	17 56.0	17 59.0	17 7.0	44 5.2	104 12.4	164 19.5
45	17 56.3	17 59.2	17 7.2	45 5.4	105 12.5	165 19.7
46	17 56.5	17 59.5	17 7.5	46 5.5	106 12.6	166 19.8
47	17 56.8	17 59.7	17 7.7	47 5.6	107 12.8	167 19.9
48	17 57.0	17 60.0	17 7.9	48 5.7	108 12.9	168 20.0
49	17 57.3	18 .2	17 8.2	49 5.8	109 13.0	169 20.1
50	17 57.5	18 .5	17 8.4	50 6.0	110 13.1	170 20.3
51	17 57.8	18 .7	17 8.7	51 6.1	111 13.2	171 20.4
52	17 58.0	18 1.0	17 8.9	52 6.2	112 13.3	172 20.5
53	17 58.3	18 1.2	17 9.1	53 6.3	113 13.5	173 20.6
54	17 58.5	18 1.5	17 9.4	54 6.4	114 13.6	174 20.7
55	17 58.8	18 1.7	17 9.6	55 6.6	115 13.7	175 20.9
56	17 59.0	18 2.0	17 9.8	56 6.7	116 13.8	176 21.0
57	17 59.3	18 2.2	17 10.1	57 6.8	117 13.9	177 21.1
58	17 59.5	18 2.5	17 10.3	58 6.9	118 14.1	178 21.2
59	17 59.8	18 2.7	17 10.6	59 7.0	119 14.2	179 21.3
60	18 .0	18 3.0	17 10.8	60 7.2	120 14.3	180 21.5

1 h 12 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	°
0	18	.0	18	3.0	17	10.8	0 .0 60 7.3 120 14.5
1	18	.3	18	3.3	17	11.0	1 .1 61 7.4 121 14.6
2	18	.5	18	3.5	17	11.3	2 .2 62 7.5 122 14.7
3	18	.8	18	3.8	17	11.5	3 .4 63 7.6 123 14.9
4	18	1.0	18	4.0	17	11.8	4 .5 64 7.7 124 15.0
5	18	1.3	18	4.3	17	12.0	5 .6 65 7.9 125 15.1
6	18	1.5	18	4.5	17	12.2	6 .7 66 8.0 126 15.2
7	18	1.8	18	4.8	17	12.5	7 .8 67 8.1 127 15.3
8	18	2.0	18	5.0	17	12.7	8 1.0 68 8.2 128 15.5
9	18	2.3	18	5.3	17	12.9	9 1.1 69 8.3 129 15.6
10	18	2.5	18	5.5	17	13.2	10 1.2 70 8.5 130 15.7
11	18	2.8	18	5.8	17	13.4	11 1.3 71 8.6 131 15.8
12	18	3.0	18	6.0	17	13.7	12 1.5 72 8.7 132 16.0
13	18	3.3	18	6.3	17	13.9	13 1.6 73 8.8 133 16.1
14	18	3.5	18	6.5	17	14.1	14 1.7 74 8.9 134 16.2
15	18	3.8	18	6.8	17	14.4	15 1.8 75 9.1 135 16.3
16	18	4.0	18	7.0	17	14.6	16 1.9 76 9.2 136 16.4
17	18	4.3	18	7.3	17	14.9	17 2.1 77 9.3 137 16.6
18	18	4.5	18	7.5	17	15.1	18 2.2 78 9.4 138 16.7
19	18	4.8	18	7.8	17	15.3	19 2.3 79 9.5 139 16.8
20	18	5.0	18	8.0	17	15.6	20 2.4 80 9.7 140 16.9
21	18	5.3	18	8.3	17	15.8	21 2.5 81 9.8 141 17.0
22	18	5.5	18	8.5	17	16.0	22 2.7 82 9.9 142 17.2
23	18	5.8	18	8.8	17	16.3	23 2.8 83 10.0 143 17.3
24	18	6.0	18	9.0	17	16.5	24 2.9 84 10.2 144 17.4
25	18	6.3	18	9.3	17	16.8	25 3.0 85 10.3 145 17.5
26	18	6.5	18	9.5	17	17.0	26 3.1 86 10.4 146 17.6
27	18	6.8	18	9.8	17	17.2	27 3.3 87 10.5 147 17.8
28	18	7.0	18	10.0	17	17.5	28 3.4 88 10.6 148 17.9
29	18	7.3	18	10.3	17	17.7	29 3.5 89 10.8 149 18.0
30	18	7.5	18	10.5	17	18.0	30 3.6 90 10.9 150 18.1
31	18	7.8	18	10.8	17	18.2	31 3.7 91 11.0 151 18.2
32	18	8.0	18	11.0	17	18.4	32 3.9 92 11.1 152 18.4
33	18	8.3	18	11.3	17	18.7	33 4.0 93 11.2 153 18.5
34	18	8.5	18	11.5	17	18.9	34 4.1 94 11.4 154 18.6
35	18	8.8	18	11.8	17	19.2	35 4.2 95 11.5 155 18.7
36	18	9.0	18	12.0	17	19.4	36 4.4 96 11.6 156 18.9
37	18	9.3	18	12.3	17	19.6	37 4.5 97 11.7 157 19.0
38	18	9.5	18	12.5	17	19.9	38 4.6 98 11.8 158 19.1
39	18	9.8	18	12.8	17	20.1	39 4.7 99 12.0 159 19.2
40	18	10.0	18	13.0	17	20.3	40 4.8 100 12.1 160 19.3
41	18	10.3	18	13.3	17	20.6	41 5.0 101 12.2 161 19.5
42	18	10.5	18	13.5	17	20.8	42 5.1 102 12.3 162 19.6
43	18	10.8	18	13.8	17	21.1	43 5.2 103 12.4 163 19.7
44	18	11.0	18	14.0	17	21.3	44 5.3 104 12.6 164 19.8
45	18	11.3	18	14.3	17	21.5	45 5.4 105 12.7 165 19.9
46	18	11.5	18	14.5	17	21.8	46 5.6 106 12.8 166 20.1
47	18	11.8	18	14.8	17	22.0	47 5.7 107 12.9 167 20.2
48	18	12.0	18	15.0	17	22.3	48 5.8 108 13.1 168 20.3
49	18	12.3	18	15.3	17	22.5	49 5.9 109 13.2 169 20.4
50	18	12.5	18	15.5	17	22.7	50 6.0 110 13.3 170 20.5
51	18	12.8	18	15.8	17	23.0	51 6.2 111 13.4 171 20.7
52	18	13.0	18	16.0	17	23.2	52 6.3 112 13.5 172 20.8
53	18	13.3	18	16.3	17	23.4	53 6.4 113 13.7 173 20.9
54	18	13.5	18	16.5	17	23.7	54 6.5 114 13.8 174 21.0
55	18	13.8	18	16.8	17	23.9	55 6.6 115 13.9 175 21.1
56	18	14.0	18	17.0	17	24.2	56 6.8 116 14.0 176 21.3
57	18	14.3	18	17.3	17	24.4	57 6.9 117 14.1 177 21.4
58	18	14.5	18	17.5	17	24.6	58 7.0 118 14.3 178 21.5
59	18	14.8	18	17.8	17	24.9	59 7.1 119 14.4 179 21.6
60	18	15.0	18	18.0	17	25.1	60 7.3 120 14.5 180 21.8

1 h 13 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	°
0	18	15.0	18	18.0	17	25.1	0 .0 60 7.4 120 14.7
1	18	15.3	18	18.3	17	25.4	1 .1 61 7.5 121 14.8
2	18	15.5	18	18.5	17	25.6	2 .2 62 7.6 122 14.9
3	18	15.8	18	18.8	17	25.8	3 .4 63 7.7 123 15.1
4	18	16.0	18	19.0	17	26.1	4 .5 64 7.8 124 15.2
5	18	16.3	18	19.3	17	26.3	5 .6 65 8.0 125 15.3
6	18	16.5	18	19.5	17	26.5	6 .7 66 8.1 126 15.4
7	18	16.8	18	19.8	17	26.8	7 .9 67 8.2 127 15.6
8	18	17.0	18	20.0	17	27.0	8 1.0 68 8.3 128 15.7
9	18	17.3	18	20.3	17	27.3	9 1.1 69 8.5 129 15.8
10	18	17.5	18	20.5	17	27.5	10 1.2 70 8.6 130 15.9
11	18	17.8	18	20.8	17	27.7	11 1.3 71 8.7 131 16.0
12	18	18.0	18	21.1	17	28.0	12 1.5 72 8.8 132 16.2
13	18	18.3	18	21.3	17	28.2	13 1.6 73 8.9 133 16.3
14	18	18.5	18	21.6	17	28.5	14 1.7 74 9.1 134 16.4
15	18	18.8	18	21.8	17	28.7	15 1.8 75 9.2 135 16.5
16	18	19.0	18	22.1	17	28.9	16 2.0 76 9.3 136 16.7
17	18	19.3	18	22.3	17	29.2	17 2.1 77 9.4 137 16.8
18	18	19.5	18	22.6	17	29.4	18 2.2 78 9.6 138 16.9
19	18	19.8	18	22.8	17	29.7	19 2.3 79 9.7 139 17.0
20	18	20.0	18	23.1	17	29.9	20 2.5 80 9.8 140 17.2
21	18	20.3	18	23.3	17	30.1	21 2.6 81 9.9 141 17.3
22	18	20.5	18	23.6	17	30.4	22 2.7 82 10.0 142 17.4
23	18	20.8	18	23.8	17	30.6	23 2.8 83 10.2 143 17.5
24	18	21.0	18	24.1	17	30.8	24 2.9 84 10.3 144 17.6
25	18	21.3	18	24.3	17	31.1	25 3.1 85 10.4 145 17.8
26	18	21.5	18	24.6	17	31.3	26 3.2 86 10.5 146 17.9
27	18	21.8	18	24.8	17	31.6	27 3.3 87 10.7 147 18.0
28	18	22.0	18	25.1	17	31.8	28 3.4 88 10.8 148 18.1
29	18	22.3	18	25.3	17	32.0	29 3.6 89 10.9 149 18.3
30	18	22.5	18	25.6	17	32.3	30 3.7 90 11.0 150 18.4
31	18	22.8	18	25.8	17	32.5	31 3.8 91 11.1 151 18.5
32	18	23.0	18	26.1	17	32.8	32 3.9 92 11.3 152 18.6
33	18	23.3	18	26.3	17	33.0	33 4.0 93 11.4 153 18.7
34	18	23.5	18	26.6	17	33.2	34 4.2 94 11.5 154 18.9
35	18	23.8	18	26.8	17	33.5	35 4.3 95 11.6 155 19.0
36	18	24.0	18	27.1	17	33.7	36 4.4 96 11.8 156 19.1
37	18	24.3	18	27.3	17	33.9	37 4.5 97 11.9 157 19.2
38	18	24.5	18	27.6	17	34.2	38 4.7 98 12.0 158 19.4
39	18	24.8	18	27.8	17	34.4	39 4.8 99 12.1 159 19.5
40	18	25.0	18	28.1	17	34.7	40 4.9 100 12.3 160 19.6
41	18	25.3	18	28.3	17	34.9	41 5.0 101 12.4 161 19.7
42	18	25.5	18	28.6	17	35.1	42 5.1 102 12.5 162 19.8
43	18	25.8	18	28.8	17	35.4	43 5.3 103 12.6 163 20.0
44	18	26.0	18	29.1	17	35.6	44 5.4 104 12.7 164 20.1
45	18	26.3	18	29.3	17	35.9	45 5.5 105 12.9 165 20.2
46	18	26.5	18	29.6	17	36.1	46 5.6 106 13.0 166 20.3
47	18	26.8	18	29.8	17	36.3	47 5.8 107 13.1 167 20.5
48	18	27.0	18	30.1	17	36.6	48 5.9 108 13.2 168 20.6
49	18	27.3	18	30.3	17	36.8	49 6.0 109 13.4 169 20.7
50	18	27.5	18	30.6	17	37.0	50 6.1 110 13.5 170 20.8
51	18	27.8	18	30.8	17	37.3	51 6.2 111 13.6 171 20.9
52	18	28.0	18	31.1	17	37.5	52 6.4 112 13.7 172 21.1
53	18	28.3	18	31.3	17	37.8	53 6.5 113 13.8 173 21.2
54	18	28.5	18	31.6	17	38.0	54 6.6 114 14.0 174 21.3
55	18	28.8	18	31.8	17	38.2	55 6.7 115 14.1 175 21.4
56	18	29.0	18	32.1	17	38.5	56 6.9 116 14.2 176 21.6
57	18	29.3	18	32.3	17	38.7	57 7.0 117 14.3 177 21.7
58	18	29.5	18	32.6	17	39.0	58 7.1 118 14.5 178 21.8
59	18	29.8	18	32.8	17	39.2	59 7.2 119 14.6 179 21.9
60	18	30.0	18	33.1	17	39.4	60 7.4 120 14.7 180 22.1

1 h 14 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	18 30.0	18 33.1	17 39.4	0 .0	60 7.5	120 14.9
1	18 30.3	18 33.3	17 39.7	1 .1	61 7.6	121 15.0
2	18 30.5	18 33.6	17 39.9	2 .2	62 7.7	122 15.1
3	18 30.8	18 33.8	17 40.1	3 .4	63 7.8	123 15.3
4	18 31.0	18 34.1	17 40.4	4 .5	64 7.9	124 15.4
5	18 31.3	18 34.3	17 40.6	5 .6	65 8.1	125 15.5
6	18 31.5	18 34.6	17 40.9	6 .7	66 8.2	126 15.6
7	18 31.8	18 34.8	17 41.1	7 .9	67 8.3	127 15.8
8	18 32.0	18 35.1	17 41.3	8 1.0	68 8.4	128 15.9
9	18 32.3	18 35.3	17 41.6	9 1.1	69 8.6	129 16.0
10	18 32.5	18 35.6	17 41.8	10 1.2	70 8.7	130 16.1
11	18 32.8	18 35.8	17 42.1	11 1.4	71 8.8	131 16.3
12	18 33.0	18 36.1	17 42.3	12 1.5	72 8.9	132 16.4
13	18 33.3	18 36.3	17 42.5	13 1.6	73 9.1	133 16.5
14	18 33.5	18 36.6	17 42.8	14 1.7	74 9.2	134 16.6
15	18 33.8	18 36.8	17 43.0	15 1.9	75 9.3	135 16.8
16	18 34.0	18 37.1	17 43.3	16 2.0	76 9.4	136 16.9
17	18 34.3	18 37.3	17 43.5	17 2.1	77 9.6	137 17.0
18	18 34.5	18 37.6	17 43.7	18 2.2	78 9.7	138 17.1
19	18 34.8	18 37.8	17 44.0	19 2.4	79 9.8	139 17.3
20	18 35.0	18 38.1	17 44.2	20 2.5	80 9.9	140 17.4
21	18 35.3	18 38.3	17 44.4	21 2.6	81 10.1	141 17.5
22	18 35.5	18 38.6	17 44.7	22 2.7	82 10.2	142 17.6
23	18 35.8	18 38.8	17 44.9	23 2.9	83 10.3	143 17.8
24	18 36.0	18 39.1	17 45.2	24 3.0	84 10.4	144 17.9
25	18 36.3	18 39.4	17 45.4	25 3.1	85 10.6	145 18.0
26	18 36.5	18 39.6	17 45.6	26 3.2	86 10.7	146 18.1
27	18 36.8	18 39.9	17 45.9	27 3.4	87 10.8	147 18.3
28	18 37.0	18 40.1	17 46.1	28 3.5	88 10.9	148 18.4
29	18 37.3	18 40.4	17 46.4	29 3.6	89 11.1	149 18.5
30	18 37.5	18 40.6	17 46.6	30 3.7	90 11.2	150 18.6
31	18 37.8	18 40.9	17 46.8	31 3.8	91 11.3	151 18.7
32	18 38.0	18 41.1	17 47.1	32 4.0	92 11.4	152 18.9
33	18 38.3	18 41.4	17 47.3	33 4.1	93 11.5	153 19.0
34	18 38.5	18 41.6	17 47.5	34 4.2	94 11.7	154 19.1
35	18 38.8	18 41.9	17 47.8	35 4.3	95 11.8	155 19.2
36	18 39.0	18 42.1	17 48.0	36 4.5	96 11.9	156 19.4
37	18 39.3	18 42.4	17 48.3	37 4.6	97 12.0	157 19.5
38	18 39.5	18 42.6	17 48.5	38 4.7	98 12.2	158 19.6
39	18 39.8	18 42.9	17 48.7	39 4.8	99 12.3	159 19.7
40	18 40.0	18 43.1	17 49.0	40 5.0	100 12.4	160 19.9
41	18 40.3	18 43.4	17 49.2	41 5.1	101 12.5	161 20.0
42	18 40.5	18 43.6	17 49.5	42 5.2	102 12.7	162 20.1
43	18 40.8	18 43.9	17 49.7	43 5.3	103 12.8	163 20.2
44	18 41.0	18 44.1	17 49.9	44 5.5	104 12.9	164 20.4
45	18 41.3	18 44.4	17 50.2	45 5.6	105 13.0	165 20.5
46	18 41.5	18 44.6	17 50.4	46 5.7	106 13.2	166 20.6
47	18 41.8	18 44.9	17 50.6	47 5.8	107 13.3	167 20.7
48	18 42.0	18 45.1	17 50.9	48 6.0	108 13.4	168 20.9
49	18 42.3	18 45.4	17 51.1	49 6.1	109 13.5	169 21.0
50	18 42.5	18 45.6	17 51.4	50 6.2	110 13.7	170 21.1
51	18 42.8	18 45.9	17 51.6	51 6.3	111 13.8	171 21.2
52	18 43.0	18 46.1	17 51.8	52 6.5	112 13.9	172 21.4
53	18 43.3	18 46.4	17 52.1	53 6.6	113 14.0	173 21.5
54	18 43.5	18 46.6	17 52.3	54 6.7	114 14.2	174 21.6
55	18 43.8	18 46.9	17 52.6	55 6.8	115 14.3	175 21.7
56	18 44.0	18 47.1	17 52.8	56 7.0	116 14.4	176 21.9
57	18 44.3	18 47.4	17 53.0	57 7.1	117 14.5	177 22.0
58	18 44.5	18 47.6	17 53.3	58 7.2	118 14.7	178 22.1
59	18 44.8	18 47.9	17 53.5	59 7.3	119 14.8	179 22.2
60	18 45.0	18 48.1	17 53.8	60 7.5	120 14.9	180 22.4

1 h 15 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	18 45.0	18 48.1	17 53.8	0 .0	60 7.6	120 15.1
1	18 45.3	18 48.4	17 54.0	1 .1	61 7.7	121 15.2
2	18 45.5	18 48.6	17 54.2	2 .3	62 7.8	122 15.4
3	18 45.8	18 48.9	17 54.5	3 .4	63 7.9	123 15.5
4	18 46.0	18 49.1	17 54.7	4 .5	64 8.1	124 15.6
5	18 46.3	18 49.4	17 54.9	5 .6	65 8.2	125 15.7
6	18 46.5	18 49.6	17 55.2	6 .8	66 8.3	126 15.9
7	18 46.8	18 49.9	17 55.4	7 .9	67 8.4	127 16.0
8	18 47.0	18 50.1	17 55.7	8 1.0	68 8.6	128 16.1
9	18 47.3	18 50.4	17 55.9	9 1.1	69 8.7	129 16.2
10	18 47.5	18 50.6	17 56.1	10 1.3	70 8.8	130 16.4
11	18 47.8	18 50.9	17 56.4	11 1.4	71 8.9	131 16.5
12	18 48.0	18 51.1	17 56.6	12 1.5	72 9.1	132 16.6
13	18 48.3	18 51.4	17 56.9	13 1.6	73 9.2	133 16.7
14	18 48.5	18 51.6	17 57.1	14 1.8	74 9.3	134 16.9
15	18 48.8	18 51.9	17 57.3	15 1.9	75 9.4	135 17.0
16	18 49.0	18 52.1	17 57.6	16 2.0	76 9.6	136 17.1
17	18 49.3	18 52.4	17 57.8	17 2.1	77 9.7	137 17.2
18	18 49.5	18 52.6	17 58.0	18 2.3	78 9.8	138 17.4
19	18 49.8	18 52.9	17 58.3	19 2.4	79 9.9	139 17.5
20	18 50.0	18 53.1	17 58.5	20 2.5	80 10.1	140 17.6
21	18 50.3	18 53.4	17 58.8	21 2.6	81 10.2	141 17.7
22	18 50.5	18 53.6	17 59.0	22 2.8	82 10.3	142 17.9
23	18 50.8	18 53.9	17 59.2	23 2.9	83 10.4	143 18.0
24	18 51.0	18 54.1	17 59.5	24 3.0	84 10.6	144 18.1
25	18 51.3	18 54.4	17 59.7	25 3.1	85 10.7	145 18.2
26	18 51.5	18 54.6	17 60.0	26 3.3	86 10.8	146 18.4
27	18 51.8	18 54.9	18 .2	27 3.4	87 10.9	147 18.5
28	18 52.0	18 55.1	18 .4	28 3.5	88 11.1	148 18.6
29	18 52.3	18 55.4	18 .7	29 3.6	89 11.2	149 18.7
30	18 52.5	18 55.6	18 .9	30 3.8	90 11.3	150 18.9
31	18 52.8	18 55.9	18 1.1	31 3.9	91 11.5	151 19.0
32	18 53.0	18 56.1	18 1.4	32 4.0	92 11.6	152 19.1
33	18 53.3	18 56.4	18 1.6	33 4.2	93 11.7	153 19.3
34	18 53.5	18 56.6	18 1.9	34 4.3	94 11.8	154 19.4
35	18 53.8	18 56.9	18 2.1	35 4.4	95 12.0	155 19.5
36	18 54.0	18 57.2	18 2.3	36 4.5	96 12.1	156 19.6
37	18 54.3	18 57.4	18 2.6	37 4.7	97 12.2	157 19.8
38	18 54.5	18 57.7	18 2.8	38 4.8	98 12.3	158 19.9
39	18 54.8	18 57.9	18 3.1	39 4.9	99 12.5	159 20.0
40	18 55.0	18 58.2	18 3.3	40 5.0	100 12.6	160 20.1
41	18 55.3	18 58.4	18 3.5	41 5.2	101 12.7	161 20.3
42	18 55.5	18 58.7	18 3.8	42 5.3	102 12.8	162 20.4
43	18 55.8	18 58.9	18 4.0	43 5.4	103 13.0	163 20.5
44	18 56.0	18 59.2	18 4.2	44 5.5	104 13.1	164 20.6
45	18 56.3	18 59.4	18 4.5	45 5.7	105 13.2	165 20.8
46	18 56.5	18 59.7	18 4.7	46 5.8	106 13.3	166 20.9
47	18 56.8	18 59.9	18 5.0	47 5.9	107 13.5	167 21.0
48	18 57.0	19 .2	18 5.2	48 6.0	108 13.6	168 21.1
49	18 57.3	19 .4	18 5.4	49 6.2	109 13.7	169 21.3
50	18 57.5	19 .7	18 5.7	50 6.3	110 13.8	170 21.4
51	18 57.8	19 .9	18 5.9	51 6.4	111 14.0	171 21.5
52	18 58.0	19 1.2	18 6.2	52 6.5	112 14.1	172 21.6
53	18 58.3	19 1.4	18 6.4	53 6.7	113 14.2	173 21.8
54	18 58.5	19 1.7	18 6.6	54 6.8	114 14.3	174 21.9
55	18 58.8	19 1.9	18 6.9	55 6.9	115 14.5	175 22.0
56	18 59.0	19 2.2	18 7.1	56 7.0	116 14.6	176 22.1
57	18 59.3	19 2.4	18 7.4	57 7.2	117 14.7	177 22.3
58	18 59.5	19 2.7	18 7.6	58 7.3	118 14.8	178 22.4
59	18 59.8	19 2.9	18 7.8	59 7.4	119 15.0	179 22.5
60	19 .0	19 3.2	18 8.1	60 7.6	120 15.1	180 22.7

1 h 16 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.		Δ popr.		Δ popr.	
	o	'	o	'	o	'	'	"	'	"	'	"
0	19	.0	19	3.2	18	8.1	0	.0	60	7.7	120	15.3
1	19	.3	19	3.4	18	8.3	1	.1	61	7.8	121	15.4
2	19	.5	19	3.7	18	8.5	2	.3	62	7.9	122	15.6
3	19	.8	19	3.9	18	8.8	3	.4	63	8.0	123	15.7
4	19	1.0	19	4.2	18	9.0	4	.5	64	8.2	124	15.8
5	19	1.3	19	4.4	18	9.3	5	.6	65	8.3	125	15.9
6	19	1.5	19	4.7	18	9.5	6	.8	66	8.4	126	16.1
7	19	1.8	19	4.9	18	9.7	7	.9	67	8.5	127	16.2
8	19	2.0	19	5.2	18	10.0	8	1.0	68	8.7	128	16.3
9	19	2.3	19	5.4	18	10.2	9	1.1	69	8.8	129	16.4
10	19	2.5	19	5.7	18	10.5	10	1.3	70	8.9	130	16.6
11	19	2.8	19	5.9	18	10.7	11	1.4	71	9.1	131	16.7
12	19	3.0	19	6.2	18	10.9	12	1.5	72	9.2	132	16.8
13	19	3.3	19	6.4	18	11.2	13	1.7	73	9.3	133	17.0
14	19	3.5	19	6.7	18	11.4	14	1.8	74	9.4	134	17.1
15	19	3.8	19	6.9	18	11.6	15	1.9	75	9.6	135	17.2
16	19	4.0	19	7.2	18	11.9	16	2.0	76	9.7	136	17.3
17	19	4.3	19	7.4	18	12.1	17	2.2	77	9.8	137	17.5
18	19	4.5	19	7.7	18	12.4	18	2.3	78	9.9	138	17.6
19	19	4.8	19	7.9	18	12.6	19	2.4	79	10.1	139	17.7
20	19	5.0	19	8.2	18	12.8	20	2.6	80	10.2	140	17.9
21	19	5.3	19	8.4	18	13.1	21	2.7	81	10.3	141	18.0
22	19	5.5	19	8.7	18	13.3	22	2.8	82	10.5	142	18.1
23	19	5.8	19	8.9	18	13.6	23	2.9	83	10.6	143	18.2
24	19	6.0	19	9.2	18	13.8	24	3.1	84	10.7	144	18.4
25	19	6.3	19	9.4	18	14.0	25	3.2	85	10.8	145	18.5
26	19	6.5	19	9.7	18	14.3	26	3.3	86	11.0	146	18.6
27	19	6.8	19	9.9	18	14.5	27	3.4	87	11.1	147	18.7
28	19	7.0	19	10.2	18	14.7	28	3.6	88	11.2	148	18.9
29	19	7.3	19	10.4	18	15.0	29	3.7	89	11.3	149	19.0
30	19	7.5	19	10.7	18	15.2	30	3.8	90	11.5	150	19.1
31	19	7.8	19	10.9	18	15.5	31	4.0	91	11.6	151	19.3
32	19	8.0	19	11.2	18	15.7	32	4.1	92	11.7	152	19.4
33	19	8.3	19	11.4	18	15.9	33	4.2	93	11.9	153	19.5
34	19	8.5	19	11.7	18	16.2	34	4.3	94	12.0	154	19.6
35	19	8.8	19	11.9	18	16.4	35	4.5	95	12.1	155	19.8
36	19	9.0	19	12.2	18	16.7	36	4.6	96	12.2	156	19.9
37	19	9.3	19	12.4	18	16.9	37	4.7	97	12.4	157	20.0
38	19	9.5	19	12.7	18	17.1	38	4.8	98	12.5	158	20.1
39	19	9.8	19	12.9	18	17.4	39	5.0	99	12.6	159	20.3
40	19	10.0	19	13.2	18	17.6	40	5.1	100	12.8	160	20.4
41	19	10.3	19	13.4	18	17.8	41	5.2	101	12.9	161	20.5
42	19	10.5	19	13.7	18	18.1	42	5.4	102	13.0	162	20.7
43	19	10.8	19	13.9	18	18.3	43	5.5	103	13.1	163	20.8
44	19	11.0	19	14.2	18	18.6	44	5.6	104	13.3	164	20.9
45	19	11.3	19	14.4	18	18.8	45	5.7	105	13.4	165	21.0
46	19	11.5	19	14.7	18	19.0	46	5.9	106	13.5	166	21.2
47	19	11.8	19	14.9	18	19.3	47	6.0	107	13.6	167	21.3
48	19	12.0	19	15.2	18	19.5	48	6.1	108	13.8	168	21.4
49	19	12.3	19	15.5	18	19.8	49	6.2	109	13.9	169	21.5
50	19	12.5	19	15.7	18	20.0	50	6.4	110	14.0	170	21.7
51	19	12.8	19	16.0	18	20.2	51	6.5	111	14.2	171	21.8
52	19	13.0	19	16.2	18	20.5	52	6.6	112	14.3	172	21.9
53	19	13.3	19	16.5	18	20.7	53	6.8	113	14.4	173	22.1
54	19	13.5	19	16.7	18	21.0	54	6.9	114	14.5	174	22.2
55	19	13.8	19	17.0	18	21.2	55	7.0	115	14.7	175	22.3
56	19	14.0	19	17.2	18	21.4	56	7.1	116	14.8	176	22.4
57	19	14.3	19	17.5	18	21.7	57	7.3	117	14.9	177	22.6
58	19	14.5	19	17.7	18	21.9	58	7.4	118	15.0	178	22.7
59	19	14.8	19	18.0	18	22.1	59	7.5	119	15.2	179	22.8
60	19	15.0	19	18.2	18	22.4	60	7.7	120	15.3	180	23.0

1 h 17 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.		Δ popr.		Δ popr.	
	o	'	o	'	o	'	'	"	'	"	'	"
0	19	15.0	19	18.2	18	22.4	0	.0	60	7.8	120	15.5
1	19	15.3	19	18.5	18	22.6	1	.1	61	7.9	121	15.6
2	19	15.5	19	18.7	18	22.9	2	.3	62	8.0	122	15.8
3	19	15.8	19	19.0	18	23.1	3	.4	63	8.1	123	15.9
4	19	16.0	19	19.2	18	23.3	4	.5	64	8.3	124	16.0
5	19	16.3	19	19.5	18	23.6	5	.6	65	8.4	125	16.1
6	19	16.5	19	19.7	18	23.8	6	.8	66	8.5	126	16.3
7	19	16.8	19	20.0	18	24.1	7	.9	67	8.7	127	16.4
8	19	17.0	19	20.2	18	24.3	8	1.0	68	8.8	128	16.5
9	19	17.3	19	20.5	18	24.5	9	1.2	69	8.9	129	16.7
10	19	17.5	19	20.7	18	24.8	10	1.3	70	9.0	130	16.8
11	19	17.8	19	21.0	18	25.0	11	1.4	71	9.2	131	16.9
12	19	18.0	19	21.2	18	25.2	12	1.6	72	9.3	132	17.1
13	19	18.3	19	21.5	18	25.5	13	1.7	73	9.4	133	17.2
14	19	18.5	19	21.7	18	25.7	14	1.8	74	9.6	134	17.3
15	19	18.8	19	22.0	18	26.0	15	1.9	75	9.7	135	17.4
16	19	19.0	19	22.2	18	26.2	16	2.1	76	9.8	136	17.6
17	19	19.3	19	22.5	18	26.4	17	2.2	77	9.9	137	17.7
18	19	19.5	19	22.7	18	26.7	18	2.3	78	10.1	138	17.8
19	19	19.8	19	23.0	18	26.9	19	2.5	79	10.2	139	18.0
20	19	20.0	19	23.2	18	27.2	20	2.6	80	10.3	140	18.1
21	19	20.3	19	23.5	18	27.4	21	2.7	81	10.5	141	18.2
22	19	20.5	19	23.7	18	27.6	22	2.8	82	10.6	142	18.3
23	19	20.8	19	24.0	18	27.9	23	3.0	83	10.7	143	18.5
24	19	21.0	19	24.2	18	28.1	24	3.1	84	10.9	144	18.6
25	19	21.3	19	24.5	18	28.3	25	3.2	85	11.0	145	18.7
26	19	21.5	19	24.7	18	28.6	26	3.4	86	11.1	146	18.9
27	19	21.8	19	25.0	18	28.8	27	3.5	87	11.2	147	19.0
28	19	22.0	19	25.2	18	29.1	28	3.6	88	11.4	148	19.1
29	19	22.3	19	25.5	18	29.3	29	3.7	89	11.5	149	19.2
30	19	22.5	19	25.7	18	29.5	30	3.9	90	11.6	150	19.4
31	19	22.8	19	26.0	18	29.8	31	4.0	91	11.8	151	19.5
32	19	23.0	19	26.2	18	30.0	32	4.1	92	11.9	152	19.6
33	19	23.3	19	26.5	18	30.3	33	4.3	93	12.0	153	19.8
34	19	23.5	19	26.7	18	30.5	34	4.4	94	12.1	154	19.9
35	19	23.8	19	27.0	18	30.7	35	4.5	95	12.3	155	20.0
36	19	24.0	19	27.2	18	31.0	36	4.7	96	12.4	156	20.2
37	19	24.3	19	27.5	18	31.2	37	4.8	97	12.5	157	20.3
38	19	24.5	19	27.7	18	31.5	38	4.9	98	12.7	158	20.4
39	19	24.8	19	28.0	18	31.7	39	5.0	99	12.8	159	20.5
40	19	25.0	19	28.2	18	31.9	40	5.2	100	12.9	160	20.7
41	19	25.3	19	28.5	18	32.2	41	5.3	101	13.0	161	20.8
42	19	25.5	19	28.7	18	32.4	42	5.4	102	13.2	162	20.9
43	19	25.8	19	29.0	18	32.6	43	5.6	103	13.3	163	21.1
44	19	26.0	19	29.2	18	32.9	44	5.7	104	13.4	164	21.2
45	19	26.3	19	29.5	18	33.1	45	5.8	105	13.6	165	21.3
46	19	26.5	19	29.7	18	33.4	46	5.9	106	13.7	166	21.4
47	19	26.8	19	30.0	18	33.6	47	6.1	107	13.8	167	21.6
48	19	27.0	19	30.2	18	33.8	48	6.2	108	14.0	168	21.7

1 h 18 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	19 30.0	19 33.3	18 36.7	0 .0	60 7.9	120 15.7
1	19 30.3	19 33.5	18 36.9	1 .1	61 8.0	121 15.8
2	19 30.5	19 33.8	18 37.2	2 .3	62 8.1	122 16.0
3	19 30.8	19 34.0	18 37.4	3 .4	63 8.2	123 16.1
4	19 31.0	19 34.3	18 37.7	4 .5	64 8.4	124 16.2
5	19 31.3	19 34.5	18 37.9	5 .7	65 8.5	125 16.4
6	19 31.5	19 34.8	18 38.1	6 .8	66 8.6	126 16.5
7	19 31.8	19 35.0	18 38.4	7 .9	67 8.8	127 16.6
8	19 32.0	19 35.3	18 38.6	8 1.0	68 8.9	128 16.7
9	19 32.3	19 35.5	18 38.8	9 1.2	69 9.0	129 16.9
10	19 32.5	19 35.8	18 39.1	10 1.3	70 9.2	130 17.0
11	19 32.8	19 36.0	18 39.3	11 1.4	71 9.3	131 17.1
12	19 33.0	19 36.3	18 39.6	12 1.6	72 9.4	132 17.3
13	19 33.3	19 36.5	18 39.8	13 1.7	73 9.6	133 17.4
14	19 33.5	19 36.8	18 40.0	14 1.8	74 9.7	134 17.5
15	19 33.8	19 37.0	18 40.3	15 2.0	75 9.8	135 17.7
16	19 34.0	19 37.3	18 40.5	16 2.1	76 9.9	136 17.8
17	19 34.3	19 37.5	18 40.8	17 2.2	77 10.1	137 17.9
18	19 34.5	19 37.8	18 41.0	18 2.4	78 10.2	138 18.1
19	19 34.8	19 38.0	18 41.2	19 2.5	79 10.3	139 18.2
20	19 35.0	19 38.3	18 41.5	20 2.6	80 10.5	140 18.3
21	19 35.3	19 38.5	18 41.7	21 2.7	81 10.6	141 18.4
22	19 35.5	19 38.8	18 41.9	22 2.9	82 10.7	142 18.6
23	19 35.8	19 39.0	18 42.2	23 3.0	83 10.9	143 18.7
24	19 36.0	19 39.3	18 42.4	24 3.1	84 11.0	144 18.8
25	19 36.3	19 39.5	18 42.7	25 3.3	85 11.1	145 19.0
26	19 36.5	19 39.8	18 42.9	26 3.4	86 11.3	146 19.1
27	19 36.8	19 40.0	18 43.1	27 3.5	87 11.4	147 19.2
28	19 37.0	19 40.3	18 43.4	28 3.7	88 11.5	148 19.4
29	19 37.3	19 40.5	18 43.6	29 3.8	89 11.6	149 19.5
30	19 37.5	19 40.8	18 43.9	30 3.9	90 11.8	150 19.6
31	19 37.8	19 41.0	18 44.1	31 4.1	91 11.9	151 19.8
32	19 38.0	19 41.3	18 44.3	32 4.2	92 12.0	152 19.9
33	19 38.3	19 41.5	18 44.6	33 4.3	93 12.2	153 20.0
34	19 38.5	19 41.8	18 44.8	34 4.4	94 12.3	154 20.1
35	19 38.8	19 42.0	18 45.1	35 4.6	95 12.4	155 20.3
36	19 39.0	19 42.3	18 45.3	36 4.7	96 12.6	156 20.4
37	19 39.3	19 42.5	18 45.5	37 4.8	97 12.7	157 20.5
38	19 39.5	19 42.8	18 45.8	38 5.0	98 12.8	158 20.7
39	19 39.8	19 43.0	18 46.0	39 5.1	99 13.0	159 20.8
40	19 40.0	19 43.3	18 46.2	40 5.2	100 13.1	160 20.9
41	19 40.3	19 43.5	18 46.5	41 5.4	101 13.2	161 21.1
42	19 40.5	19 43.8	18 46.7	42 5.5	102 13.3	162 21.2
43	19 40.8	19 44.0	18 47.0	43 5.6	103 13.5	163 21.3
44	19 41.0	19 44.3	18 47.2	44 5.8	104 13.6	164 21.5
45	19 41.3	19 44.5	18 47.4	45 5.9	105 13.7	165 21.6
46	19 41.5	19 44.8	18 47.7	46 6.0	106 13.9	166 21.7
47	19 41.8	19 45.0	18 47.9	47 6.1	107 14.0	167 21.8
48	19 42.0	19 45.3	18 48.2	48 6.3	108 14.1	168 22.0
49	19 42.3	19 45.5	18 48.4	49 6.4	109 14.3	169 22.1
50	19 42.5	19 45.8	18 48.6	50 6.5	110 14.4	170 22.2
51	19 42.8	19 46.0	18 48.9	51 6.7	111 14.5	171 22.4
52	19 43.0	19 46.3	18 49.1	52 6.8	112 14.7	172 22.5
53	19 43.3	19 46.5	18 49.3	53 6.9	113 14.8	173 22.6
54	19 43.5	19 46.8	18 49.6	54 7.1	114 14.9	174 22.8
55	19 43.8	19 47.0	18 49.8	55 7.2	115 15.0	175 22.9
56	19 44.0	19 47.3	18 50.1	56 7.3	116 15.2	176 23.0
57	19 44.3	19 47.5	18 50.3	57 7.5	117 15.3	177 23.2
58	19 44.5	19 47.8	18 50.5	58 7.6	118 15.4	178 23.3
59	19 44.8	19 48.0	18 50.8	59 7.7	119 15.6	179 23.4
60	19 45.0	19 48.3	18 51.0	60 7.9	120 15.7	180 23.6

1 h 19 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	19 45.0	19 48.3	18 51.0	0 .0	60 8.0	120 15.9
1	19 45.3	19 48.5	18 51.3	1 .1	61 8.1	121 16.0
2	19 45.5	19 48.8	18 51.5	2 .3	62 8.2	122 16.2
3	19 45.8	19 49.0	18 51.7	3 .4	63 8.3	123 16.3
4	19 46.0	19 49.3	18 52.0	4 .5	64 8.5	124 16.4
5	19 46.3	19 49.5	18 52.2	5 .7	65 8.6	125 16.6
6	19 46.5	19 49.8	18 52.4	6 .8	66 8.7	126 16.7
7	19 46.8	19 50.0	18 52.7	7 .9	67 8.9	127 16.8
8	19 47.0	19 50.3	18 52.9	8 1.1	68 9.0	128 17.0
9	19 47.3	19 50.5	18 53.2	9 1.2	69 9.1	129 17.1
10	19 47.5	19 50.8	18 53.4	10 1.3	70 9.3	130 17.2
11	19 47.8	19 51.0	18 53.6	11 1.5	71 9.4	131 17.4
12	19 48.0	19 51.3	18 53.9	12 1.6	72 9.5	132 17.5
13	19 48.3	19 51.6	18 54.1	13 1.7	73 9.7	133 17.6
14	19 48.5	19 51.8	18 54.4	14 1.9	74 9.8	134 17.8
15	19 48.8	19 52.1	18 54.6	15 2.0	75 9.9	135 17.9
16	19 49.0	19 52.3	18 54.8	16 2.1	76 10.1	136 18.0
17	19 49.3	19 52.6	18 55.1	17 2.3	77 10.2	137 18.2
18	19 49.5	19 52.8	18 55.3	18 2.4	78 10.3	138 18.3
19	19 49.8	19 53.1	18 55.6	19 2.5	79 10.5	139 18.4
20	19 50.0	19 53.3	18 55.8	20 2.7	80 10.6	140 18.6
21	19 50.3	19 53.6	18 56.0	21 2.8	81 10.7	141 18.7
22	19 50.5	19 53.8	18 56.3	22 2.9	82 10.9	142 18.8
23	19 50.8	19 54.1	18 56.5	23 3.0	83 11.0	143 18.9
24	19 51.0	19 54.3	18 56.7	24 3.2	84 11.1	144 19.1
25	19 51.3	19 54.6	18 57.0	25 3.3	85 11.3	145 19.2
26	19 51.5	19 54.8	18 57.2	26 3.4	86 11.4	146 19.3
27	19 51.8	19 55.1	18 57.5	27 3.6	87 11.5	147 19.5
28	19 52.0	19 55.3	18 57.7	28 3.7	88 11.7	148 19.6
29	19 52.3	19 55.6	18 57.9	29 3.8	89 11.8	149 19.7
30	19 52.5	19 55.8	18 58.2	30 4.0	90 11.9	150 19.9
31	19 52.8	19 56.1	18 58.4	31 4.1	91 12.1	151 20.0
32	19 53.0	19 56.3	18 58.7	32 4.2	92 12.2	152 20.1
33	19 53.3	19 56.6	18 58.9	33 4.4	93 12.3	153 20.3
34	19 53.5	19 56.8	18 59.1	34 4.5	94 12.5	154 20.4
35	19 53.8	19 57.1	18 59.4	35 4.6	95 12.6	155 20.5
36	19 54.0	19 57.3	18 59.6	36 4.8	96 12.7	156 20.7
37	19 54.3	19 57.6	18 59.8	37 4.9	97 12.9	157 20.8
38	19 54.5	19 57.8	19 .1	38 5.0	98 13.0	158 20.9
39	19 54.8	19 58.1	19 .3	39 5.2	99 13.1	159 21.1
40	19 55.0	19 58.3	19 .6	40 5.3	100 13.3	160 21.2
41	19 55.3	19 58.6	19 .8	41 5.4	101 13.4	161 21.3
42	19 55.5	19 58.8	19 1.0	42 5.6	102 13.5	162 21.5
43	19 55.8	19 59.1	19 1.3	43 5.7	103 13.6	163 21.6
44	19 56.0	19 59.3	19 1.5	44 5.8	104 13.8	164 21.7
45	19 56.3	19 59.6	19 1.8	45 6.0	105 13.9	165 21.9
46	19 56.5	19 59.8	19 2.0	46 6.1	106 14.0	166 22.0
47	19 56.8	20 .1	19 2.2	47 6.2	107 14.2	167 22.1
48	19 57.0	20 .3	19 2.5	48 6.4	108 14.3	168 22.3
49	19 57.3	20 .6	19 2.7	49 6.5	109 14.4	169 22.4
50	19 57.5	20 .8	19 2.9	50 6.6	110 14.6	170 22.5
51	19 57.8	20 1.1	19 3.2	51 6.8	111 14.7	171 22.7
52	19 58.0	20 1.3	19 3.4	52 6.9	112 14.8	172 22.8
53	19 58.3	20 1.6	19 3.7	53 7.0	113 15.0	173 22.9
54	19 58.5	20 1.8	19 3.9	54 7.2	114 15.1	174 23.1
55	19 58.8	20 2.1	19 4.1	55 7.3	115 15.2	175 23.2
56	19 59.0	20 2.3	19 4.4	56 7.4	116 15.4	176 23.3
57	19 59.3	20 2.6	19 4.6	57 7.6	117 15.5	177 23.5
58	19 59.5	20 2.8	19 4.9	58 7.7	118 15.6	178 23.6
59	19 59.8	20 3.1	19 5.1	59 7.8	119 15.8	179 23.7
60	20 .0	20 3.3	19 5.3	60 8.0	120 15.9	180 23.9

1 h 20 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	'
0	20	.0	20	3.3	19	5.3	0 .0 60 8.1 120 16.1
1	20	.3	20	3.6	19	5.6	1 .1 61 8.2 121 16.2
2	20	.5	20	3.8	19	5.8	2 .3 62 8.3 122 16.4
3	20	.8	20	4.1	19	6.0	3 .4 63 8.5 123 16.5
4	20	1.0	20	4.3	19	6.3	4 .5 64 8.6 124 16.6
5	20	1.3	20	4.6	19	6.5	5 .7 65 8.7 125 16.8
6	20	1.5	20	4.8	19	6.8	6 .8 66 8.9 126 16.9
7	20	1.8	20	5.1	19	7.0	7 .9 67 9.0 127 17.0
8	20	2.0	20	5.3	19	7.2	8 1.1 68 9.1 128 17.2
9	20	2.3	20	5.6	19	7.5	9 1.2 69 9.3 129 17.3
10	20	2.5	20	5.8	19	7.7	10 1.3 70 9.4 130 17.4
11	20	2.8	20	6.1	19	8.0	11 1.5 71 9.5 131 17.6
12	20	3.0	20	6.3	19	8.2	12 1.6 72 9.7 132 17.7
13	20	3.3	20	6.6	19	8.4	13 1.7 73 9.8 133 17.8
14	20	3.5	20	6.8	19	8.7	14 1.9 74 9.9 134 18.0
15	20	3.8	20	7.1	19	8.9	15 2.0 75 10.1 135 18.1
16	20	4.0	20	7.3	19	9.2	16 2.1 76 10.2 136 18.2
17	20	4.3	20	7.6	19	9.4	17 2.3 77 10.3 137 18.4
18	20	4.5	20	7.8	19	9.6	18 2.4 78 10.5 138 18.5
19	20	4.8	20	8.1	19	9.9	19 2.5 79 10.6 139 18.6
20	20	5.0	20	8.3	19	10.1	20 2.7 80 10.7 140 18.8
21	20	5.3	20	8.6	19	10.3	21 2.8 81 10.9 141 18.9
22	20	5.5	20	8.8	19	10.6	22 3.0 82 11.0 142 19.1
23	20	5.8	20	9.1	19	10.8	23 3.1 83 11.1 143 19.2
24	20	6.0	20	9.4	19	11.1	24 3.2 84 11.3 144 19.3
25	20	6.3	20	9.6	19	11.3	25 3.4 85 11.4 145 19.5
26	20	6.5	20	9.9	19	11.5	26 3.5 86 11.5 146 19.6
27	20	6.8	20	10.1	19	11.8	27 3.6 87 11.7 147 19.7
28	20	7.0	20	10.4	19	12.0	28 3.8 88 11.8 148 19.9
29	20	7.3	20	10.6	19	12.3	29 3.9 89 11.9 149 20.0
30	20	7.5	20	10.9	19	12.5	30 4.0 90 12.1 150 20.1
31	20	7.8	20	11.1	19	12.7	31 4.2 91 12.2 151 20.3
32	20	8.0	20	11.4	19	13.0	32 4.3 92 12.3 152 20.4
33	20	8.3	20	11.6	19	13.2	33 4.4 93 12.5 153 20.5
34	20	8.5	20	11.9	19	13.4	34 4.6 94 12.6 154 20.7
35	20	8.8	20	12.1	19	13.7	35 4.7 95 12.7 155 20.8
36	20	9.0	20	12.4	19	13.9	36 4.8 96 12.9 156 20.9
37	20	9.3	20	12.6	19	14.2	37 5.0 97 13.0 157 21.1
38	20	9.5	20	12.9	19	14.4	38 5.1 98 13.1 158 21.2
39	20	9.8	20	13.1	19	14.6	39 5.2 99 13.3 159 21.3
40	20	10.0	20	13.4	19	14.9	40 5.4 100 13.4 160 21.5
41	20	10.3	20	13.6	19	15.1	41 5.5 101 13.6 161 21.6
42	20	10.5	20	13.9	19	15.4	42 5.6 102 13.7 162 21.7
43	20	10.8	20	14.1	19	15.6	43 5.8 103 13.8 163 21.9
44	20	11.0	20	14.4	19	15.8	44 5.9 104 14.0 164 22.0
45	20	11.3	20	14.6	19	16.1	45 6.0 105 14.1 165 22.1
46	20	11.5	20	14.9	19	16.3	46 6.2 106 14.2 166 22.3
47	20	11.8	20	15.1	19	16.5	47 6.3 107 14.4 167 22.4
48	20	12.0	20	15.4	19	16.8	48 6.4 108 14.5 168 22.5
49	20	12.3	20	15.6	19	17.0	49 6.6 109 14.6 169 22.7
50	20	12.5	20	15.9	19	17.3	50 6.7 110 14.8 170 22.8
51	20	12.8	20	16.1	19	17.5	51 6.8 111 14.9 171 22.9
52	20	13.0	20	16.4	19	17.7	52 7.0 112 15.0 172 23.1
53	20	13.3	20	16.6	19	18.0	53 7.1 113 15.2 173 23.2
54	20	13.5	20	16.9	19	18.2	54 7.2 114 15.3 174 23.3
55	20	13.8	20	17.1	19	18.5	55 7.4 115 15.4 175 23.5
56	20	14.0	20	17.4	19	18.7	56 7.5 116 15.6 176 23.6
57	20	14.3	20	17.6	19	18.9	57 7.6 117 15.7 177 23.7
58	20	14.5	20	17.9	19	19.2	58 7.8 118 15.8 178 23.9
59	20	14.8	20	18.1	19	19.4	59 7.9 119 16.0 179 24.0
60	20	15.0	20	18.4	19	19.7	60 8.1 120 16.1 180 24.2

1 h 21 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	°	'	°	'	°	'	'
0	20	15.0	20	18.4	19	19.7	0 .0 60 8.2 120 16.3
1	20	15.3	20	18.6	19	19.9	1 .1 61 8.3 121 16.4
2	20	15.5	20	18.9	19	20.1	2 .3 62 8.4 122 16.6
3	20	15.8	20	19.1	19	20.4	3 .4 63 8.6 123 16.7
4	20	16.0	20	19.4	19	20.6	4 .5 64 8.7 124 16.8
5	20	16.3	20	19.6	19	20.8	5 .7 65 8.8 125 17.0
6	20	16.5	20	19.9	19	21.1	6 .8 66 9.0 126 17.1
7	20	16.8	20	20.1	19	21.3	7 1.0 67 9.1 127 17.3
8	20	17.0	20	20.4	19	21.6	8 1.1 68 9.2 128 17.4
9	20	17.3	20	20.6	19	21.8	9 1.2 69 9.4 129 17.5
10	20	17.5	20	20.9	19	22.0	10 1.4 70 9.5 130 17.7
11	20	17.8	20	21.1	19	22.3	11 1.5 71 9.6 131 17.8
12	20	18.0	20	21.4	19	22.5	12 1.6 72 9.8 132 17.9
13	20	18.3	20	21.6	19	22.8	13 1.8 73 9.9 133 18.1
14	20	18.5	20	21.9	19	23.0	14 1.9 74 10.1 134 18.2
15	20	18.8	20	22.1	19	23.2	15 2.0 75 10.2 135 18.3
16	20	19.0	20	22.4	19	23.5	16 2.2 76 10.3 136 18.5
17	20	19.3	20	22.6	19	23.7	17 2.3 77 10.5 137 18.6
18	20	19.5	20	22.9	19	23.9	18 2.4 78 10.6 138 18.7
19	20	19.8	20	23.1	19	24.2	19 2.6 79 10.7 139 18.9
20	20	20.0	20	23.4	19	24.4	20 2.7 80 10.9 140 19.0
21	20	20.3	20	23.6	19	24.7	21 2.9 81 11.0 141 19.2
22	20	20.5	20	23.9	19	24.9	22 3.0 82 11.1 142 19.3
23	20	20.8	20	24.1	19	25.1	23 3.1 83 11.3 143 19.4
24	20	21.0	20	24.4	19	25.4	24 3.3 84 11.4 144 19.6
25	20	21.3	20	24.6	19	25.6	25 3.4 85 11.5 145 19.7
26	20	21.5	20	24.9	19	25.9	26 3.5 86 11.7 146 19.8
27	20	21.8	20	25.1	19	26.1	27 3.7 87 11.8 147 20.0
28	20	22.0	20	25.4	19	26.3	28 3.8 88 12.0 148 20.1
29	20	22.3	20	25.6	19	26.6	29 3.9 89 12.1 149 20.2
30	20	22.5	20	25.9	19	26.8	30 4.1 90 12.2 150 20.4
31	20	22.8	20	26.1	19	27.0	31 4.2 91 12.4 151 20.5
32	20	23.0	20	26.4	19	27.3	32 4.3 92 12.5 152 20.6
33	20	23.3	20	26.6	19	27.5	33 4.5 93 12.6 153 20.8
34	20	23.5	20	26.9	19	27.8	34 4.6 94 12.8 154 20.9
35	20	23.8	20	27.1	19	28.0	35 4.8 95 12.9 155 21.1
36	20	24.0	20	27.4	19	28.2	36 4.9 96 13.0 156 21.2
37	20	24.3	20	27.7	19	28.5	37 5.0 97 13.2 157 21.3
38	20	24.5	20	27.9	19	28.7	38 5.2 98 13.3 158 21.5
39	20	24.8	20	28.2	19	29.0	39 5.3 99 13.4 159 21.6
40	20	25.0	20	28.4	19	29.2	40 5.4 100 13.6 160 21.7
41	20	25.3	20	28.7	19	29.4	41 5.6 101 13.7 161 21.9
42	20	25.5	20	28.9	19	29.7	42 5.7 102 13.9 162 22.0
43	20	25.8	20	29.2	19	29.9	43 5.8 103 14.0 163 22.1
44	20	26.0	20	29.4	19	30.1	44 6.0 104 14.1 164 22.3
45	20	26.3	20	29.7	19	30.4	45 6.1 105 14.3 165 22.4
46	20	26.5	20	29.9	19	30.6	46 6.2 106 14.4 166 22.5
47	20	26.8	20	30.2	19	30.9	47 6.4 107 14.5 167 22.7
48	20	27.0	20	30.4	19	31.1	48 6.5 108 14.7 168 22.8
49	20	27.3	20	30.7	19	31.3	49 6.7 109 14.8 169 23.0
50	20	27.5	20	30.9	19	31.6	50 6.8 110 14.9 170 23.1
51	20	27.8	20	31.2	19	31.8	51 6.9 111 15.1 171 23.2
52	20	28.0	20	31.4	19	32.1	52 7.1 112 15.2 172 23.4
53	20	28.3	20	31.7	19	32.3	53 7.2 113 15.3 173 23.5
54	20	28.5	20	31.9	19	32.5	54 7.3 114 15.5 174 23.6
55	20	28.8	20	32.2	19	32.8	55 7.5 115 15.6 175 23.8
56	20	29.0	20	32.4	19	33.0	56 7.6 116 15.8 176 23.9
57	20	29.3	20	32.7	19	33.3	57 7.7 117 15.9 177 24.0
58	20	29.5	20	32.9	19	33.5	58 7.9 118 16.0 178 24.2
59	20	29.8	20	33.2	19	33.7	59 8.0 119 16.2 179 24.3
60	20	30.0	20	33.4	19	34.0	60 8.2 120 16.3 180 24.5

1 h 22 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	20 30.0	20 33.4	19 34.0	0 .0	60 8.3	120 16.5
1	20 30.3	20 33.7	19 34.2	1 .1	61 8.4	121 16.6
2	20 30.5	20 33.9	19 34.4	2 .3	62 8.5	122 16.8
3	20 30.8	20 34.2	19 34.7	3 .4	63 8.7	123 16.9
4	20 31.0	20 34.4	19 34.9	4 .6	64 8.8	124 17.1
5	20 31.3	20 34.7	19 35.2	5 .7	65 8.9	125 17.2
6	20 31.5	20 34.9	19 35.4	6 .8	66 9.1	126 17.3
7	20 31.8	20 35.2	19 35.6	7 1.0	67 9.2	127 17.5
8	20 32.0	20 35.4	19 35.9	8 1.1	68 9.4	128 17.6
9	20 32.3	20 35.7	19 36.1	9 1.2	69 9.5	129 17.7
10	20 32.5	20 35.9	19 36.4	10 1.4	70 9.6	130 17.9
11	20 32.8	20 36.2	19 36.6	11 1.5	71 9.8	131 18.0
12	20 33.0	20 36.4	19 36.8	12 1.7	72 9.9	132 18.2
13	20 33.3	20 36.7	19 37.1	13 1.8	73 10.0	133 18.3
14	20 33.5	20 36.9	19 37.3	14 1.9	74 10.2	134 18.4
15	20 33.8	20 37.2	19 37.5	15 2.1	75 10.3	135 18.6
16	20 34.0	20 37.4	19 37.8	16 2.2	76 10.5	136 18.7
17	20 34.3	20 37.7	19 38.0	17 2.3	77 10.6	137 18.8
18	20 34.5	20 37.9	19 38.3	18 2.5	78 10.7	138 19.0
19	20 34.8	20 38.2	19 38.5	19 2.6	79 10.9	139 19.1
20	20 35.0	20 38.4	19 38.7	20 2.8	80 11.0	140 19.3
21	20 35.3	20 38.7	19 39.0	21 2.9	81 11.1	141 19.4
22	20 35.5	20 38.9	19 39.2	22 3.0	82 11.3	142 19.5
23	20 35.8	20 39.2	19 39.5	23 3.2	83 11.4	143 19.7
24	20 36.0	20 39.4	19 39.7	24 3.3	84 11.6	144 19.8
25	20 36.3	20 39.7	19 39.9	25 3.4	85 11.7	145 19.9
26	20 36.5	20 39.9	19 40.2	26 3.6	86 11.8	146 20.1
27	20 36.8	20 40.2	19 40.4	27 3.7	87 12.0	147 20.2
28	20 37.0	20 40.4	19 40.6	28 3.9	88 12.1	148 20.4
29	20 37.3	20 40.7	19 40.9	29 4.0	89 12.2	149 20.5
30	20 37.5	20 40.9	19 41.1	30 4.1	90 12.4	150 20.6
31	20 37.8	20 41.2	19 41.4	31 4.3	91 12.5	151 20.8
32	20 38.0	20 41.4	19 41.6	32 4.4	92 12.7	152 20.9
33	20 38.3	20 41.7	19 41.8	33 4.5	93 12.8	153 21.0
34	20 38.5	20 41.9	19 42.1	34 4.7	94 12.9	154 21.2
35	20 38.8	20 42.2	19 42.3	35 4.8	95 13.1	155 21.3
36	20 39.0	20 42.4	19 42.6	36 5.0	96 13.2	156 21.5
37	20 39.3	20 42.7	19 42.8	37 5.1	97 13.3	157 21.6
38	20 39.5	20 42.9	19 43.0	38 5.2	98 13.5	158 21.7
39	20 39.8	20 43.2	19 43.3	39 5.4	99 13.6	159 21.9
40	20 40.0	20 43.4	19 43.5	40 5.5	100 13.8	160 22.0
41	20 40.3	20 43.7	19 43.7	41 5.6	101 13.9	161 22.1
42	20 40.5	20 43.9	19 44.0	42 5.8	102 14.0	162 22.3
43	20 40.8	20 44.2	19 44.2	43 5.9	103 14.2	163 22.4
44	20 41.0	20 44.4	19 44.5	44 6.1	104 14.3	164 22.6
45	20 41.3	20 44.7	19 44.7	45 6.2	105 14.4	165 22.7
46	20 41.5	20 44.9	19 44.9	46 6.3	106 14.6	166 22.8
47	20 41.8	20 45.2	19 45.2	47 6.5	107 14.7	167 23.0
48	20 42.0	20 45.5	19 45.4	48 6.6	108 14.9	168 23.1
49	20 42.3	20 45.7	19 45.7	49 6.7	109 15.0	169 23.2
50	20 42.5	20 46.0	19 45.9	50 6.9	110 15.1	170 23.4
51	20 42.8	20 46.2	19 46.1	51 7.0	111 15.3	171 23.5
52	20 43.0	20 46.5	19 46.4	52 7.2	112 15.4	172 23.7
53	20 43.3	20 46.7	19 46.6	53 7.3	113 15.5	173 23.8
54	20 43.5	20 47.0	19 46.9	54 7.4	114 15.7	174 23.9
55	20 43.8	20 47.2	19 47.1	55 7.6	115 15.8	175 24.1
56	20 44.0	20 47.5	19 47.3	56 7.7	116 16.0	176 24.2
57	20 44.3	20 47.7	19 47.6	57 7.8	117 16.1	177 24.3
58	20 44.5	20 48.0	19 47.8	58 8.0	118 16.2	178 24.5
59	20 44.8	20 48.2	19 48.0	59 8.1	119 16.4	179 24.6
60	20 45.0	20 48.5	19 48.3	60 8.3	120 16.5	180 24.8

1 h 23 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
S	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	20 45.0	20 48.5	19 48.3	0 .0	60 8.4	120 16.7
1	20 45.3	20 48.7	19 48.5	1 .1	61 8.5	121 16.8
2	20 45.5	20 49.0	19 48.8	2 .3	62 8.6	122 17.0
3	20 45.8	20 49.2	19 49.0	3 .4	63 8.8	123 17.1
4	20 46.0	20 49.5	19 49.2	4 .6	64 8.9	124 17.3
5	20 46.3	20 49.7	19 49.5	5 .7	65 9.0	125 17.4
6	20 46.5	20 50.0	19 49.7	6 .8	66 9.2	126 17.5
7	20 46.8	20 50.2	19 50.0	7 1.0	67 9.3	127 17.7
8	20 47.0	20 50.5	19 50.2	8 1.1	68 9.5	128 17.8
9	20 47.3	20 50.7	19 50.4	9 1.3	69 9.6	129 18.0
10	20 47.5	20 51.0	19 50.7	10 1.4	70 9.7	130 18.1
11	20 47.8	20 51.2	19 50.9	11 1.5	71 9.9	131 18.2
12	20 48.0	20 51.5	19 51.1	12 1.7	72 10.0	132 18.4
13	20 48.3	20 51.7	19 51.4	13 1.8	73 10.2	133 18.5
14	20 48.5	20 52.0	19 51.6	14 1.9	74 10.3	134 18.6
15	20 48.8	20 52.2	19 51.9	15 2.1	75 10.4	135 18.8
16	20 49.0	20 52.5	19 52.1	16 2.2	76 10.6	136 18.9
17	20 49.3	20 52.7	19 52.3	17 2.4	77 10.7	137 19.1
18	20 49.5	20 53.0	19 52.6	18 2.5	78 10.9	138 19.2
19	20 49.8	20 53.2	19 52.8	19 2.6	79 11.0	139 19.3
20	20 50.0	20 53.5	19 53.1	20 2.8	80 11.1	140 19.5
21	20 50.3	20 53.7	19 53.3	21 2.9	81 11.3	141 19.6
22	20 50.5	20 54.0	19 53.5	22 3.1	82 11.4	142 19.8
23	20 50.8	20 54.2	19 53.8	23 3.2	83 11.6	143 19.9
24	20 51.0	20 54.5	19 54.0	24 3.3	84 11.7	144 20.0
25	20 51.3	20 54.7	19 54.2	25 3.5	85 11.8	145 20.2
26	20 51.5	20 55.0	19 54.5	26 3.6	86 12.0	146 20.3
27	20 51.8	20 55.2	19 54.7	27 3.8	87 12.1	147 20.5
28	20 52.0	20 55.5	19 55.0	28 3.9	88 12.2	148 20.6
29	20 52.3	20 55.7	19 55.2	29 4.0	89 12.4	149 20.7
30	20 52.5	20 56.0	19 55.4	30 4.2	90 12.5	150 20.9
31	20 52.8	20 56.2	19 55.7	31 4.3	91 12.7	151 21.0
32	20 53.0	20 56.5	19 55.9	32 4.5	92 12.8	152 21.2
33	20 53.3	20 56.7	19 56.2	33 4.6	93 12.9	153 21.3
34	20 53.5	20 57.0	19 56.4	34 4.7	94 13.1	154 21.4
35	20 53.8	20 57.2	19 56.6	35 4.9	95 13.2	155 21.6
36	20 54.0	20 57.5	19 56.9	36 5.0	96 13.4	156 21.7
37	20 54.3	20 57.7	19 57.1	37 5.1	97 13.5	157 21.8
38	20 54.5	20 58.0	19 57.4	38 5.3	98 13.6	158 22.0
39	20 54.8	20 58.2	19 57.6	39 5.4	99 13.8	159 22.1
40	20 55.0	20 58.5	19 57.8	40 5.6	100 13.9	160 22.3
41	20 55.3	20 58.7	19 58.1	41 5.7	101 14.1	161 22.4
42	20 55.5	20 59.0	19 58.3	42 5.8	102 14.2	162 22.5
43	20 55.8	20 59.2	19 58.5	43 6.0	103 14.3	163 22.7
44	20 56.0	20 59.5	19 58.8	44 6.1	104 14.5	164 22.8
45	20 56.3	20 59.7	19 59.0	45 6.3	105 14.6	165 23.0
46	20 56.5	20 60.0	19 59.3	46 6.4	106 14.8	166 23.1
47	20 56.8	21 .2	19 59.5	47 6.5	107 14.9	167 23.2
48	20 57.0	21 .5	19 59.7	48 6.7	108 15.0	168 23.4
49	20 57.3	21 .7	19 60.0	49 6.8	109 15.2	169 23.5
50	20 57.5	21 1.0	20 .2	50 7.0	110 15.3	170 23.7
51	20 57.8	21 1.2	20 .5	51 7.1	111 15.4	171 23.8
52	20 58.0	21 1.5	20 .7	52 7.2	112 15.6	172 23.9
53	20 58.3	21 1.7	20 .9	53 7.4	113 15.7	173 24.1
54	20 58.5	21 2.0	20 1.2	54 7.5	114 15.9	174 24.2
55	20 58.8	21 2.2	20 1.4	55 7.7	115 16.0	175 24.4
56	20 59.0	21 2.5	20 1.6	56 7.8	116 16.1	176 24.5
57	20 59.3	21 2.7	20 1.9	57 7.9	117 16.3	177 24.6
58	20 59.5	21 3.0	20 2.1	58 8.1	118 16.4	178 24.8
59	20 59.8	21 3.2	20 2.4	59 8.2	119 16.6	179 24.9
60	21 .0	21 3.5	20 2.6	60 8.4	120 16.7	180 25.1

1 h 24 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	°	'	°	'	°	'	'		'		'	
0	21	.0	21	3.5	20	2.6	0	.0	60	8.5	120	16.9
1	21	.3	21	3.8	20	2.8	1	.1	61	8.6	121	17.0
2	21	.5	21	4.0	20	3.1	2	.3	62	8.7	122	17.2
3	21	.8	21	4.3	20	3.3	3	.4	63	8.9	123	17.3
4	21	1.0	21	4.5	20	3.6	4	.6	64	9.0	124	17.5
5	21	1.3	21	4.8	20	3.8	5	.7	65	9.2	125	17.6
6	21	1.5	21	5.0	20	4.0	6	.8	66	9.3	126	17.7
7	21	1.8	21	5.3	20	4.3	7	1.0	67	9.4	127	17.9
8	21	2.0	21	5.5	20	4.5	8	1.1	68	9.6	128	18.0
9	21	2.3	21	5.8	20	4.7	9	1.3	69	9.7	129	18.2
10	21	2.5	21	6.0	20	5.0	10	1.4	70	9.9	130	18.3
11	21	2.8	21	6.3	20	5.2	11	1.5	71	10.0	131	18.4
12	21	3.0	21	6.5	20	5.5	12	1.7	72	10.1	132	18.6
13	21	3.3	21	6.8	20	5.7	13	1.8	73	10.3	133	18.7
14	21	3.5	21	7.0	20	5.9	14	2.0	74	10.4	134	18.9
15	21	3.8	21	7.3	20	6.2	15	2.1	75	10.6	135	19.0
16	21	4.0	21	7.5	20	6.4	16	2.3	76	10.7	136	19.2
17	21	4.3	21	7.8	20	6.7	17	2.4	77	10.8	137	19.3
18	21	4.5	21	8.0	20	6.9	18	2.5	78	11.0	138	19.4
19	21	4.8	21	8.3	20	7.1	19	2.7	79	11.1	139	19.6
20	21	5.0	21	8.5	20	7.4	20	2.8	80	11.3	140	19.7
21	21	5.3	21	8.8	20	7.6	21	3.0	81	11.4	141	19.9
22	21	5.5	21	9.0	20	7.8	22	3.1	82	11.5	142	20.0
23	21	5.8	21	9.3	20	8.1	23	3.2	83	11.7	143	20.1
24	21	6.0	21	9.5	20	8.3	24	3.4	84	11.8	144	20.3
25	21	6.3	21	9.8	20	8.6	25	3.5	85	12.0	145	20.4
26	21	6.5	21	10.0	20	8.8	26	3.7	86	12.1	146	20.6
27	21	6.8	21	10.3	20	9.0	27	3.8	87	12.3	147	20.7
28	21	7.0	21	10.5	20	9.3	28	3.9	88	12.4	148	20.8
29	21	7.3	21	10.8	20	9.5	29	4.1	89	12.5	149	21.0
30	21	7.5	21	11.0	20	9.8	30	4.2	90	12.7	150	21.1
31	21	7.8	21	11.3	20	10.0	31	4.4	91	12.8	151	21.3
32	21	8.0	21	11.5	20	10.2	32	4.5	92	13.0	152	21.4
33	21	8.3	21	11.8	20	10.5	33	4.6	93	13.1	153	21.5
34	21	8.5	21	12.0	20	10.7	34	4.8	94	13.2	154	21.7
35	21	8.8	21	12.3	20	11.0	35	4.9	95	13.4	155	21.8
36	21	9.0	21	12.5	20	11.2	36	5.1	96	13.5	156	22.0
37	21	9.3	21	12.8	20	11.4	37	5.2	97	13.7	157	22.1
38	21	9.5	21	13.0	20	11.7	38	5.4	98	13.8	158	22.3
39	21	9.8	21	13.3	20	11.9	39	5.5	99	13.9	159	22.4
40	21	10.0	21	13.5	20	12.1	40	5.6	100	14.1	160	22.5
41	21	10.3	21	13.8	20	12.4	41	5.8	101	14.2	161	22.7
42	21	10.5	21	14.0	20	12.6	42	5.9	102	14.4	162	22.8
43	21	10.8	21	14.3	20	12.9	43	6.1	103	14.5	163	23.0
44	21	11.0	21	14.5	20	13.1	44	6.2	104	14.6	164	23.1
45	21	11.3	21	14.8	20	13.3	45	6.3	105	14.8	165	23.2
46	21	11.5	21	15.0	20	13.6	46	6.5	106	14.9	166	23.4
47	21	11.8	21	15.3	20	13.8	47	6.6	107	15.1	167	23.5
48	21	12.0	21	15.5	20	14.1	48	6.8	108	15.2	168	23.7
49	21	12.3	21	15.8	20	14.3	49	6.9	109	15.4	169	23.8
50	21	12.5	21	16.0	20	14.5	50	7.0	110	15.5	170	23.9
51	21	12.8	21	16.3	20	14.8	51	7.2	111	15.6	171	24.1
52	21	13.0	21	16.5	20	15.0	52	7.3	112	15.8	172	24.2
53	21	13.3	21	16.8	20	15.2	53	7.5	113	15.9	173	24.4
54	21	13.5	21	17.0	20	15.5	54	7.6	114	16.1	174	24.5
55	21	13.8	21	17.3	20	15.7	55	7.7	115	16.2	175	24.6
56	21	14.0	21	17.5	20	16.0	56	7.9	116	16.3	176	24.8
57	21	14.3	21	17.8	20	16.2	57	8.0	117	16.5	177	24.9
58	21	14.5	21	18.0	20	16.4	58	8.2	118	16.6	178	25.1
59	21	14.8	21	18.3	20	16.7	59	8.3	119	16.8	179	25.2
60	21	15.0	21	18.5	20	16.9	60	8.5	120	16.9	180	25.4

1 h 25 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ	popr.	Δ	popr.	Δ	popr.
	°	'	°	'	°	'	'		'		'	
0	21	15.0	21	18.5	20	16.9	0	.0	60	8.6	120	17.1
1	21	15.3	21	18.8	20	17.2	1	.1	61	8.7	121	17.2
2	21	15.5	21	19.0	20	17.4	2	.3	62	8.8	122	17.4
3	21	15.8	21	19.3	20	17.6	3	.4	63	9.0	123	17.5
4	21	16.0	21	19.5	20	17.9	4	.6	64	9.1	124	17.7
5	21	16.3	21	19.8	20	18.1	5	.7	65	9.3	125	17.8
6	21	16.5	21	20.0	20	18.3	6	.9	66	9.4	126	18.0
7	21	16.8	21	20.3	20	18.6	7	1.0	67	9.5	127	18.1
8	21	17.0	21	20.5	20	18.8	8	1.1	68	9.7	128	18.2
9	21	17.3	21	20.8	20	19.1	9	1.3	69	9.8	129	18.4
10	21	17.5	21	21.0	20	19.3	10	1.4	70	10.0	130	18.5
11	21	17.8	21	21.3	20	19.5	11	1.6	71	10.1	131	18.7
12	21	18.0	21	21.6	20	19.8	12	1.7	72	10.3	132	18.8
13	21	18.3	21	21.8	20	20.0	13	1.9	73	10.4	133	19.0
14	21	18.5	21	22.1	20	20.3	14	2.0	74	10.5	134	19.1
15	21	18.8	21	22.3	20	20.5	15	2.1	75	10.7	135	19.2
16	21	19.0	21	22.6	20	20.7	16	2.3	76	10.8	136	19.4
17	21	19.3	21	22.8	20	21.0	17	2.4	77	11.0	137	19.5
18	21	19.5	21	23.1	20	21.2	18	2.6	78	11.1	138	19.7
19	21	19.8	21	23.3	20	21.5	19	2.7	79	11.3	139	19.8
20	21	20.0	21	23.6	20	21.7	20	2.9	80	11.4	140	20.0
21	21	20.3	21	23.8	20	21.9	21	3.0	81	11.5	141	20.1
22	21	20.5	21	24.1	20	22.2	22	3.1	82	11.7	142	20.2
23	21	20.8	21	24.3	20	22.4	23	3.3	83	11.8	143	20.4
24	21	21.0	21	24.6	20	22.6	24	3.4	84	12.0	144	20.5
25	21	21.3	21	24.8	20	22.9	25	3.6	85	12.1	145	20.7
26	21	21.5	21	25.1	20	23.1	26	3.7	86	12.3	146	20.8
27	21	21.8	21	25.3	20	23.4	27	3.8	87	12.4	147	20.9
28	21	22.0	21	25.6	20	23.6	28	4.0	88	12.5	148	21.1
29	21	22.3	21	25.8	20	23.8	29	4.1	89	12.7	149	21.2
30	21	22.5	21	26.1	20	24.1	30	4.3	90	12.8	150	21.4
31	21	22.8	21	26.3	20	24.3	31	4.4	91	13.0	151	21.5
32	21	23.0	21	26.6	20	24.6	32	4.6	92	13.1	152	21.7
33	21	23.3	21	26.8	20	24.8	33	4.7	93	13.3	153	21.8
34	21	23.5	21	27.1	20	25.0	34	4.8	94	13.4	154	21.9
35	21	23.8	21	27.3	20	25.3	35	5.0	95	13.5	155	22.1
36	21	24.0	21	27.6	20	25.5	36	5.1	96	13.7	156	22.2
37	21	24.3	21	27.8	20	25.7	37	5.3	97	13.8	157	22.4
38	21	24.5	21	28.1	20	26.0	38	5.4	98	14.0	158	22.5
39	21	24.8	21	28.3	20	26.2	39	5.6	99	14.1	159	22.7
40	21	25.0	21	28.6	20	26.5	40	5.7	100	14.3	160	22.8
41	21	25.3	21	28.8	20	26.7	41	5.8	101	14.4	161	22.9
42	21	25.5	21	29.1	20	26.9	42	6.0	102	14.5	162	23.1
43	21	25.8	21	29.3	20	27.2	43	6.1	103	14.7	163	23.2
44	21	26.0	21	29.6	20	27.4	44	6.3	104	14.8	164	23.4
45	21	26.3	21	29.8	20	27.7	45	6.4	105	15.0	165	23.5
46	21	26.5	21	30.1	20	27.9	46	6.6	106	15.1	166	23.7
47	21	26.8	21	30.3	20	28.1	47	6.7	107	15.2	167	23.8
48	21	27.0	21	30.6	20	28.4	48	6.8	108	15.4		

1 h 26 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	21 30.0	21 33.6	20 31.2	0 .0	60 8.7	120 17.3
1	21 30.3	21 33.8	20 31.5	1 .1	61 8.8	121 17.4
2	21 30.5	21 34.1	20 31.7	2 .3	62 8.9	122 17.6
3	21 30.8	21 34.3	20 31.9	3 .4	63 9.1	123 17.7
4	21 31.0	21 34.6	20 32.2	4 .6	64 9.2	124 17.9
5	21 31.3	21 34.8	20 32.4	5 .7	65 9.4	125 18.0
6	21 31.5	21 35.1	20 32.7	6 .9	66 9.5	126 18.2
7	21 31.8	21 35.3	20 32.9	7 1.0	67 9.7	127 18.3
8	21 32.0	21 35.6	20 33.1	8 1.2	68 9.8	128 18.5
9	21 32.3	21 35.8	20 33.4	9 1.3	69 9.9	129 18.6
10	21 32.5	21 36.1	20 33.6	10 1.4	70 10.1	130 18.7
11	21 32.8	21 36.3	20 33.9	11 1.6	71 10.2	131 18.9
12	21 33.0	21 36.6	20 34.1	12 1.7	72 10.4	132 19.0
13	21 33.3	21 36.8	20 34.3	13 1.9	73 10.5	133 19.2
14	21 33.5	21 37.1	20 34.6	14 2.0	74 10.7	134 19.3
15	21 33.8	21 37.3	20 34.8	15 2.2	75 10.8	135 19.5
16	21 34.0	21 37.6	20 35.1	16 2.3	76 11.0	136 19.6
17	21 34.3	21 37.8	20 35.3	17 2.5	77 11.1	137 19.8
18	21 34.5	21 38.1	20 35.5	18 2.6	78 11.2	138 19.9
19	21 34.8	21 38.3	20 35.8	19 2.7	79 11.4	139 20.0
20	21 35.0	21 38.6	20 36.0	20 2.9	80 11.5	140 20.2
21	21 35.3	21 38.8	20 36.2	21 3.0	81 11.7	141 20.3
22	21 35.5	21 39.1	20 36.5	22 3.2	82 11.8	142 20.5
23	21 35.8	21 39.3	20 36.7	23 3.3	83 12.0	143 20.6
24	21 36.0	21 39.6	20 37.0	24 3.5	84 12.1	144 20.8
25	21 36.3	21 39.9	20 37.2	25 3.6	85 12.3	145 20.9
26	21 36.5	21 40.1	20 37.4	26 3.7	86 12.4	146 21.0
27	21 36.8	21 40.4	20 37.7	27 3.9	87 12.5	147 21.2
28	21 37.0	21 40.6	20 37.9	28 4.0	88 12.7	148 21.3
29	21 37.3	21 40.9	20 38.2	29 4.2	89 12.8	149 21.5
30	21 37.5	21 41.1	20 38.4	30 4.3	90 13.0	150 21.6
31	21 37.8	21 41.4	20 38.6	31 4.5	91 13.1	151 21.8
32	21 38.0	21 41.6	20 38.9	32 4.6	92 13.3	152 21.9
33	21 38.3	21 41.9	20 39.1	33 4.8	93 13.4	153 22.1
34	21 38.5	21 42.1	20 39.3	34 4.9	94 13.6	154 22.2
35	21 38.8	21 42.4	20 39.6	35 5.0	95 13.7	155 22.3
36	21 39.0	21 42.6	20 39.8	36 5.2	96 13.8	156 22.5
37	21 39.3	21 42.9	20 40.1	37 5.3	97 14.0	157 22.6
38	21 39.5	21 43.1	20 40.3	38 5.5	98 14.1	158 22.8
39	21 39.8	21 43.4	20 40.5	39 5.6	99 14.3	159 22.9
40	21 40.0	21 43.6	20 40.8	40 5.8	100 14.4	160 23.1
41	21 40.3	21 43.9	20 41.0	41 5.9	101 14.6	161 23.2
42	21 40.5	21 44.1	20 41.3	42 6.1	102 14.7	162 23.4
43	21 40.8	21 44.4	20 41.5	43 6.2	103 14.8	163 23.5
44	21 41.0	21 44.6	20 41.7	44 6.3	104 15.0	164 23.6
45	21 41.3	21 44.9	20 42.0	45 6.5	105 15.1	165 23.8
46	21 41.5	21 45.1	20 42.2	46 6.6	106 15.3	166 23.9
47	21 41.8	21 45.4	20 42.4	47 6.8	107 15.4	167 24.1
48	21 42.0	21 45.6	20 42.7	48 6.9	108 15.6	168 24.2
49	21 42.3	21 45.9	20 42.9	49 7.1	109 15.7	169 24.4
50	21 42.5	21 46.1	20 43.2	50 7.2	110 15.9	170 24.5
51	21 42.8	21 46.4	20 43.4	51 7.4	111 16.0	171 24.7
52	21 43.0	21 46.6	20 43.6	52 7.5	112 16.1	172 24.8
53	21 43.3	21 46.9	20 43.9	53 7.6	113 16.3	173 24.9
54	21 43.5	21 47.1	20 44.1	54 7.8	114 16.4	174 25.1
55	21 43.8	21 47.4	20 44.4	55 7.9	115 16.6	175 25.2
56	21 44.0	21 47.6	20 44.6	56 8.1	116 16.7	176 25.4
57	21 44.3	21 47.9	20 44.8	57 8.2	117 16.9	177 25.5
58	21 44.5	21 48.1	20 45.1	58 8.4	118 17.0	178 25.7
59	21 44.8	21 48.4	20 45.3	59 8.5	119 17.2	179 25.8
60	21 45.0	21 48.6	20 45.6	60 8.7	120 17.3	180 26.0

1 h 27 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	21 45.0	21 48.6	20 45.6	0 .0	60 8.8	120 17.5
1	21 45.3	21 48.9	20 45.8	1 .1	61 8.9	121 17.6
2	21 45.5	21 49.1	20 46.0	2 .3	62 9.0	122 17.8
3	21 45.8	21 49.4	20 46.3	3 .4	63 9.2	123 17.9
4	21 46.0	21 49.6	20 46.5	4 .6	64 9.3	124 18.1
5	21 46.3	21 49.9	20 46.7	5 .7	65 9.5	125 18.2
6	21 46.5	21 50.1	20 47.0	6 .9	66 9.6	126 18.4
7	21 46.8	21 50.4	20 47.2	7 1.0	67 9.8	127 18.5
8	21 47.0	21 50.6	20 47.5	8 1.2	68 9.9	128 18.7
9	21 47.3	21 50.9	20 47.7	9 1.3	69 10.1	129 18.8
10	21 47.5	21 51.1	20 47.9	10 1.5	70 10.2	130 19.0
11	21 47.8	21 51.4	20 48.2	11 1.6	71 10.4	131 19.1
12	21 48.0	21 51.6	20 48.4	12 1.8	72 10.5	132 19.3
13	21 48.3	21 51.9	20 48.7	13 1.9	73 10.6	133 19.4
14	21 48.5	21 52.1	20 48.9	14 2.0	74 10.8	134 19.5
15	21 48.8	21 52.4	20 49.1	15 2.2	75 10.9	135 19.7
16	21 49.0	21 52.6	20 49.4	16 2.3	76 11.1	136 19.8
17	21 49.3	21 52.9	20 49.6	17 2.5	77 11.2	137 20.0
18	21 49.5	21 53.1	20 49.8	18 2.6	78 11.4	138 20.1
19	21 49.8	21 53.4	20 50.1	19 2.8	79 11.5	139 20.3
20	21 50.0	21 53.6	20 50.3	20 2.9	80 11.7	140 20.4
21	21 50.3	21 53.9	20 50.6	21 3.1	81 11.8	141 20.6
22	21 50.5	21 54.1	20 50.8	22 3.2	82 12.0	142 20.7
23	21 50.8	21 54.4	20 51.0	23 3.4	83 12.1	143 20.9
24	21 51.0	21 54.6	20 51.3	24 3.5	84 12.3	144 21.0
25	21 51.3	21 54.9	20 51.5	25 3.6	85 12.4	145 21.1
26	21 51.5	21 55.1	20 51.8	26 3.8	86 12.5	146 21.3
27	21 51.8	21 55.4	20 52.0	27 3.9	87 12.7	147 21.4
28	21 52.0	21 55.6	20 52.2	28 4.1	88 12.8	148 21.6
29	21 52.3	21 55.9	20 52.5	29 4.2	89 13.0	149 21.7
30	21 52.5	21 56.1	20 52.7	30 4.4	90 13.1	150 21.9
31	21 52.8	21 56.4	20 52.9	31 4.5	91 13.3	151 22.0
32	21 53.0	21 56.6	20 53.2	32 4.7	92 13.4	152 22.2
33	21 53.3	21 56.9	20 53.4	33 4.8	93 13.6	153 22.3
34	21 53.5	21 57.1	20 53.7	34 5.0	94 13.7	154 22.5
35	21 53.8	21 57.4	20 53.9	35 5.1	95 13.9	155 22.6
36	21 54.0	21 57.7	20 54.1	36 5.3	96 14.0	156 22.8
37	21 54.3	21 57.9	20 54.4	37 5.4	97 14.1	157 22.9
38	21 54.5	21 58.2	20 54.6	38 5.5	98 14.3	158 23.0
39	21 54.8	21 58.4	20 54.9	39 5.7	99 14.4	159 23.2
40	21 55.0	21 58.7	20 55.1	40 5.8	100 14.6	160 23.3
41	21 55.3	21 58.9	20 55.3	41 6.0	101 14.7	161 23.5
42	21 55.5	21 59.2	20 55.6	42 6.1	102 14.9	162 23.6
43	21 55.8	21 59.4	20 55.8	43 6.3	103 15.0	163 23.8
44	21 56.0	21 59.7	20 56.0	44 6.4	104 15.2	164 23.9
45	21 56.3	21 59.9	20 56.3	45 6.6	105 15.3	165 24.1
46	21 56.5	22 .2	20 56.5	46 6.7	106 15.5	166 24.2
47	21 56.8	22 .4	20 56.8	47 6.9	107 15.6	167 24.4
48	21 57.0	22 .7	20 57.0	48 7.0	108 15.8	168 24.5
49	21 57.3	22 .9	20 57.2	49 7.1	109 15.9	169 24.6
50	21 57.5	22 1.2	20 57.5	50 7.3	110 16.0	170 24.8
51	21 57.8	22 1.4	20 57.7	51 7.4	111 16.2	171 24.9
52	21 58.0	22 1.7	20 58.0	52 7.6	112 16.3	172 25.1
53	21 58.3	22 1.9	20 58.2	53 7.7	113 16.5	173 25.2
54	21 58.5	22 2.2	20 58.4	54 7.9	114 16.6	174 25.4
55	21 58.8	22 2.4	20 58.7	55 8.0	115 16.8	175 25.5
56	21 59.0	22 2.7	20 58.9	56 8.2	116 16.9	176 25.7
57	21 59.3	22 2.9	20 59.2	57 8.3	117 17.1	177 25.8
58	21 59.5	22 3.2	20 59.4	58 8.5	118 17.2	178 26.0
59	21 59.8	22 3.4	20 59.6	59 8.6	119 17.4	179 26.1
60	22 .0	22 3.7	20 59.9	60 8.8	120 17.5	180 26.3

1 h 28 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	22	.0	22	3.7	20	59.9	0	.0	60	8.9	120	17.7
1	22	.3	22	3.9	21	.1	1	.1	61	9.0	121	17.8
2	22	.5	22	4.2	21	.3	2	.3	62	9.1	122	18.0
3	22	.8	22	4.4	21	.6	3	.4	63	9.3	123	18.1
4	22	1.0	22	4.7	21	.8	4	.6	64	9.4	124	18.3
5	22	1.3	22	4.9	21	1.1	5	.7	65	9.6	125	18.4
6	22	1.5	22	5.2	21	1.3	6	.9	66	9.7	126	18.6
7	22	1.8	22	5.4	21	1.5	7	1.0	67	9.9	127	18.7
8	22	2.0	22	5.7	21	1.8	8	1.2	68	10.0	128	18.9
9	22	2.3	22	5.9	21	2.0	9	1.3	69	10.2	129	19.0
10	22	2.5	22	6.2	21	2.3	10	1.5	70	10.3	130	19.2
11	22	2.8	22	6.4	21	2.5	11	1.6	71	10.5	131	19.3
12	22	3.0	22	6.7	21	2.7	12	1.8	72	10.6	132	19.5
13	22	3.3	22	6.9	21	3.0	13	1.9	73	10.8	133	19.6
14	22	3.5	22	7.2	21	3.2	14	2.1	74	10.9	134	19.8
15	22	3.8	22	7.4	21	3.4	15	2.2	75	11.1	135	19.9
16	22	4.0	22	7.7	21	3.7	16	2.4	76	11.2	136	20.1
17	22	4.3	22	7.9	21	3.9	17	2.5	77	11.4	137	20.2
18	22	4.5	22	8.2	21	4.2	18	2.7	78	11.5	138	20.4
19	22	4.8	22	8.4	21	4.4	19	2.8	79	11.7	139	20.5
20	22	5.0	22	8.7	21	4.6	20	3.0	80	11.8	140	20.7
21	22	5.3	22	8.9	21	4.9	21	3.1	81	11.9	141	20.8
22	22	5.5	22	9.2	21	5.1	22	3.2	82	12.1	142	20.9
23	22	5.8	22	9.4	21	5.4	23	3.4	83	12.2	143	21.1
24	22	6.0	22	9.7	21	5.6	24	3.5	84	12.4	144	21.2
25	22	6.3	22	9.9	21	5.8	25	3.7	85	12.5	145	21.4
26	22	6.5	22	10.2	21	6.1	26	3.8	86	12.7	146	21.5
27	22	6.8	22	10.4	21	6.3	27	4.0	87	12.8	147	21.7
28	22	7.0	22	10.7	21	6.5	28	4.1	88	13.0	148	21.8
29	22	7.3	22	10.9	21	6.8	29	4.3	89	13.1	149	22.0
30	22	7.5	22	11.2	21	7.0	30	4.4	90	13.3	150	22.1
31	22	7.8	22	11.4	21	7.3	31	4.6	91	13.4	151	22.3
32	22	8.0	22	11.7	21	7.5	32	4.7	92	13.6	152	22.4
33	22	8.3	22	11.9	21	7.7	33	4.9	93	13.7	153	22.6
34	22	8.5	22	12.2	21	8.0	34	5.0	94	13.9	154	22.7
35	22	8.8	22	12.4	21	8.2	35	5.2	95	14.0	155	22.9
36	22	9.0	22	12.7	21	8.5	36	5.3	96	14.2	156	23.0
37	22	9.3	22	12.9	21	8.7	37	5.5	97	14.3	157	23.2
38	22	9.5	22	13.2	21	8.9	38	5.6	98	14.5	158	23.3
39	22	9.8	22	13.4	21	9.2	39	5.8	99	14.6	159	23.5
40	22	10.0	22	13.7	21	9.4	40	5.9	100	14.8	160	23.6
41	22	10.3	22	13.9	21	9.6	41	6.0	101	14.9	161	23.7
42	22	10.5	22	14.2	21	9.9	42	6.2	102	15.0	162	23.9
43	22	10.8	22	14.4	21	10.1	43	6.3	103	15.2	163	24.0
44	22	11.0	22	14.7	21	10.4	44	6.5	104	15.3	164	24.2
45	22	11.3	22	14.9	21	10.6	45	6.6	105	15.5	165	24.3
46	22	11.5	22	15.2	21	10.8	46	6.8	106	15.6	166	24.5
47	22	11.8	22	15.4	21	11.1	47	6.9	107	15.8	167	24.6
48	22	12.0	22	15.7	21	11.3	48	7.1	108	15.9	168	24.8
49	22	12.3	22	16.0	21	11.6	49	7.2	109	16.1	169	24.9
50	22	12.5	22	16.2	21	11.8	50	7.4	110	16.2	170	25.1
51	22	12.8	22	16.5	21	12.0	51	7.5	111	16.4	171	25.2
52	22	13.0	22	16.7	21	12.3	52	7.7	112	16.5	172	25.4
53	22	13.3	22	17.0	21	12.5	53	7.8	113	16.7	173	25.5
54	22	13.5	22	17.2	21	12.8	54	8.0	114	16.8	174	25.7
55	22	13.8	22	17.5	21	13.0	55	8.1	115	17.0	175	25.8
56	22	14.0	22	17.7	21	13.2	56	8.3	116	17.1	176	26.0
57	22	14.3	22	18.0	21	13.5	57	8.4	117	17.3	177	26.1
58	22	14.5	22	18.2	21	13.7	58	8.6	118	17.4	178	26.3
59	22	14.8	22	18.5	21	13.9	59	8.7	119	17.6	179	26.4
60	22	15.0	22	18.7	21	14.2	60	8.9	120	17.7	180	26.6

1 h 29 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
S	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA (		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	22	15.0	22	18.7	21	14.2	0	.0	60	9.0	120	17.9
1	22	15.3	22	19.0	21	14.4	1	.1	61	9.1	121	18.0
2	22	15.5	22	19.2	21	14.7	2	.3	62	9.2	122	18.2
3	22	15.8	22	19.5	21	14.9	3	.4	63	9.4	123	18.3
4	22	16.0	22	19.7	21	15.1	4	.6	64	9.5	124	18.5
5	22	16.3	22	20.0	21	15.4	5	.7	65	9.7	125	18.6
6	22	16.5	22	20.2	21	15.6	6	.9	66	9.8	126	18.8
7	22	16.8	22	20.5	21	15.9	7	1.0	67	10.0	127	18.9
8	22	17.0	22	20.7	21	16.1	8	1.2	68	10.1	128	19.1
9	22	17.3	22	21.0	21	16.3	9	1.3	69	10.3	129	19.2
10	22	17.5	22	21.2	21	16.6	10	1.5	70	10.4	130	19.4
11	22	17.8	22	21.5	21	16.8	11	1.6	71	10.6	131	19.5
12	22	18.0	22	21.7	21	17.0	12	1.8	72	10.7	132	19.7
13	22	18.3	22	22.0	21	17.3	13	1.9	73	10.9	133	19.8
14	22	18.5	22	22.2	21	17.5	14	2.1	74	11.0	134	20.0
15	22	18.8	22	22.5	21	17.8	15	2.2	75	11.2	135	20.1
16	22	19.0	22	22.7	21	18.0	16	2.4	76	11.3	136	20.3
17	22	19.3	22	23.0	21	18.2	17	2.5	77	11.5	137	20.4
18	22	19.5	22	23.2	21	18.5	18	2.7	78	11.6	138	20.6
19	22	19.8	22	23.5	21	18.7	19	2.8	79	11.8	139	20.7
20	22	20.0	22	23.7	21	19.0	20	3.0	80	11.9	140	20.9
21	22	20.3	22	24.0	21	19.2	21	3.1	81	12.1	141	21.0
22	22	20.5	22	24.2	21	19.4	22	3.3	82	12.2	142	21.2
23	22	20.8	22	24.5	21	19.7	23	3.4	83	12.4	143	21.3
24	22	21.0	22	24.7	21	19.9	24	3.6	84	12.5	144	21.5
25	22	21.3	22	25.0	21	20.1	25	3.7	85	12.7	145	21.6
26	22	21.5	22	25.2	21	20.4	26	3.9	86	12.8	146	21.8
27	22	21.8	22	25.5	21	20.6	27	4.0	87	13.0	147	21.9
28	22	22.0	22	25.7	21	20.9	28	4.2	88	13.1	148	22.1
29	22	22.3	22	26.0	21	21.1	29	4.3	89	13.3	149	22.2
30	22	22.5	22	26.2	21	21.3	30	4.5	90	13.4	150	22.4
31	22	22.8	22	26.5	21	21.6	31	4.6	91	13.6	151	22.5
32	22	23.0	22	26.7	21	21.8	32	4.8	92	13.7	152	22.7
33	22	23.3	22	27.0	21	22.1	33	4.9	93	13.9	153	22.8
34	22	23.5	22	27.2	21	22.3	34	5.1	94	14.0	154	23.0
35	22	23.8	22	27.5	21	22.5	35	5.2	95	14.2	155	23.1
36	22	24.0	22	27.7	21	22.8	36	5.4	96	14.3	156	23.3
37	22	24.3	22	28.0	21	23.0	37	5.5	97	14.5	157	23.4
38	22	24.5	22	28.2	21	23.3	38	5.7	98	14.6	158	23.6
39	22	24.8	22	28.5	21	23.5	39	5.8	99	14.8	159	23.7
40	22	25.0	22	28.7	21	23.7	40	6.0	100	14.9	160	23.9
41	22	25.3	22	29.0	21	24.0	41	6.1	101	15.1	161	24.0
42	22	25.5	22	29.2	21	24.2	42	6.3	102	15.2	162	24.2
43	22	25.8	22	29.5	21	24.4	43	6.4	103	15.4	163	24.3
44	22	26.0	22	29.7	21	24.7	44	6.6	104	15.5	164	24.5
45	22	26.3	22	30.0	21	24.9	45	6.7	105	15.7	165	24.6
46	22	26.5	22	30.2	21	25.2	46	6.9	106	15.8	166	24.8
47	22	26.8	22	30.5	21	25.4	47	7.0	107	16.0	167	24.9
48	22	27.0	22	30.7	21	25.6	48	7.2	108	16.1	168	25.1
49	22	27.3	22	31.0	21	25.9	49	7.3	109	16.3	169	

1 h 30 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (°)	Δ popr.		
				Δ	popr.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	22 30.0	22 33.8	21 28.5	0	.0	60 9.1 120 18.1
1	22 30.3	22 34.0	21 28.7	1	.2	61 9.2 121 18.3
2	22 30.5	22 34.3	21 29.0	2	.3	62 9.4 122 18.4
3	22 30.8	22 34.5	21 29.2	3	.5	63 9.5 123 18.6
4	22 31.0	22 34.8	21 29.5	4	.6	64 9.7 124 18.7
5	22 31.3	22 35.0	21 29.7	5	.8	65 9.8 125 18.9
6	22 31.5	22 35.3	21 29.9	6	.9	66 10.0 126 19.0
7	22 31.8	22 35.5	21 30.2	7	1.1	67 10.1 127 19.2
8	22 32.0	22 35.8	21 30.4	8	1.2	68 10.3 128 19.3
9	22 32.3	22 36.0	21 30.6	9	1.4	69 10.4 129 19.5
10	22 32.5	22 36.3	21 30.9	10	1.5	70 10.6 130 19.6
11	22 32.8	22 36.5	21 31.1	11	1.7	71 10.7 131 19.8
12	22 33.0	22 36.8	21 31.4	12	1.8	72 10.9 132 19.9
13	22 33.3	22 37.0	21 31.6	13	2.0	73 11.0 133 20.1
14	22 33.5	22 37.3	21 31.8	14	2.1	74 11.2 134 20.2
15	22 33.8	22 37.5	21 32.1	15	2.3	75 11.3 135 20.4
16	22 34.0	22 37.8	21 32.3	16	2.4	76 11.5 136 20.5
17	22 34.3	22 38.0	21 32.6	17	2.6	77 11.6 137 20.7
18	22 34.5	22 38.3	21 32.8	18	2.7	78 11.8 138 20.8
19	22 34.8	22 38.5	21 33.0	19	2.9	79 11.9 139 21.0
20	22 35.0	22 38.8	21 33.3	20	3.0	80 12.1 140 21.1
21	22 35.3	22 39.0	21 33.5	21	3.2	81 12.2 141 21.3
22	22 35.5	22 39.3	21 33.7	22	3.3	82 12.4 142 21.4
23	22 35.8	22 39.5	21 34.0	23	3.5	83 12.5 143 21.6
24	22 36.0	22 39.8	21 34.2	24	3.6	84 12.7 144 21.7
25	22 36.3	22 40.0	21 34.5	25	3.8	85 12.8 145 21.9
26	22 36.5	22 40.3	21 34.7	26	3.9	86 13.0 146 22.0
27	22 36.8	22 40.5	21 34.9	27	4.1	87 13.1 147 22.2
28	22 37.0	22 40.8	21 35.2	28	4.2	88 13.3 148 22.3
29	22 37.3	22 41.0	21 35.4	29	4.4	89 13.4 149 22.5
30	22 37.5	22 41.3	21 35.7	30	4.5	90 13.6 150 22.6
31	22 37.8	22 41.5	21 35.9	31	4.7	91 13.7 151 22.8
32	22 38.0	22 41.8	21 36.1	32	4.8	92 13.9 152 22.9
33	22 38.3	22 42.0	21 36.4	33	5.0	93 14.0 153 23.1
34	22 38.5	22 42.3	21 36.6	34	5.1	94 14.2 154 23.2
35	22 38.8	22 42.5	21 36.9	35	5.3	95 14.3 155 23.4
36	22 39.0	22 42.8	21 37.1	36	5.4	96 14.5 156 23.5
37	22 39.3	22 43.0	21 37.3	37	5.6	97 14.6 157 23.7
38	22 39.5	22 43.3	21 37.6	38	5.7	98 14.8 158 23.8
39	22 39.8	22 43.5	21 37.8	39	5.9	99 14.9 159 24.0
40	22 40.0	22 43.8	21 38.0	40	6.0	100 15.1 160 24.1
41	22 40.3	22 44.0	21 38.3	41	6.2	101 15.2 161 24.3
42	22 40.5	22 44.3	21 38.5	42	6.3	102 15.4 162 24.4
43	22 40.8	22 44.5	21 38.8	43	6.5	103 15.5 163 24.6
44	22 41.0	22 44.8	21 39.0	44	6.6	104 15.7 164 24.7
45	22 41.3	22 45.0	21 39.2	45	6.8	105 15.8 165 24.9
46	22 41.5	22 45.3	21 39.5	46	6.9	106 16.0 166 25.0
47	22 41.8	22 45.5	21 39.7	47	7.1	107 16.1 167 25.2
48	22 42.0	22 45.8	21 40.0	48	7.2	108 16.3 168 25.3
49	22 42.3	22 46.0	21 40.2	49	7.4	109 16.4 169 25.5
50	22 42.5	22 46.3	21 40.4	50	7.5	110 16.6 170 25.6
51	22 42.8	22 46.5	21 40.7	51	7.7	111 16.7 171 25.8
52	22 43.0	22 46.8	21 40.9	52	7.8	112 16.9 172 25.9
53	22 43.3	22 47.0	21 41.1	53	8.0	113 17.0 173 26.1
54	22 43.5	22 47.3	21 41.4	54	8.1	114 17.2 174 26.2
55	22 43.8	22 47.5	21 41.6	55	8.3	115 17.3 175 26.4
56	22 44.0	22 47.8	21 41.9	56	8.4	116 17.5 176 26.5
57	22 44.3	22 48.0	21 42.1	57	8.6	117 17.6 177 26.7
58	22 44.5	22 48.3	21 42.3	58	8.7	118 17.8 178 26.8
59	22 44.8	22 48.5	21 42.6	59	8.9	119 17.9 179 27.0
60	22 45.0	22 48.8	21 42.8	60	9.1	120 18.1 180 27.2

1 h 31 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (°)	Δ popr.		
				Δ	popr.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	22 45.0	22 48.8	21 42.8	0	.0	60 9.2 120 18.3
1	22 45.3	22 49.0	21 43.1	1	.2	61 9.3 121 18.5
2	22 45.5	22 49.3	21 43.3	2	.3	62 9.5 122 18.6
3	22 45.8	22 49.5	21 43.5	3	.5	63 9.6 123 18.8
4	22 46.0	22 49.8	21 43.8	4	.6	64 9.8 124 18.9
5	22 46.3	22 50.0	21 44.0	5	.8	65 9.9 125 19.1
6	22 46.5	22 50.3	21 44.2	6	.9	66 10.1 126 19.2
7	22 46.8	22 50.5	21 44.5	7	1.1	67 10.2 127 19.4
8	22 47.0	22 50.8	21 44.7	8	1.2	68 10.4 128 19.5
9	22 47.3	22 51.0	21 45.0	9	1.4	69 10.5 129 19.7
10	22 47.5	22 51.3	21 45.2	10	1.5	70 10.7 130 19.8
11	22 47.8	22 51.5	21 45.4	11	1.7	71 10.8 131 20.0
12	22 48.0	22 51.8	21 45.7	12	1.8	72 11.0 132 20.1
13	22 48.3	22 52.1	21 45.9	13	2.0	73 11.1 133 20.3
14	22 48.5	22 52.3	21 46.2	14	2.1	74 11.3 134 20.4
15	22 48.8	22 52.6	21 46.4	15	2.3	75 11.4 135 20.6
16	22 49.0	22 52.8	21 46.6	16	2.4	76 11.6 136 20.7
17	22 49.3	22 53.1	21 46.9	17	2.6	77 11.7 137 20.9
18	22 49.5	22 53.3	21 47.1	18	2.7	78 11.9 138 21.0
19	22 49.8	22 53.6	21 47.4	19	2.9	79 12.0 139 21.2
20	22 50.0	22 53.8	21 47.6	20	3.1	80 12.2 140 21.4
21	22 50.3	22 54.1	21 47.8	21	3.2	81 12.4 141 21.5
22	22 50.5	22 54.3	21 48.1	22	3.4	82 12.5 142 21.7
23	22 50.8	22 54.6	21 48.3	23	3.5	83 12.7 143 21.8
24	22 51.0	22 54.8	21 48.5	24	3.7	84 12.8 144 22.0
25	22 51.3	22 55.1	21 48.8	25	3.8	85 13.0 145 22.1
26	22 51.5	22 55.3	21 49.0	26	4.0	86 13.1 146 22.3
27	22 51.8	22 55.6	21 49.3	27	4.1	87 13.3 147 22.4
28	22 52.0	22 55.8	21 49.5	28	4.3	88 13.4 148 22.6
29	22 52.3	22 56.1	21 49.7	29	4.4	89 13.6 149 22.7
30	22 52.5	22 56.3	21 50.0	30	4.6	90 13.7 150 22.9
31	22 52.8	22 56.6	21 50.2	31	4.7	91 13.9 151 23.0
32	22 53.0	22 56.8	21 50.5	32	4.9	92 14.0 152 23.2
33	22 53.3	22 57.1	21 50.7	33	5.0	93 14.2 153 23.3
34	22 53.5	22 57.3	21 50.9	34	5.2	94 14.3 154 23.5
35	22 53.8	22 57.6	21 51.2	35	5.3	95 14.5 155 23.6
36	22 54.0	22 57.8	21 51.4	36	5.5	96 14.6 156 23.8
37	22 54.3	22 58.1	21 51.6	37	5.6	97 14.8 157 23.9
38	22 54.5	22 58.3	21 51.9	38	5.8	98 14.9 158 24.1
39	22 54.8	22 58.6	21 52.1	39	5.9	99 15.1 159 24.2
40	22 55.0	22 58.8	21 52.4	40	6.1	100 15.3 160 24.4
41	22 55.3	22 59.1	21 52.6	41	6.3	101 15.4 161 24.6
42	22 55.5	22 59.3	21 52.8	42	6.4	102 15.6 162 24.7
43	22 55.8	22 59.6	21 53.1	43	6.6	103 15.7 163 24.9
44	22 56.0	22 59.8	21 53.3	44	6.7	104 15.9 164 25.0
45	22 56.3	23 .1	21 53.6	45	6.9	105 16.0 165 25.2
46	22 56.5	23 .3	21 53.8	46	7.0	106 16.2 166 25.3
47	22 56.8	23 .6	21 54.0	47	7.2	107 16.3 167 25.5
48	22 57.0	23 .8	21 54.3	48	7.3	108 16.5 168 25.6
49	22 57.3	23 1.1	21 54.5	49	7.5	109 16.6 169 25.8
50	22 57.5	23 1.3	21 54.7	50	7.6	110 16.8 170 25.9
51	22 57.8	23 1.6	21 55.0	51	7.8	111 16.9 171 26.1
52	22 58.0	23 1.8	21 55.2	52	7.9	112 17.1 172 26.2
53	22 58.3	23 2.1	21 55.5	53	8.1	113 17.2 173 26.4
54	22 58.5	23 2.3	21 55.7	54	8.2	114 17.4 174 26.5
55	22 58.8	23 2.6	21 55.9	55	8.4	115 17.5 175 26.7
56	22 59.0	23 2.8	21 56.2	56	8.5	116 17.7 176 26.8
57	22 59.3	23 3.1	21 56.4	57	8.7	117 17.8 177 27.0
58	22 59.5	23 3.3	21 56.7	58	8.8	118 18.0 178 27.1
59	22 59.8	23 3.6	21 56.9	59	9.0	119 18.1 179 27.3
60	23 .0	23 3.8	21 57.1	60	9.2	120 18.3 180 27.5

1 h 32 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	23	.0	23	3.8	21	57.1	0	.0	60	9.3	120	18.5
1	23	.3	23	4.1	21	57.4	1	.2	61	9.4	121	18.7
2	23	.5	23	4.3	21	57.6	2	.3	62	9.6	122	18.8
3	23	.8	23	4.6	21	57.8	3	.5	63	9.7	123	19.0
4	23	1.0	23	4.8	21	58.1	4	.6	64	9.9	124	19.1
5	23	1.3	23	5.1	21	58.3	5	.8	65	10.0	125	19.3
6	23	1.5	23	5.3	21	58.6	6	.9	66	10.2	126	19.4
7	23	1.8	23	5.6	21	58.8	7	1.1	67	10.3	127	19.6
8	23	2.0	23	5.8	21	59.0	8	1.2	68	10.5	128	19.7
9	23	2.3	23	6.1	21	59.3	9	1.4	69	10.6	129	19.9
10	23	2.5	23	6.3	21	59.5	10	1.5	70	10.8	130	20.0
11	23	2.8	23	6.6	21	59.8	11	1.7	71	10.9	131	20.2
12	23	3.0	23	6.8	21	60.0	12	1.9	72	11.1	132	20.4
13	23	3.3	23	7.1	22	.2	13	2.0	73	11.3	133	20.5
14	23	3.5	23	7.3	22	.5	14	2.2	74	11.4	134	20.7
15	23	3.8	23	7.6	22	.7	15	2.3	75	11.6	135	20.8
16	23	4.0	23	7.8	22	1.0	16	2.5	76	11.7	136	21.0
17	23	4.3	23	8.1	22	1.2	17	2.6	77	11.9	137	21.1
18	23	4.5	23	8.3	22	1.4	18	2.8	78	12.0	138	21.3
19	23	4.8	23	8.6	22	1.7	19	2.9	79	12.2	139	21.4
20	23	5.0	23	8.8	22	1.9	20	3.1	80	12.3	140	21.6
21	23	5.3	23	9.1	22	2.1	21	3.2	81	12.5	141	21.7
22	23	5.5	23	9.3	22	2.4	22	3.4	82	12.6	142	21.9
23	23	5.8	23	9.6	22	2.6	23	3.5	83	12.8	143	22.0
24	23	6.0	23	9.9	22	2.9	24	3.7	84	13.0	144	22.2
25	23	6.3	23	10.1	22	3.1	25	3.9	85	13.1	145	22.4
26	23	6.5	23	10.4	22	3.3	26	4.0	86	13.3	146	22.5
27	23	6.8	23	10.6	22	3.6	27	4.2	87	13.4	147	22.7
28	23	7.0	23	10.9	22	3.8	28	4.3	88	13.6	148	22.8
29	23	7.3	23	11.1	22	4.1	29	4.5	89	13.7	149	23.0
30	23	7.5	23	11.4	22	4.3	30	4.6	90	13.9	150	23.1
31	23	7.8	23	11.6	22	4.5	31	4.8	91	14.0	151	23.3
32	23	8.0	23	11.9	22	4.8	32	4.9	92	14.2	152	23.4
33	23	8.3	23	12.1	22	5.0	33	5.1	93	14.3	153	23.6
34	23	8.5	23	12.4	22	5.2	34	5.2	94	14.5	154	23.7
35	23	8.8	23	12.6	22	5.5	35	5.4	95	14.6	155	23.9
36	23	9.0	23	12.9	22	5.7	36	5.6	96	14.8	156	24.1
37	23	9.3	23	13.1	22	6.0	37	5.7	97	15.0	157	24.2
38	23	9.5	23	13.4	22	6.2	38	5.9	98	15.1	158	24.4
39	23	9.8	23	13.6	22	6.4	39	6.0	99	15.3	159	24.5
40	23	10.0	23	13.9	22	6.7	40	6.2	100	15.4	160	24.7
41	23	10.3	23	14.1	22	6.9	41	6.3	101	15.6	161	24.8
42	23	10.5	23	14.4	22	7.2	42	6.5	102	15.7	162	25.0
43	23	10.8	23	14.6	22	7.4	43	6.6	103	15.9	163	25.1
44	23	11.0	23	14.9	22	7.6	44	6.8	104	16.0	164	25.3
45	23	11.3	23	15.1	22	7.9	45	6.9	105	16.2	165	25.4
46	23	11.5	23	15.4	22	8.1	46	7.1	106	16.3	166	25.6
47	23	11.8	23	15.6	22	8.3	47	7.2	107	16.5	167	25.7
48	23	12.0	23	15.9	22	8.6	48	7.4	108	16.7	168	25.9
49	23	12.3	23	16.1	22	8.8	49	7.6	109	16.8	169	26.1
50	23	12.5	23	16.4	22	9.1	50	7.7	110	17.0	170	26.2
51	23	12.8	23	16.6	22	9.3	51	7.9	111	17.1	171	26.4
52	23	13.0	23	16.9	22	9.5	52	8.0	112	17.3	172	26.5
53	23	13.3	23	17.1	22	9.8	53	8.2	113	17.4	173	26.7
54	23	13.5	23	17.4	22	10.0	54	8.3	114	17.6	174	26.8
55	23	13.8	23	17.6	22	10.3	55	8.5	115	17.7	175	27.0
56	23	14.0	23	17.9	22	10.5	56	8.6	116	17.9	176	27.1
57	23	14.3	23	18.1	22	10.7	57	8.8	117	18.0	177	27.3
58	23	14.5	23	18.4	22	11.0	58	8.9	118	18.2	178	27.4
59	23	14.8	23	18.6	22	11.2	59	9.1	119	18.3	179	27.6
60	23	15.0	23	18.9	22	11.5	60	9.3	120	18.5	180	27.8

1 h 33 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta								
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑		MESECA ☾		Δ popr.	Δ popr.	Δ popr.			
	o	'	o	'	o	'						
0	23	15.0	23	18.9	22	11.5	0	.0	60	9.4	120	18.7
1	23	15.3	23	19.1	22	11.7	1	.2	61	9.5	121	18.9
2	23	15.5	23	19.4	22	11.9	2	.3	62	9.7	122	19.0
3	23	15.8	23	19.6	22	12.2	3	.5	63	9.8	123	19.2
4	23	16.0	23	19.9	22	12.4	4	.6	64	10.0	124	19.3
5	23	16.3	23	20.1	22	12.6	5	.8	65	10.1	125	19.5
6	23	16.5	23	20.4	22	12.9	6	.9	66	10.3	126	19.6
7	23	16.8	23	20.6	22	13.1	7	1.1	67	10.4	127	19.8
8	23	17.0	23	20.9	22	13.4	8	1.2	68	10.6	128	19.9
9	23	17.3	23	21.1	22	13.6	9	1.4	69	10.8	129	20.1
10	23	17.5	23	21.4	22	13.8	10	1.6	70	10.9	130	20.3
11	23	17.8	23	21.6	22	14.1	11	1.7	71	11.1	131	20.4
12	23	18.0	23	21.9	22	14.3	12	1.9	72	11.2	132	20.6
13	23	18.3	23	22.1	22	14.6	13	2.0	73	11.4	133	20.7
14	23	18.5	23	22.4	22	14.8	14	2.2	74	11.5	134	20.9
15	23	18.8	23	22.6	22	15.0	15	2.3	75	11.7	135	21.0
16	23	19.0	23	22.9	22	15.3	16	2.5	76	11.8	136	21.2
17	23	19.3	23	23.1	22	15.5	17	2.6	77	12.0	137	21.3
18	23	19.5	23	23.4	22	15.7	18	2.8	78	12.2	138	21.5
19	23	19.8	23	23.6	22	16.0	19	3.0	79	12.3	139	21.7
20	23	20.0	23	23.9	22	16.2	20	3.1	80	12.5	140	21.8
21	23	20.3	23	24.1	22	16.5	21	3.3	81	12.6	141	22.0
22	23	20.5	23	24.4	22	16.7	22	3.4	82	12.8	142	22.1
23	23	20.8	23	24.6	22	16.9	23	3.6	83	12.9	143	22.3
24	23	21.0	23	24.9	22	17.2	24	3.7	84	13.1	144	22.4
25	23	21.3	23	25.1	22	17.4	25	3.9	85	13.2	145	22.6
26	23	21.5	23	25.4	22	17.7	26	4.1	86	13.4	146	22.8
27	23	21.8	23	25.6	22	17.9	27	4.2	87	13.6	147	22.9
28	23	22.0	23	25.9	22	18.1	28	4.4	88	13.7	148	23.1
29	23	22.3	23	26.1	22	18.4	29	4.5	89	13.9	149	23.2
30	23	22.5	23	26.4	22	18.6	30	4.7	90	14.0	150	23.4
31	23	22.8	23	26.6	22	18.8	31	4.8	91	14.2	151	23.5
32	23	23.0	23	26.9	22	19.1	32	5.0	92	14.3	152	23.7
33	23	23.3	23	27.1	22	19.3	33	5.1	93	14.5	153	23.8
34	23	23.5	23	27.4	22	19.6	34	5.3	94	14.6	154	24.0
35	23	23.8	23	27.6	22	19.8	35	5.5	95	14.8	155	24.2
36	23	24.0	23	27.9	22	20.0	36	5.6	96	15.0	156	24.3
37	23	24.3	23	28.2	22	20.3	37	5.8	97	15.1	157	24.5
38	23	24.5	23	28.4	22	20.5	38	5.9	98	15.3	158	24.6
39	23	24.8	23	28.7	22	20.8	39	6.1	99	15.4	159	24.8
40	23	25.0	23	28.9	22	21.0	40	6.2	100	15.6	160	24.9
41	23	25.3	23	29.2	22	21.2	41	6.4	101	15.7	161	25.1
42	23	25.5	23	29.4	22	21.5	42	6.5	102	15.9	162	25.2
43	23	25.8	23	29.7	22	21.7	43	6.7	103	16.1	163	25.4
44	23	26.0	23	29.9	22	21.9	44	6.9	104	16.2	164	25.6
45	23	26.3	23	30.2	22	22.2	45	7.0	105	16.4	165	25.7
46	23	26.5	23	30.4	22	22.4	46	7.2	106	16.5	166	25.9
47	23	26.8	23	30.7	22	22.7	47	7.3	107	16.7	167	26.0
48	23	27.0	23	30.9	22	22.9	48	7.5	108	16.8	168	26.2
49	23	27.3	23	31.2	22	23.1	49	7.6				

1 h 34 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	23	30.0	23	33.9	22	25.8	0 .0	60 9.5	120 18.9
1	23	30.3	23	34.2	22	26.0	1 .2	61 9.6	121 19.1
2	23	30.5	23	34.4	22	26.2	2 .3	62 9.8	122 19.2
3	23	30.8	23	34.7	22	26.5	3 .5	63 9.9	123 19.4
4	23	31.0	23	34.9	22	26.7	4 .6	64 10.1	124 19.5
5	23	31.3	23	35.2	22	27.0	5 .8	65 10.2	125 19.7
6	23	31.5	23	35.4	22	27.2	6 .9	66 10.4	126 19.8
7	23	31.8	23	35.7	22	27.4	7 1.1	67 10.6	127 20.0
8	23	32.0	23	35.9	22	27.7	8 1.3	68 10.7	128 20.2
9	23	32.3	23	36.2	22	27.9	9 1.4	69 10.9	129 20.3
10	23	32.5	23	36.4	22	28.2	10 1.6	70 11.0	130 20.5
11	23	32.8	23	36.7	22	28.4	11 1.7	71 11.2	131 20.6
12	23	33.0	23	36.9	22	28.6	12 1.9	72 11.3	132 20.8
13	23	33.3	23	37.2	22	28.9	13 2.0	73 11.5	133 20.9
14	23	33.5	23	37.4	22	29.1	14 2.2	74 11.7	134 21.1
15	23	33.8	23	37.7	22	29.3	15 2.4	75 11.8	135 21.3
16	23	34.0	23	37.9	22	29.6	16 2.5	76 12.0	136 21.4
17	23	34.3	23	38.2	22	29.8	17 2.7	77 12.1	137 21.6
18	23	34.5	23	38.4	22	30.1	18 2.8	78 12.3	138 21.7
19	23	34.8	23	38.7	22	30.3	19 3.0	79 12.4	139 21.9
20	23	35.0	23	38.9	22	30.5	20 3.2	80 12.6	140 22.1
21	23	35.3	23	39.2	22	30.8	21 3.3	81 12.8	141 22.2
22	23	35.5	23	39.4	22	31.0	22 3.5	82 12.9	142 22.4
23	23	35.8	23	39.7	22	31.3	23 3.6	83 13.1	143 22.5
24	23	36.0	23	39.9	22	31.5	24 3.8	84 13.2	144 22.7
25	23	36.3	23	40.2	22	31.7	25 3.9	85 13.4	145 22.8
26	23	36.5	23	40.4	22	32.0	26 4.1	86 13.5	146 23.0
27	23	36.8	23	40.7	22	32.2	27 4.3	87 13.7	147 23.2
28	23	37.0	23	40.9	22	32.4	28 4.4	88 13.9	148 23.3
29	23	37.3	23	41.2	22	32.7	29 4.6	89 14.0	149 23.5
30	23	37.5	23	41.4	22	32.9	30 4.7	90 14.2	150 23.6
31	23	37.8	23	41.7	22	33.2	31 4.9	91 14.3	151 23.8
32	23	38.0	23	41.9	22	33.4	32 5.0	92 14.5	152 23.9
33	23	38.3	23	42.2	22	33.6	33 5.2	93 14.6	153 24.1
34	23	38.5	23	42.4	22	33.9	34 5.4	94 14.8	154 24.3
35	23	38.8	23	42.7	22	34.1	35 5.5	95 15.0	155 24.4
36	23	39.0	23	42.9	22	34.4	36 5.7	96 15.1	156 24.6
37	23	39.3	23	43.2	22	34.6	37 5.8	97 15.3	157 24.7
38	23	39.5	23	43.4	22	34.8	38 6.0	98 15.4	158 24.9
39	23	39.8	23	43.7	22	35.1	39 6.1	99 15.6	159 25.0
40	23	40.0	23	43.9	22	35.3	40 6.3	100 15.8	160 25.2
41	23	40.3	23	44.2	22	35.5	41 6.5	101 15.9	161 25.4
42	23	40.5	23	44.4	22	35.8	42 6.6	102 16.1	162 25.5
43	23	40.8	23	44.7	22	36.0	43 6.8	103 16.2	163 25.7
44	23	41.0	23	44.9	22	36.3	44 6.9	104 16.4	164 25.8
45	23	41.3	23	45.2	22	36.5	45 7.1	105 16.5	165 26.0
46	23	41.5	23	45.4	22	36.7	46 7.2	106 16.7	166 26.1
47	23	41.8	23	45.7	22	37.0	47 7.4	107 16.9	167 26.3
48	23	42.0	23	46.0	22	37.2	48 7.6	108 17.0	168 26.5
49	23	42.3	23	46.2	22	37.5	49 7.7	109 17.2	169 26.6
50	23	42.5	23	46.5	22	37.7	50 7.9	110 17.3	170 26.8
51	23	42.8	23	46.7	22	37.9	51 8.0	111 17.5	171 26.9
52	23	43.0	23	47.0	22	38.2	52 8.2	112 17.6	172 27.1
53	23	43.3	23	47.2	22	38.4	53 8.3	113 17.8	173 27.2
54	23	43.5	23	47.5	22	38.7	54 8.5	114 18.0	174 27.4
55	23	43.8	23	47.7	22	38.9	55 8.7	115 18.1	175 27.6
56	23	44.0	23	48.0	22	39.1	56 8.8	116 18.3	176 27.7
57	23	44.3	23	48.2	22	39.4	57 9.0	117 18.4	177 27.9
58	23	44.5	23	48.5	22	39.6	58 9.1	118 18.6	178 28.0
59	23	44.8	23	48.7	22	39.8	59 9.3	119 18.7	179 28.2
60	23	45.0	23	49.0	22	40.1	60 9.5	120 18.9	180 28.4

1 h 35 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	23	45.0	23	49.0	22	40.1	0 .0	60 9.6	120 19.1
1	23	45.3	23	49.2	22	40.3	1 .2	61 9.7	121 19.3
2	23	45.5	23	49.5	22	40.6	2 .3	62 9.9	122 19.4
3	23	45.8	23	49.7	22	40.8	3 .5	63 10.0	123 19.6
4	23	46.0	23	50.0	22	41.0	4 .6	64 10.2	124 19.7
5	23	46.3	23	50.2	22	41.3	5 .8	65 10.3	125 19.9
6	23	46.5	23	50.5	22	41.5	6 1.0	66 10.5	126 20.1
7	23	46.8	23	50.7	22	41.8	7 1.1	67 10.7	127 20.2
8	23	47.0	23	51.0	22	42.0	8 1.3	68 10.8	128 20.4
9	23	47.3	23	51.2	22	42.2	9 1.4	69 11.0	129 20.5
10	23	47.5	23	51.5	22	42.5	10 1.6	70 11.1	130 20.7
11	23	47.8	23	51.7	22	42.7	11 1.8	71 11.3	131 20.9
12	23	48.0	23	52.0	22	42.9	12 1.9	72 11.5	132 21.0
13	23	48.3	23	52.2	22	43.2	13 2.1	73 11.6	133 21.2
14	23	48.5	23	52.5	22	43.4	14 2.2	74 11.8	134 21.3
15	23	48.8	23	52.7	22	43.7	15 2.4	75 11.9	135 21.5
16	23	49.0	23	53.0	22	43.9	16 2.5	76 12.1	136 21.6
17	23	49.3	23	53.2	22	44.1	17 2.7	77 12.3	137 21.8
18	23	49.5	23	53.5	22	44.4	18 2.9	78 12.4	138 22.0
19	23	49.8	23	53.7	22	44.6	19 3.0	79 12.6	139 22.1
20	23	50.0	23	54.0	22	44.9	20 3.2	80 12.7	140 22.3
21	23	50.3	23	54.2	22	45.1	21 3.3	81 12.9	141 22.4
22	23	50.5	23	54.5	22	45.3	22 3.5	82 13.1	142 22.6
23	23	50.8	23	54.7	22	45.6	23 3.7	83 13.2	143 22.8
24	23	51.0	23	55.0	22	45.8	24 3.8	84 13.4	144 22.9
25	23	51.3	23	55.2	22	46.0	25 4.0	85 13.5	145 23.1
26	23	51.5	23	55.5	22	46.3	26 4.1	86 13.7	146 23.2
27	23	51.8	23	55.7	22	46.5	27 4.3	87 13.8	147 23.4
28	23	52.0	23	56.0	22	46.8	28 4.5	88 14.0	148 23.6
29	23	52.3	23	56.2	22	47.0	29 4.6	89 14.2	149 23.7
30	23	52.5	23	56.5	22	47.2	30 4.8	90 14.3	150 23.9
31	23	52.8	23	56.7	22	47.5	31 4.9	91 14.5	151 24.0
32	23	53.0	23	57.0	22	47.7	32 5.1	92 14.6	152 24.2
33	23	53.3	23	57.2	22	48.0	33 5.3	93 14.8	153 24.4
34	23	53.5	23	57.5	22	48.2	34 5.4	94 15.0	154 24.5
35	23	53.8	23	57.7	22	48.4	35 5.6	95 15.1	155 24.7
36	23	54.0	23	58.0	22	48.7	36 5.7	96 15.3	156 24.8
37	23	54.3	23	58.2	22	48.9	37 5.9	97 15.4	157 25.0
38	23	54.5	23	58.5	22	49.2	38 6.0	98 15.6	158 25.1
39	23	54.8	23	58.7	22	49.4	39 6.2	99 15.8	159 25.3
40	23	55.0	23	59.0	22	49.6	40 6.4	100 15.9	160 25.5
41	23	55.3	23	59.2	22	49.9	41 6.5	101 16.1	161 25.6
42	23	55.5	23	59.5	22	50.1	42 6.7	102 16.2	162 25.8
43	23	55.8	23	59.7	22	50.3	43 6.8	103 16.4	163 25.9
44	23	56.0	23	60.0	22	50.6	44 7.0	104 16.6	164 26.1
45	23	56.3	24	.2	22	50.8	45 7.2	105 16.7	165 26.3
46	23	56.5	24	.5	22	51.1	46 7.3	106 16.9	166 26.4
47	23	56.8	24	.7	22	51.3	47 7.5	107 17.0	167 26.6
48	23	57.0	24	1.0	22	51.5	48 7.6	108 17.2	168 26.7
49	23	57.3	24	1.2	22	51.8	49 7.8	109 17.3	169 26.9
50	23	57.5	24	1.5	22	52.0	50 8.0	110 17.5	170 27.1
51	23	57.8	24	1.7	22	52.3	51 8.1	111 17.7	171 27.2
52	23	58.0	24	2.0	22	52.5	52 8.3	112 17.8	172 27.4
53	23	58.3	24	2.2	22	52.7	53 8.4	113 18.0	173 27.5
54	23	58.5	24	2.5	22	53.0	54 8.6	114 18.1	174 27.7
55	23	58.8	24	2.7	22	53.2	55 8.8	115 18.3	175 27.9
56	23	59.0	24	3.0	22	53.4	56 8.9	116 18.5	176 28.0
57	23	59.3	24	3.2	22	53.7	57 9.1	117 18.6	177 28.2
58	23	59.5	24	3.5	22	53.9	58 9.2	118 18.8	178 28.3
59	23	59.8	24	3.7	22	54.2	59 9.4	119 18.9	179 28.5
60	24	.0	24	4.0	22	54.4	60 9.6	120 19.1	180 28.7

1 h 36 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	24	.0	24	4.0	22	54.4	0 .0	60 9.7	120 19.3
1	24	.3	24	4.3	22	54.6	1 .2	61 9.8	121 19.5
2	24	.5	24	4.5	22	54.9	2 .3	62 10.0	122 19.6
3	24	.8	24	4.8	22	55.1	3 .5	63 10.1	123 19.8
4	24	1.0	24	5.0	22	55.4	4 .6	64 10.3	124 19.9
5	24	1.3	24	5.3	22	55.6	5 .8	65 10.5	125 20.1
6	24	1.5	24	5.5	22	55.8	6 1.0	66 10.6	126 20.3
7	24	1.8	24	5.8	22	56.1	7 1.1	67 10.8	127 20.4
8	24	2.0	24	6.0	22	56.3	8 1.3	68 10.9	128 20.6
9	24	2.3	24	6.3	22	56.5	9 1.4	69 11.1	129 20.7
10	24	2.5	24	6.5	22	56.8	10 1.6	70 11.3	130 20.9
11	24	2.8	24	6.8	22	57.0	11 1.8	71 11.4	131 21.1
12	24	3.0	24	7.0	22	57.3	12 1.9	72 11.6	132 21.2
13	24	3.3	24	7.3	22	57.5	13 2.1	73 11.7	133 21.4
14	24	3.5	24	7.5	22	57.7	14 2.3	74 11.9	134 21.6
15	24	3.8	24	7.8	22	58.0	15 2.4	75 12.1	135 21.7
16	24	4.0	24	8.0	22	58.2	16 2.6	76 12.2	136 21.9
17	24	4.3	24	8.3	22	58.5	17 2.7	77 12.4	137 22.0
18	24	4.5	24	8.5	22	58.7	18 2.9	78 12.5	138 22.2
19	24	4.8	24	8.8	22	58.9	19 3.1	79 12.7	139 22.4
20	24	5.0	24	9.0	22	59.2	20 3.2	80 12.9	140 22.5
21	24	5.3	24	9.3	22	59.4	21 3.4	81 13.0	141 22.7
22	24	5.5	24	9.5	22	59.6	22 3.5	82 13.2	142 22.8
23	24	5.8	24	9.8	22	59.9	23 3.7	83 13.3	143 23.0
24	24	6.0	24	10.0	23	.1	24 3.9	84 13.5	144 23.2
25	24	6.3	24	10.3	23	.4	25 4.0	85 13.7	145 23.3
26	24	6.5	24	10.5	23	.6	26 4.2	86 13.8	146 23.5
27	24	6.8	24	10.8	23	.8	27 4.3	87 14.0	147 23.6
28	24	7.0	24	11.0	23	1.1	28 4.5	88 14.2	148 23.8
29	24	7.3	24	11.3	23	1.3	29 4.7	89 14.3	149 24.0
30	24	7.5	24	11.5	23	1.6	30 4.8	90 14.5	150 24.1
31	24	7.8	24	11.8	23	1.8	31 5.0	91 14.6	151 24.3
32	24	8.0	24	12.0	23	2.0	32 5.1	92 14.8	152 24.4
33	24	8.3	24	12.3	23	2.3	33 5.3	93 15.0	153 24.6
34	24	8.5	24	12.5	23	2.5	34 5.5	94 15.1	154 24.8
35	24	8.8	24	12.8	23	2.8	35 5.6	95 15.3	155 24.9
36	24	9.0	24	13.0	23	3.0	36 5.8	96 15.4	156 25.1
37	24	9.3	24	13.3	23	3.2	37 6.0	97 15.6	157 25.3
38	24	9.5	24	13.5	23	3.5	38 6.1	98 15.8	158 25.4
39	24	9.8	24	13.8	23	3.7	39 6.3	99 15.9	159 25.6
40	24	10.0	24	14.0	23	3.9	40 6.4	100 16.1	160 25.7
41	24	10.3	24	14.3	23	4.2	41 6.6	101 16.2	161 25.9
42	24	10.5	24	14.5	23	4.4	42 6.8	102 16.4	162 26.1
43	24	10.8	24	14.8	23	4.7	43 6.9	103 16.6	163 26.2
44	24	11.0	24	15.0	23	4.9	44 7.1	104 16.7	164 26.4
45	24	11.3	24	15.3	23	5.1	45 7.2	105 16.9	165 26.5
46	24	11.5	24	15.5	23	5.4	46 7.4	106 17.0	166 26.7
47	24	11.8	24	15.8	23	5.6	47 7.6	107 17.2	167 26.9
48	24	12.0	24	16.0	23	5.9	48 7.7	108 17.4	168 27.0
49	24	12.3	24	16.3	23	6.1	49 7.9	109 17.5	169 27.2
50	24	12.5	24	16.5	23	6.3	50 8.0	110 17.7	170 27.3
51	24	12.8	24	16.8	23	6.6	51 8.2	111 17.9	171 27.5
52	24	13.0	24	17.0	23	6.8	52 8.4	112 18.0	172 27.7
53	24	13.3	24	17.3	23	7.0	53 8.5	113 18.2	173 27.8
54	24	13.5	24	17.5	23	7.3	54 8.7	114 18.3	174 28.0
55	24	13.8	24	17.8	23	7.5	55 8.8	115 18.5	175 28.1
56	24	14.0	24	18.0	23	7.8	56 9.0	116 18.7	176 28.3
57	24	14.3	24	18.3	23	8.0	57 9.2	117 18.8	177 28.5
58	24	14.5	24	18.5	23	8.2	58 9.3	118 19.0	178 28.6
59	24	14.8	24	18.8	23	8.5	59 9.5	119 19.1	179 28.8
60	24	15.0	24	19.0	23	8.7	60 9.7	120 19.3	180 29.0

1 h 37 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	24	15.0	24	19.0	23	8.7	0 .0	60 9.8	120 19.5
1	24	15.3	24	19.3	23	9.0	1 .2	61 9.9	121 19.7
2	24	15.5	24	19.5	23	9.2	2 .3	62 10.1	122 19.8
3	24	15.8	24	19.8	23	9.4	3 .5	63 10.2	123 20.0
4	24	16.0	24	20.0	23	9.7	4 .7	64 10.4	124 20.2
5	24	16.3	24	20.3	23	9.9	5 .8	65 10.6	125 20.3
6	24	16.5	24	20.5	23	10.1	6 1.0	66 10.7	126 20.5
7	24	16.8	24	20.8	23	10.4	7 1.1	67 10.9	127 20.6
8	24	17.0	24	21.0	23	10.6	8 1.3	68 11.1	128 20.8
9	24	17.3	24	21.3	23	10.9	9 1.5	69 11.2	129 21.0
10	24	17.5	24	21.5	23	11.1	10 1.6	70 11.4	130 21.1
11	24	17.8	24	21.8	23	11.3	11 1.8	71 11.5	131 21.3
12	24	18.0	24	22.1	23	11.6	12 2.0	72 11.7	132 21.5
13	24	18.3	24	22.3	23	11.8	13 2.1	73 11.9	133 21.6
14	24	18.5	24	22.6	23	12.1	14 2.3	74 12.0	134 21.8
15	24	18.8	24	22.8	23	12.3	15 2.4	75 12.2	135 21.9
16	24	19.0	24	23.1	23	12.5	16 2.6	76 12.4	136 22.1
17	24	19.3	24	23.3	23	12.8	17 2.8	77 12.5	137 22.3
18	24	19.5	24	23.6	23	13.0	18 2.9	78 12.7	138 22.4
19	24	19.8	24	23.8	23	13.3	19 3.1	79 12.8	139 22.6
20	24	20.0	24	24.1	23	13.5	20 3.3	80 13.0	140 22.8
21	24	20.3	24	24.3	23	13.7	21 3.4	81 13.2	141 22.9
22	24	20.5	24	24.6	23	14.0	22 3.6	82 13.3	142 23.1
23	24	20.8	24	24.8	23	14.2	23 3.7	83 13.5	143 23.2
24	24	21.0	24	25.1	23	14.4	24 3.9	84 13.7	144 23.4
25	24	21.3	24	25.3	23	14.7	25 4.1	85 13.8	145 23.6
26	24	21.5	24	25.6	23	14.9	26 4.2	86 14.0	146 23.7
27	24	21.8	24	25.8	23	15.2	27 4.4	87 14.1	147 23.9
28	24	22.0	24	26.1	23	15.4	28 4.6	88 14.3	148 24.1
29	24	22.3	24	26.3	23	15.6	29 4.7	89 14.5	149 24.2
30	24	22.5	24	26.6	23	15.9	30 4.9	90 14.6	150 24.4
31	24	22.8	24	26.8	23	16.1	31 5.0	91 14.8	151 24.5
32	24	23.0	24	27.1	23	16.4	32 5.2	92 15.0	152 24.7
33	24	23.3	24	27.3	23	16.6	33 5.4	93 15.1	153 24.9
34	24	23.5	24	27.6	23	16.8	34 5.5	94 15.3	154 25.0
35	24	23.8	24	27.8	23	17.1	35 5.7	95 15.4	155 25.2
36	24	24.0	24	28.1	23	17.3	36 5.9	96 15.6	156 25.4
37	24	24.3	24	28.3	23	17.5	37 6.0	97 15.8	157 25.5
38	24	24.5	24	28.6	23	17.8	38 6.2	98 15.9	158 25.7
39	24	24.8	24	28.8	23	18.0	39 6.3	99 16.1	159 25.8
40	24	25.0	24	29.1	23	18.3	40 6.5	100 16.3	160 26.0
41	24	25.3	24	29.3	23	18.5	41 6.7	101 16.4	161 26.2
42	24	25.5	24	29.6	23	18.7	42 6.8	102 16.6	162 26.3
43	24	25.8	24	29.8	23	19.0	43 7.0	103 16.7	163 26.5
44	24	26.0	24	30.1	23	19.2	44 7.2	104 16.9	164 26.7
45	24	26.3	24	30.3	23	19.5	45 7.3	105 17.1	165 26.8
46	24	26.5	24	30.6	23	19.7	46 7.5	106 17.2	166 27.0
47	24	26.8	24	30.8	23	19.9	47 7.6	107 17.4	167 27.1
48	24	27.0	24	31.1	23	20.2	48 7.8	108 17.6	168 27.3
49	24	27.3	24	31.3	23	20.4	49 8.0	109 17.7	169 27.5
50	24	27.5	24	31.6	23	20.6	50 8.1	110 17.9	170 27.6
51	24	27.8	24	31.8	23	20.9	51 8.3	111 18.0	171 27.8
52	24	28.0	24	32.1	23	21.1	52 8.5	112 18.2	172 28.0
53	24	28.3	24	32.3	23	21.4	53 8.6	113 18.4	173 28.1
54	24	28.5	24	32.6	23	21.6	54 8.8	114 18.5	174 28.3
55	24	28.8	24	32.8	23	21.8	55 8.9	115 18.7	175 28.4
56	24	29.0	24	33.1	23	22.1	56 9.1	116 18.9	176 28.6
57	24	29.3	24	33.3	23	22.3	57 9.3	117 19.0	177 28.8
58	24	29.5	24	33.6	23	22.6	58 9.4	118 19.2	178 28.9
59	24	29.8	24	33.8	23	22.8	59 9.6	119 19.3	179 29.1
60	24	30.0	24	34.1	23	23.0	60 9.8	120 19.5	180 29.3

1 h 38 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	24	30.0	24	34.1	23	23.0	0 .0	60 9.9	120 19.7
1	24	30.3	24	34.3	23	23.3	1 .2	61 10.0	121 19.9
2	24	30.5	24	34.6	23	23.5	2 .3	62 10.2	122 20.0
3	24	30.8	24	34.8	23	23.7	3 .5	63 10.3	123 20.2
4	24	31.0	24	35.1	23	24.0	4 .7	64 10.5	124 20.4
5	24	31.3	24	35.3	23	24.2	5 .8	65 10.7	125 20.5
6	24	31.5	24	35.6	23	24.5	6 1.0	66 10.8	126 20.7
7	24	31.8	24	35.8	23	24.7	7 1.1	67 11.0	127 20.8
8	24	32.0	24	36.1	23	24.9	8 1.3	68 11.2	128 21.0
9	24	32.3	24	36.3	23	25.2	9 1.5	69 11.3	129 21.2
10	24	32.5	24	36.6	23	25.4	10 1.6	70 11.5	130 21.3
11	24	32.8	24	36.8	23	25.7	11 1.8	71 11.7	131 21.5
12	24	33.0	24	37.1	23	25.9	12 2.0	72 11.8	132 21.7
13	24	33.3	24	37.3	23	26.1	13 2.1	73 12.0	133 21.8
14	24	33.5	24	37.6	23	26.4	14 2.3	74 12.1	134 22.0
15	24	33.8	24	37.8	23	26.6	15 2.5	75 12.3	135 22.2
16	24	34.0	24	38.1	23	26.9	16 2.6	76 12.5	136 22.3
17	24	34.3	24	38.3	23	27.1	17 2.8	77 12.6	137 22.5
18	24	34.5	24	38.6	23	27.3	18 3.0	78 12.8	138 22.7
19	24	34.8	24	38.8	23	27.6	19 3.1	79 13.0	139 22.8
20	24	35.0	24	39.1	23	27.8	20 3.3	80 13.1	140 23.0
21	24	35.3	24	39.3	23	28.0	21 3.4	81 13.3	141 23.1
22	24	35.5	24	39.6	23	28.3	22 3.6	82 13.5	142 23.3
23	24	35.8	24	39.8	23	28.5	23 3.8	83 13.6	143 23.5
24	24	36.0	24	40.1	23	28.8	24 3.9	84 13.8	144 23.6
25	24	36.3	24	40.4	23	29.0	25 4.1	85 14.0	145 23.8
26	24	36.5	24	40.6	23	29.2	26 4.3	86 14.1	146 24.0
27	24	36.8	24	40.9	23	29.5	27 4.4	87 14.3	147 24.1
28	24	37.0	24	41.1	23	29.7	28 4.6	88 14.4	148 24.3
29	24	37.3	24	41.4	23	30.0	29 4.8	89 14.6	149 24.5
30	24	37.5	24	41.6	23	30.2	30 4.9	90 14.8	150 24.6
31	24	37.8	24	41.9	23	30.4	31 5.1	91 14.9	151 24.8
32	24	38.0	24	42.1	23	30.7	32 5.3	92 15.1	152 25.0
33	24	38.3	24	42.4	23	30.9	33 5.4	93 15.3	153 25.1
34	24	38.5	24	42.6	23	31.1	34 5.6	94 15.4	154 25.3
35	24	38.8	24	42.9	23	31.4	35 5.7	95 15.6	155 25.4
36	24	39.0	24	43.1	23	31.6	36 5.9	96 15.8	156 25.6
37	24	39.3	24	43.4	23	31.9	37 6.1	97 15.9	157 25.8
38	24	39.5	24	43.6	23	32.1	38 6.2	98 16.1	158 25.9
39	24	39.8	24	43.9	23	32.3	39 6.4	99 16.3	159 26.1
40	24	40.0	24	44.1	23	32.6	40 6.6	100 16.4	160 26.3
41	24	40.3	24	44.4	23	32.8	41 6.7	101 16.6	161 26.4
42	24	40.5	24	44.6	23	33.1	42 6.9	102 16.7	162 26.6
43	24	40.8	24	44.9	23	33.3	43 7.1	103 16.9	163 26.8
44	24	41.0	24	45.1	23	33.5	44 7.2	104 17.1	164 26.9
45	24	41.3	24	45.4	23	33.8	45 7.4	105 17.2	165 27.1
46	24	41.5	24	45.6	23	34.0	46 7.6	106 17.4	166 27.3
47	24	41.8	24	45.9	23	34.2	47 7.7	107 17.6	167 27.4
48	24	42.0	24	46.1	23	34.5	48 7.9	108 17.7	168 27.6
49	24	42.3	24	46.4	23	34.7	49 8.0	109 17.9	169 27.7
50	24	42.5	24	46.6	23	35.0	50 8.2	110 18.1	170 27.9
51	24	42.8	24	46.9	23	35.2	51 8.4	111 18.2	171 28.1
52	24	43.0	24	47.1	23	35.4	52 8.5	112 18.4	172 28.2
53	24	43.3	24	47.4	23	35.7	53 8.7	113 18.6	173 28.4
54	24	43.5	24	47.6	23	35.9	54 8.9	114 18.7	174 28.6
55	24	43.8	24	47.9	23	36.2	55 9.0	115 18.9	175 28.7
56	24	44.0	24	48.1	23	36.4	56 9.2	116 19.0	176 28.9
57	24	44.3	24	48.4	23	36.6	57 9.4	117 19.2	177 29.1
58	24	44.5	24	48.6	23	36.9	58 9.5	118 19.4	178 29.2
59	24	44.8	24	48.9	23	37.1	59 9.7	119 19.5	179 29.4
60	24	45.0	24	49.1	23	37.4	60 9.9	120 19.7	180 29.6

1 h 39 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	24	45.0	24	49.1	23	37.4	0 .0	60 10.0	120 19.9
1	24	45.3	24	49.4	23	37.6	1 .2	61 10.1	121 20.1
2	24	45.5	24	49.6	23	37.8	2 .3	62 10.3	122 20.2
3	24	45.8	24	49.9	23	38.1	3 .5	63 10.4	123 20.4
4	24	46.0	24	50.1	23	38.3	4 .7	64 10.6	124 20.6
5	24	46.3	24	50.4	23	38.5	5 .8	65 10.8	125 20.7
6	24	46.5	24	50.6	23	38.8	6 1.0	66 10.9	126 20.9
7	24	46.8	24	50.9	23	39.0	7 1.2	67 11.1	127 21.1
8	24	47.0	24	51.1	23	39.3	8 1.3	68 11.3	128 21.2
9	24	47.3	24	51.4	23	39.5	9 1.5	69 11.4	129 21.4
10	24	47.5	24	51.6	23	39.7	10 1.7	70 11.6	130 21.6
11	24	47.8	24	51.9	23	40.0	11 1.8	71 11.8	131 21.7
12	24	48.0	24	52.1	23	40.2	12 2.0	72 11.9	132 21.9
13	24	48.3	24	52.4	23	40.5	13 2.2	73 12.1	133 22.1
14	24	48.5	24	52.6	23	40.7	14 2.3	74 12.3	134 22.2
15	24	48.8	24	52.9	23	40.9	15 2.5	75 12.4	135 22.4
16	24	49.0	24	53.1	23	41.2	16 2.7	76 12.6	136 22.6
17	24	49.3	24	53.4	23	41.4	17 2.8	77 12.8	137 22.7
18	24	49.5	24	53.6	23	41.6	18 3.0	78 12.9	138 22.9
19	24	49.8	24	53.9	23	41.9	19 3.2	79 13.1	139 23.1
20	24	50.0	24	54.1	23	42.1	20 3.3	80 13.3	140 23.2
21	24	50.3	24	54.4	23	42.4	21 3.5	81 13.4	141 23.4
22	24	50.5	24	54.6	23	42.6	22 3.6	82 13.6	142 23.5
23	24	50.8	24	54.9	23	42.8	23 3.8	83 13.8	143 23.7
24	24	51.0	24	55.1	23	43.1	24 4.0	84 13.9	144 23.9
25	24	51.3	24	55.4	23	43.3	25 4.1	85 14.1	145 24.0
26	24	51.5	24	55.6	23	43.6	26 4.3	86 14.3	146 24.2
27	24	51.8	24	55.9	23	43.8	27 4.5	87 14.4	147 24.4
28	24	52.0	24	56.1	23	44.0	28 4.6	88 14.6	148 24.5
29	24	52.3	24	56.4	23	44.3	29 4.8	89 14.8	149 24.7
30	24	52.5	24	56.6	23	44.5	30 5.0	90 14.9	150 24.9
31	24	52.8	24	56.9	23	44.7	31 5.1	91 15.1	151 25.0
32	24	53.0	24	57.1	23	45.0	32 5.3	92 15.3	152 25.2
33	24	53.3	24	57.4	23	45.2	33 5.5	93 15.4	153 25.4
34	24	53.5	24	57.6	23	45.5	34 5.6	94 15.6	154 25.5
35	24	53.8	24	57.9	23	45.7	35 5.8	95 15.8	155 25.7
36	24	54.0	24	58.2	23	45.9	36 6.0	96 15.9	156 25.9
37	24	54.3	24	58.4	23	46.2	37 6.1	97 16.1	157 26.0
38	24	54.5	24	58.7	23	46.4	38 6.3	98 16.3	158 26.2
39	24	54.8	24	58.9	23	46.7	39 6.5	99 16.4	159 26.4
40	24	55.0	24	59.2	23	46.9	40 6.6	100 16.6	160 26.5
41	24	55.3	24	59.4	23	47.1	41 6.8	101 16.7	161 26.7
42	24	55.5	24	59.7	23	47.4	42 7.0	102 16.9	162 26.9
43	24	55.8	24	59.9	23	47.6	43 7.1	103 17.1	163 27.0
44	24	56.0	25	.2	23	47.8	44 7.3	104 17.2	164 27.2
45	24	56.3	25	.4	23	48.1	45 7.5	105 17.4	165 27.4
46	24	56.5	25	.7	23	48.3	46 7.6	106 17.6	166 27.5
47	24	56.8	25	.9	23	48.6	47 7.8	107 17.7	167 27.7
48	24	57.0	25	1.2	23	48.8	48 8.0	108 17.9	168 27.9
49	24	57.3	25	1.4	23	49.0	49 8.1	109 18.1	169 28.0
50	24	57.5	25	1.7	23	49.3	50 8.3	110 18.2	170 28.2
51	24	57.8	25	1.9	23	49.5	51 8.5	111 18.4	171 28.4
52	24	58.0	25	2.2	23	49.8	52 8.6	112 18.6	172 28.5
53	24	58.3	25	2.4	23	50.0	53 8.8	113 18.7	173 28.7
54	24	58.5	25	2.7	23	50.2	54 9.0	114 18.9	174 28.9
55	24	58.8	25	2.9	23	50.5	55 9.1	115 19.1	175 29.0
56	24	59.0	25	3.2	23	50.7	56 9.3	116 19.2	176 29.2
57	24	59.3	25	3.4	23	51.0	57 9.5	117 19.4	177 29.4
58	24	59.5	25	3.7	23	51.2	58 9.6	118 19.6	178 29.5
59	24	59.8	25	3.9	23	51.4	59 9.8	119 19.7	179 29.7
60	25	.0	25	4.2	23	51.7	60 10.0	120 19.9	180 29.9

1 h 40 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	25	.0	25	4.2	23	51.7	0 .0 60 10.1 120 20.1
1	25	.3	25	4.4	23	51.9	1 .2 61 10.2 121 20.3
2	25	.5	25	4.7	23	52.1	2 .3 62 10.4 122 20.4
3	25	.8	25	4.9	23	52.4	3 .5 63 10.6 123 20.6
4	25	1.0	25	5.2	23	52.6	4 .7 64 10.7 124 20.8
5	25	1.3	25	5.4	23	52.9	5 .8 65 10.9 125 20.9
6	25	1.5	25	5.7	23	53.1	6 1.0 66 11.1 126 21.1
7	25	1.8	25	5.9	23	53.3	7 1.2 67 11.2 127 21.3
8	25	2.0	25	6.2	23	53.6	8 1.3 68 11.4 128 21.4
9	25	2.3	25	6.4	23	53.8	9 1.5 69 11.6 129 21.6
10	25	2.5	25	6.7	23	54.1	10 1.7 70 11.7 130 21.8
11	25	2.8	25	6.9	23	54.3	11 1.8 71 11.9 131 21.9
12	25	3.0	25	7.2	23	54.5	12 2.0 72 12.1 132 22.1
13	25	3.3	25	7.4	23	54.8	13 2.2 73 12.2 133 22.3
14	25	3.5	25	7.7	23	55.0	14 2.3 74 12.4 134 22.4
15	25	3.8	25	7.9	23	55.2	15 2.5 75 12.6 135 22.6
16	25	4.0	25	8.2	23	55.5	16 2.7 76 12.7 136 22.8
17	25	4.3	25	8.4	23	55.7	17 2.8 77 12.9 137 22.9
18	25	4.5	25	8.7	23	56.0	18 3.0 78 13.1 138 23.1
19	25	4.8	25	8.9	23	56.2	19 3.2 79 13.2 139 23.3
20	25	5.0	25	9.2	23	56.4	20 3.4 80 13.4 140 23.5
21	25	5.3	25	9.4	23	56.7	21 3.5 81 13.6 141 23.6
22	25	5.5	25	9.7	23	56.9	22 3.7 82 13.7 142 23.8
23	25	5.8	25	9.9	23	57.2	23 3.9 83 13.9 143 24.0
24	25	6.0	25	10.2	23	57.4	24 4.0 84 14.1 144 24.1
25	25	6.3	25	10.4	23	57.6	25 4.2 85 14.2 145 24.3
26	25	6.5	25	10.7	23	57.9	26 4.4 86 14.4 146 24.5
27	25	6.8	25	10.9	23	58.1	27 4.5 87 14.6 147 24.6
28	25	7.0	25	11.2	23	58.3	28 4.7 88 14.7 148 24.8
29	25	7.3	25	11.4	23	58.6	29 4.9 89 14.9 149 25.0
30	25	7.5	25	11.7	23	58.8	30 5.0 90 15.1 150 25.1
31	25	7.8	25	11.9	23	59.1	31 5.2 91 15.2 151 25.3
32	25	8.0	25	12.2	23	59.3	32 5.4 92 15.4 152 25.5
33	25	8.3	25	12.4	23	59.5	33 5.5 93 15.6 153 25.6
34	25	8.5	25	12.7	23	59.8	34 5.7 94 15.7 154 25.8
35	25	8.8	25	12.9	24	.0	35 5.9 95 15.9 155 26.0
36	25	9.0	25	13.2	24	.3	36 6.0 96 16.1 156 26.1
37	25	9.3	25	13.4	24	.5	37 6.2 97 16.2 157 26.3
38	25	9.5	25	13.7	24	.7	38 6.4 98 16.4 158 26.5
39	25	9.8	25	13.9	24	1.0	39 6.5 99 16.6 159 26.6
40	25	10.0	25	14.2	24	1.2	40 6.7 100 16.8 160 26.8
41	25	10.3	25	14.4	24	1.4	41 6.9 101 16.9 161 27.0
42	25	10.5	25	14.7	24	1.7	42 7.0 102 17.1 162 27.1
43	25	10.8	25	14.9	24	1.9	43 7.2 103 17.3 163 27.3
44	25	11.0	25	15.2	24	2.2	44 7.4 104 17.4 164 27.5
45	25	11.3	25	15.4	24	2.4	45 7.5 105 17.6 165 27.6
46	25	11.5	25	15.7	24	2.6	46 7.7 106 17.8 166 27.8
47	25	11.8	25	15.9	24	2.9	47 7.9 107 17.9 167 28.0
48	25	12.0	25	16.2	24	3.1	48 8.0 108 18.1 168 28.1
49	25	12.3	25	16.5	24	3.4	49 8.2 109 18.3 169 28.3
50	25	12.5	25	16.7	24	3.6	50 8.4 110 18.4 170 28.5
51	25	12.8	25	17.0	24	3.8	51 8.5 111 18.6 171 28.6
52	25	13.0	25	17.2	24	4.1	52 8.7 112 18.8 172 28.8
53	25	13.3	25	17.5	24	4.3	53 8.9 113 18.9 173 29.0
54	25	13.5	25	17.7	24	4.6	54 9.0 114 19.1 174 29.1
55	25	13.8	25	18.0	24	4.8	55 9.2 115 19.3 175 29.3
56	25	14.0	25	18.2	24	5.0	56 9.4 116 19.4 176 29.5
57	25	14.3	25	18.5	24	5.3	57 9.5 117 19.6 177 29.6
58	25	14.5	25	18.7	24	5.5	58 9.7 118 19.8 178 29.8
59	25	14.8	25	19.0	24	5.7	59 9.9 119 19.9 179 30.0
60	25	15.0	25	19.2	24	6.0	60 10.1 120 20.1 180 30.2

1 h 41 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta			
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	o	'	o	'	'	'	'
0	25	15.0	25	19.2	24	6.0	0 .0 60 10.2 120 20.3
1	25	15.3	25	19.5	24	6.2	1 .2 61 10.3 121 20.5
2	25	15.5	25	19.7	24	6.5	2 .3 62 10.5 122 20.6
3	25	15.8	25	20.0	24	6.7	3 .5 63 10.7 123 20.8
4	25	16.0	25	20.2	24	6.9	4 .7 64 10.8 124 21.0
5	25	16.3	25	20.5	24	7.2	5 .8 65 11.0 125 21.1
6	25	16.5	25	20.7	24	7.4	6 1.0 66 11.2 126 21.3
7	25	16.8	25	21.0	24	7.7	7 1.2 67 11.3 127 21.5
8	25	17.0	25	21.2	24	7.9	8 1.4 68 11.5 128 21.7
9	25	17.3	25	21.5	24	8.1	9 1.5 69 11.7 129 21.8
10	25	17.5	25	21.7	24	8.4	10 1.7 70 11.8 130 22.0
11	25	17.8	25	22.0	24	8.6	11 1.9 71 12.0 131 22.2
12	25	18.0	25	22.2	24	8.8	12 2.0 72 12.2 132 22.3
13	25	18.3	25	22.5	24	9.1	13 2.2 73 12.3 133 22.5
14	25	18.5	25	22.7	24	9.3	14 2.4 74 12.5 134 22.7
15	25	18.8	25	23.0	24	9.6	15 2.5 75 12.7 135 22.8
16	25	19.0	25	23.2	24	9.8	16 2.7 76 12.9 136 23.0
17	25	19.3	25	23.5	24	10.0	17 2.9 77 13.0 137 23.2
18	25	19.5	25	23.7	24	10.3	18 3.0 78 13.2 138 23.3
19	25	19.8	25	24.0	24	10.5	19 3.2 79 13.4 139 23.5
20	25	20.0	25	24.2	24	10.8	20 3.4 80 13.5 140 23.7
21	25	20.3	25	24.5	24	11.0	21 3.6 81 13.7 141 23.9
22	25	20.5	25	24.7	24	11.2	22 3.7 82 13.9 142 24.0
23	25	20.8	25	25.0	24	11.5	23 3.9 83 14.0 143 24.2
24	25	21.0	25	25.2	24	11.7	24 4.1 84 14.2 144 24.4
25	25	21.3	25	25.5	24	11.9	25 4.2 85 14.4 145 24.5
26	25	21.5	25	25.7	24	12.2	26 4.4 86 14.5 146 24.7
27	25	21.8	25	26.0	24	12.4	27 4.6 87 14.7 147 24.9
28	25	22.0	25	26.2	24	12.7	28 4.7 88 14.9 148 25.0
29	25	22.3	25	26.5	24	12.9	29 4.9 89 15.1 149 25.2
30	25	22.5	25	26.7	24	13.1	30 5.1 90 15.2 150 25.4
31	25	22.8	25	27.0	24	13.4	31 5.2 91 15.4 151 25.5
32	25	23.0	25	27.2	24	13.6	32 5.4 92 15.6 152 25.7
33	25	23.3	25	27.5	24	13.9	33 5.6 93 15.7 153 25.9
34	25	23.5	25	27.7	24	14.1	34 5.8 94 15.9 154 26.1
35	25	23.8	25	28.0	24	14.3	35 5.9 95 16.1 155 26.2
36	25	24.0	25	28.2	24	14.6	36 6.1 96 16.2 156 26.4
37	25	24.3	25	28.5	24	14.8	37 6.3 97 16.4 157 26.6
38	25	24.5	25	28.7	24	15.1	38 6.4 98 16.6 158 26.7
39	25	24.8	25	29.0	24	15.3	39 6.6 99 16.7 159 26.9
40	25	25.0	25	29.2	24	15.5	40 6.8 100 16.9 160 27.1
41	25	25.3	25	29.5	24	15.8	41 6.9 101 17.1 161 27.2
42	25	25.5	25	29.7	24	16.0	42 7.1 102 17.3 162 27.4
43	25	25.8	25	30.0	24	16.2	43 7.3 103 17.4 163 27.6
44	25	26.0	25	30.2	24	16.5	44 7.4 104 17.6 164 27.7
45	25	26.3	25	30.5	24	16.7	45 7.6 105 17.8 165 27.9
46	25	26.5	25	30.7	24	17.0	46 7.8 106 17.9 166 28.1
47	25	26.8	25	31.0	24	17.2	47 8.0 107 18.1 167 28.3
48	25	27.0	25	31.2	24	17.4	48 8.1 108 18.3 168 28.4
49	25	27.3	25	31.5	24	17.7	49 8.3 109 18.4 169 28.6
50	25	27.5	25	31.7	24	17.9	50 8.5 110 18.6 170 28.8
51	25	27.8	25	32.0	24	18.2	51 8.6 111 18.8 171 28.9
52	25	28.0	25	32.2	24	18.4	52 8.8 112 18.9 172 29.1
53	25	28.3	25	32.5	24	18.6	53 9.0 113 19.1 173 29.3
54	25	28.5	25	32.7	24	18.9	54 9.1 114 19.3 174 29.4
55	25	28.8	25	33.0	24	19.1	55 9.3 115 19.5 175 29.6
56	25	29.0	25	33.2	24	19.3	56 9.5 116 19.6 176 29.8
57	25	29.3	25	33.5	24	19.6	57 9.6 117 19.8 177 29.9
58	25	29.5	25	33.7	24	19.8	58 9.8 118 20.0 178 30.1
59	25	29.8	25	34.0	24	20.1	59 10.0 119 20.1 179 30.3
60	25	30.0	25	34.3	24	20.3	60 10.2 120 20.3 180 30.5

1 h 42 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	25	30.0	25	34.3	24	20.3	0 .0	60 10.3	120 20.5
1	25	30.3	25	34.5	24	20.5	1 .2	61 10.4	121 20.7
2	25	30.5	25	34.8	24	20.8	2 .3	62 10.6	122 20.8
3	25	30.8	25	35.0	24	21.0	3 .5	63 10.8	123 21.0
4	25	31.0	25	35.3	24	21.3	4 .7	64 10.9	124 21.2
5	25	31.3	25	35.5	24	21.5	5 .9	65 11.1	125 21.4
6	25	31.5	25	35.8	24	21.7	6 1.0	66 11.3	126 21.5
7	25	31.8	25	36.0	24	22.0	7 1.2	67 11.4	127 21.7
8	25	32.0	25	36.3	24	22.2	8 1.4	68 11.6	128 21.9
9	25	32.3	25	36.5	24	22.4	9 1.5	69 11.8	129 22.0
10	25	32.5	25	36.8	24	22.7	10 1.7	70 12.0	130 22.2
11	25	32.8	25	37.0	24	22.9	11 1.9	71 12.1	131 22.4
12	25	33.0	25	37.3	24	23.2	12 2.1	72 12.3	132 22.6
13	25	33.3	25	37.5	24	23.4	13 2.2	73 12.5	133 22.7
14	25	33.5	25	37.8	24	23.6	14 2.4	74 12.6	134 22.9
15	25	33.8	25	38.0	24	23.9	15 2.6	75 12.8	135 23.1
16	25	34.0	25	38.3	24	24.1	16 2.7	76 13.0	136 23.2
17	25	34.3	25	38.5	24	24.4	17 2.9	77 13.2	137 23.4
18	25	34.5	25	38.8	24	24.6	18 3.1	78 13.3	138 23.6
19	25	34.8	25	39.0	24	24.8	19 3.2	79 13.5	139 23.7
20	25	35.0	25	39.3	24	25.1	20 3.4	80 13.7	140 23.9
21	25	35.3	25	39.5	24	25.3	21 3.6	81 13.8	141 24.1
22	25	35.5	25	39.8	24	25.5	22 3.8	82 14.0	142 24.3
23	25	35.8	25	40.0	24	25.8	23 3.9	83 14.2	143 24.4
24	25	36.0	25	40.3	24	26.0	24 4.1	84 14.4	144 24.6
25	25	36.3	25	40.5	24	26.3	25 4.3	85 14.5	145 24.8
26	25	36.5	25	40.8	24	26.5	26 4.4	86 14.7	146 24.9
27	25	36.8	25	41.0	24	26.7	27 4.6	87 14.9	147 25.1
28	25	37.0	25	41.3	24	27.0	28 4.8	88 15.0	148 25.3
29	25	37.3	25	41.5	24	27.2	29 5.0	89 15.2	149 25.5
30	25	37.5	25	41.8	24	27.5	30 5.1	90 15.4	150 25.6
31	25	37.8	25	42.0	24	27.7	31 5.3	91 15.5	151 25.8
32	25	38.0	25	42.3	24	27.9	32 5.5	92 15.7	152 26.0
33	25	38.3	25	42.5	24	28.2	33 5.6	93 15.9	153 26.1
34	25	38.5	25	42.8	24	28.4	34 5.8	94 16.1	154 26.3
35	25	38.8	25	43.0	24	28.7	35 6.0	95 16.2	155 26.5
36	25	39.0	25	43.3	24	28.9	36 6.2	96 16.4	156 26.7
37	25	39.3	25	43.5	24	29.1	37 6.3	97 16.6	157 26.8
38	25	39.5	25	43.8	24	29.4	38 6.5	98 16.7	158 27.0
39	25	39.8	25	44.0	24	29.6	39 6.7	99 16.9	159 27.2
40	25	40.0	25	44.3	24	29.8	40 6.8	100 17.1	160 27.3
41	25	40.3	25	44.5	24	30.1	41 7.0	101 17.3	161 27.5
42	25	40.5	25	44.8	24	30.3	42 7.2	102 17.4	162 27.7
43	25	40.8	25	45.0	24	30.6	43 7.3	103 17.6	163 27.8
44	25	41.0	25	45.3	24	30.8	44 7.5	104 17.8	164 28.0
45	25	41.3	25	45.5	24	31.0	45 7.7	105 17.9	165 28.2
46	25	41.5	25	45.8	24	31.3	46 7.9	106 18.1	166 28.4
47	25	41.8	25	46.0	24	31.5	47 8.0	107 18.3	167 28.5
48	25	42.0	25	46.3	24	31.8	48 8.2	108 18.5	168 28.7
49	25	42.3	25	46.5	24	32.0	49 8.4	109 18.6	169 28.9
50	25	42.5	25	46.8	24	32.2	50 8.5	110 18.8	170 29.0
51	25	42.8	25	47.0	24	32.5	51 8.7	111 19.0	171 29.2
52	25	43.0	25	47.3	24	32.7	52 8.9	112 19.1	172 29.4
53	25	43.3	25	47.5	24	32.9	53 9.1	113 19.3	173 29.6
54	25	43.5	25	47.8	24	33.2	54 9.2	114 19.5	174 29.7
55	25	43.8	25	48.0	24	33.4	55 9.4	115 19.6	175 29.9
56	25	44.0	25	48.3	24	33.7	56 9.6	116 19.8	176 30.1
57	25	44.3	25	48.5	24	33.9	57 9.7	117 20.0	177 30.2
58	25	44.5	25	48.8	24	34.1	58 9.9	118 20.2	178 30.4
59	25	44.8	25	49.0	24	34.4	59 10.1	119 20.3	179 30.6
60	25	45.0	25	49.3	24	34.6	60 10.3	120 20.5	180 30.8

1 h 43 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	25	45.0	25	49.3	24	34.6	0 .0	60 10.4	120 20.7
1	25	45.3	25	49.5	24	34.9	1 .2	61 10.5	121 20.9
2	25	45.5	25	49.8	24	35.1	2 .3	62 10.7	122 21.0
3	25	45.8	25	50.0	24	35.3	3 .5	63 10.9	123 21.2
4	25	46.0	25	50.3	24	35.6	4 .7	64 11.0	124 21.4
5	25	46.3	25	50.5	24	35.8	5 .9	65 11.2	125 21.6
6	25	46.5	25	50.8	24	36.0	6 1.0	66 11.4	126 21.7
7	25	46.8	25	51.0	24	36.3	7 1.2	67 11.6	127 21.9
8	25	47.0	25	51.3	24	36.5	8 1.4	68 11.7	128 22.1
9	25	47.3	25	51.5	24	36.8	9 1.6	69 11.9	129 22.3
10	25	47.5	25	51.8	24	37.0	10 1.7	70 12.1	130 22.4
11	25	47.8	25	52.0	24	37.2	11 1.9	71 12.2	131 22.6
12	25	48.0	25	52.3	24	37.5	12 2.1	72 12.4	132 22.8
13	25	48.3	25	52.6	24	37.7	13 2.2	73 12.6	133 22.9
14	25	48.5	25	52.8	24	38.0	14 2.4	74 12.8	134 23.1
15	25	48.8	25	53.1	24	38.2	15 2.6	75 12.9	135 23.3
16	25	49.0	25	53.3	24	38.4	16 2.8	76 13.1	136 23.5
17	25	49.3	25	53.6	24	38.7	17 2.9	77 13.3	137 23.6
18	25	49.5	25	53.8	24	38.9	18 3.1	78 13.5	138 23.8
19	25	49.8	25	54.1	24	39.2	19 3.3	79 13.6	139 24.0
20	25	50.0	25	54.3	24	39.4	20 3.5	80 13.8	140 24.2
21	25	50.3	25	54.6	24	39.6	21 3.6	81 14.0	141 24.3
22	25	50.5	25	54.8	24	39.9	22 3.8	82 14.1	142 24.5
23	25	50.8	25	55.1	24	40.1	23 4.0	83 14.3	143 24.7
24	25	51.0	25	55.3	24	40.3	24 4.1	84 14.5	144 24.8
25	25	51.3	25	55.6	24	40.6	25 4.3	85 14.7	145 25.0
26	25	51.5	25	55.8	24	40.8	26 4.5	86 14.8	146 25.2
27	25	51.8	25	56.1	24	41.1	27 4.7	87 15.0	147 25.4
28	25	52.0	25	56.3	24	41.3	28 4.8	88 15.2	148 25.5
29	25	52.3	25	56.6	24	41.5	29 5.0	89 15.4	149 25.7
30	25	52.5	25	56.8	24	41.8	30 5.2	90 15.5	150 25.9
31	25	52.8	25	57.1	24	42.0	31 5.3	91 15.7	151 26.0
32	25	53.0	25	57.3	24	42.3	32 5.5	92 15.9	152 26.2
33	25	53.3	25	57.6	24	42.5	33 5.7	93 16.0	153 26.4
34	25	53.5	25	57.8	24	42.7	34 5.9	94 16.2	154 26.6
35	25	53.8	25	58.1	24	43.0	35 6.0	95 16.4	155 26.7
36	25	54.0	25	58.3	24	43.2	36 6.2	96 16.6	156 26.9
37	25	54.3	25	58.6	24	43.4	37 6.4	97 16.7	157 27.1
38	25	54.5	25	58.8	24	43.7	38 6.6	98 16.9	158 27.3
39	25	54.8	25	59.1	24	43.9	39 6.7	99 17.1	159 27.4
40	25	55.0	25	59.3	24	44.2	40 6.9	100 17.3	160 27.6
41	25	55.3	25	59.6	24	44.4	41 7.1	101 17.4	161 27.8
42	25	55.5	25	59.8	24	44.6	42 7.2	102 17.6	162 27.9
43	25	55.8	26	.1	24	44.9	43 7.4	103 17.8	163 28.1
44	25	56.0	26	.3	24	45.1	44 7.6	104 17.9	164 28.3
45	25	56.3	26	.6	24	45.4	45 7.8	105 18.1	165 28.5
46	25	56.5	26	.8	24	45.6	46 7.9	106 18.3	166 28.6
47	25	56.8	26	1.1	24	45.8	47 8.1	107 18.5	167 28.8
48	25	57.0	26	1.3	24	46.1	48 8.3	108 18.6	168 29.0
49	25	57.3	26	1.6	24	46.3	49 8.5	109 18.8	169 29.2
50	25	57.5	26	1.8	24	46.5	50 8.6	110 19.0	170 29.3
51	25	57.8	26	2.1	24	46.8	51 8.8	111 19.1	171 29.5
52	25	58.0	26	2.3	24	47.0	52 9.0	112 19.3	172 29.7
53	25	58.3	26	2.6	24	47.3	53 9.1	113 19.5	173 29.8
54	25	58.5	26	2.8	24	47.5	54 9.3	114 19.7	174 30.0
55	25	58.8	26	3.1	24	47.7	55 9.5	115 19.8	175 30.2
56	25	59.0	26	3.3	24	48.0	56 9.7	116 20.0	176 30.4
57	25	59.3	26	3.6	24	48.2	57 9.8	117 20.2	177 30.5
58	25	59.5	26	3.8	24	48.5	58 10.0	118 20.4	178 30.7
59	25	59.8	26	4.1	24	48.7	59 10.2	119 20.5	179 30.9
60	26	.0	26	4.3	24	48.9	60 10.4	120 20.7	180 31.1

1 h 44 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	°	'	'		
0	26	.0	26	4.3	24	48.9	0 .0	60 10.5	120 20.9
1	26	.3	26	4.6	24	49.2	1 .2	61 10.6	121 21.1
2	26	.5	26	4.8	24	49.4	2 .3	62 10.8	122 21.2
3	26	.8	26	5.1	24	49.6	3 .5	63 11.0	123 21.4
4	26	1.0	26	5.3	24	49.9	4 .7	64 11.1	124 21.6
5	26	1.3	26	5.6	24	50.1	5 .9	65 11.3	125 21.8
6	26	1.5	26	5.8	24	50.4	6 1.0	66 11.5	126 21.9
7	26	1.8	26	6.1	24	50.6	7 1.2	67 11.7	127 22.1
8	26	2.0	26	6.3	24	50.8	8 1.4	68 11.8	128 22.3
9	26	2.3	26	6.6	24	51.1	9 1.6	69 12.0	129 22.5
10	26	2.5	26	6.8	24	51.3	10 1.7	70 12.2	130 22.6
11	26	2.8	26	7.1	24	51.6	11 1.9	71 12.4	131 22.8
12	26	3.0	26	7.3	24	51.8	12 2.1	72 12.5	132 23.0
13	26	3.3	26	7.6	24	52.0	13 2.3	73 12.7	133 23.2
14	26	3.5	26	7.8	24	52.3	14 2.4	74 12.9	134 23.3
15	26	3.8	26	8.1	24	52.5	15 2.6	75 13.1	135 23.5
16	26	4.0	26	8.3	24	52.8	16 2.8	76 13.2	136 23.7
17	26	4.3	26	8.6	24	53.0	17 3.0	77 13.4	137 23.9
18	26	4.5	26	8.8	24	53.2	18 3.1	78 13.6	138 24.0
19	26	4.8	26	9.1	24	53.5	19 3.3	79 13.8	139 24.2
20	26	5.0	26	9.3	24	53.7	20 3.5	80 13.9	140 24.4
21	26	5.3	26	9.6	24	53.9	21 3.7	81 14.1	141 24.6
22	26	5.5	26	9.8	24	54.2	22 3.8	82 14.3	142 24.7
23	26	5.8	26	10.1	24	54.4	23 4.0	83 14.5	143 24.9
24	26	6.0	26	10.4	24	54.7	24 4.2	84 14.6	144 25.1
25	26	6.3	26	10.6	24	54.9	25 4.4	85 14.8	145 25.3
26	26	6.5	26	10.9	24	55.1	26 4.5	86 15.0	146 25.4
27	26	6.8	26	11.1	24	55.4	27 4.7	87 15.2	147 25.6
28	26	7.0	26	11.4	24	55.6	28 4.9	88 15.3	148 25.8
29	26	7.3	26	11.6	24	55.9	29 5.1	89 15.5	149 26.0
30	26	7.5	26	11.9	24	56.1	30 5.2	90 15.7	150 26.1
31	26	7.8	26	12.1	24	56.3	31 5.4	91 15.8	151 26.3
32	26	8.0	26	12.4	24	56.6	32 5.6	92 16.0	152 26.5
33	26	8.3	26	12.6	24	56.8	33 5.7	93 16.2	153 26.6
34	26	8.5	26	12.9	24	57.0	34 5.9	94 16.4	154 26.8
35	26	8.8	26	13.1	24	57.3	35 6.1	95 16.5	155 27.0
36	26	9.0	26	13.4	24	57.5	36 6.3	96 16.7	156 27.2
37	26	9.3	26	13.6	24	57.8	37 6.4	97 16.9	157 27.3
38	26	9.5	26	13.9	24	58.0	38 6.6	98 17.1	158 27.5
39	26	9.8	26	14.1	24	58.2	39 6.8	99 17.2	159 27.7
40	26	10.0	26	14.4	24	58.5	40 7.0	100 17.4	160 27.9
41	26	10.3	26	14.6	24	58.7	41 7.1	101 17.6	161 28.0
42	26	10.5	26	14.9	24	59.0	42 7.3	102 17.8	162 28.2
43	26	10.8	26	15.1	24	59.2	43 7.5	103 17.9	163 28.4
44	26	11.0	26	15.4	24	59.4	44 7.7	104 18.1	164 28.6
45	26	11.3	26	15.6	24	59.7	45 7.8	105 18.3	165 28.7
46	26	11.5	26	15.9	24	59.9	46 8.0	106 18.5	166 28.9
47	26	11.8	26	16.1	25	.1	47 8.2	107 18.6	167 29.1
48	26	12.0	26	16.4	25	.4	48 8.4	108 18.8	168 29.3
49	26	12.3	26	16.6	25	.6	49 8.5	109 19.0	169 29.4
50	26	12.5	26	16.9	25	.9	50 8.7	110 19.2	170 29.6
51	26	12.8	26	17.1	25	1.1	51 8.9	111 19.3	171 29.8
52	26	13.0	26	17.4	25	1.3	52 9.1	112 19.5	172 30.0
53	26	13.3	26	17.6	25	1.6	53 9.2	113 19.7	173 30.1
54	26	13.5	26	17.9	25	1.8	54 9.4	114 19.9	174 30.3
55	26	13.8	26	18.1	25	2.1	55 9.6	115 20.0	175 30.5
56	26	14.0	26	18.4	25	2.3	56 9.8	116 20.2	176 30.7
57	26	14.3	26	18.6	25	2.5	57 9.9	117 20.4	177 30.8
58	26	14.5	26	18.9	25	2.8	58 10.1	118 20.6	178 31.0
59	26	14.8	26	19.1	25	3.0	59 10.3	119 20.7	179 31.2
60	26	15.0	26	19.4	25	3.3	60 10.5	120 20.9	180 31.4

1 h 45 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	°	'	°	'	°	'	'		
0	26	15.0	26	19.4	25	3.3	0 .0	60 10.6	120 21.1
1	26	15.3	26	19.6	25	3.5	1 .2	61 10.7	121 21.3
2	26	15.5	26	19.9	25	3.7	2 .4	62 10.9	122 21.5
3	26	15.8	26	20.1	25	4.0	3 .5	63 11.1	123 21.6
4	26	16.0	26	20.4	25	4.2	4 .7	64 11.3	124 21.8
5	26	16.3	26	20.6	25	4.4	5 .9	65 11.4	125 22.0
6	26	16.5	26	20.9	25	4.7	6 1.1	66 11.6	126 22.2
7	26	16.8	26	21.1	25	4.9	7 1.2	67 11.8	127 22.3
8	26	17.0	26	21.4	25	5.2	8 1.4	68 12.0	128 22.5
9	26	17.3	26	21.6	25	5.4	9 1.6	69 12.1	129 22.7
10	26	17.5	26	21.9	25	5.6	10 1.8	70 12.3	130 22.9
11	26	17.8	26	22.1	25	5.9	11 1.9	71 12.5	131 23.0
12	26	18.0	26	22.4	25	6.1	12 2.1	72 12.7	132 23.2
13	26	18.3	26	22.6	25	6.4	13 2.3	73 12.8	133 23.4
14	26	18.5	26	22.9	25	6.6	14 2.5	74 13.0	134 23.6
15	26	18.8	26	23.1	25	6.8	15 2.6	75 13.2	135 23.7
16	26	19.0	26	23.4	25	7.1	16 2.8	76 13.4	136 23.9
17	26	19.3	26	23.6	25	7.3	17 3.0	77 13.5	137 24.1
18	26	19.5	26	23.9	25	7.5	18 3.2	78 13.7	138 24.3
19	26	19.8	26	24.1	25	7.8	19 3.3	79 13.9	139 24.4
20	26	20.0	26	24.4	25	8.0	20 3.5	80 14.1	140 24.6
21	26	20.3	26	24.6	25	8.3	21 3.7	81 14.2	141 24.8
22	26	20.5	26	24.9	25	8.5	22 3.9	82 14.4	142 25.0
23	26	20.8	26	25.1	25	8.7	23 4.0	83 14.6	143 25.1
24	26	21.0	26	25.4	25	9.0	24 4.2	84 14.8	144 25.3
25	26	21.3	26	25.6	25	9.2	25 4.4	85 14.9	145 25.5
26	26	21.5	26	25.9	25	9.5	26 4.6	86 15.1	146 25.7
27	26	21.8	26	26.1	25	9.7	27 4.7	87 15.3	147 25.8
28	26	22.0	26	26.4	25	9.9	28 4.9	88 15.5	148 26.0
29	26	22.3	26	26.6	25	10.2	29 5.1	89 15.6	149 26.2
30	26	22.5	26	26.9	25	10.4	30 5.3	90 15.8	150 26.4
31	26	22.8	26	27.1	25	10.6	31 5.5	91 16.0	151 26.6
32	26	23.0	26	27.4	25	10.9	32 5.6	92 16.2	152 26.7
33	26	23.3	26	27.6	25	11.1	33 5.8	93 16.4	153 26.9
34	26	23.5	26	27.9	25	11.4	34 6.0	94 16.5	154 27.1
35	26	23.8	26	28.1	25	11.6	35 6.2	95 16.7	155 27.3
36	26	24.0	26	28.4	25	11.8	36 6.3	96 16.9	156 27.4
37	26	24.3	26	28.7	25	12.1	37 6.5	97 17.1	157 27.6
38	26	24.5	26	28.9	25	12.3	38 6.7	98 17.2	158 27.8
39	26	24.8	26	29.2	25	12.6	39 6.9	99 17.4	159 28.0
40	26	25.0	26	29.4	25	12.8	40 7.0	100 17.6	160 28.1
41	26	25.3	26	29.7	25	13.0	41 7.2	101 17.8	161 28.3
42	26	25.5	26	29.9	25	13.3	42 7.4	102 17.9	162 28.5
43	26	25.8	26	30.2	25	13.5	43 7.6	103 18.1	163 28.7
44	26	26.0	26	30.4	25	13.7	44 7.7	104 18.3	164 28.8
45	26	26.3	26	30.7	25	14.0	45 7.9	105 18.5	165 29.0
46	26	26.5	26	30.9	25	14.2	46 8.1	106 18.6	166 29.2
47	26	26.8	26	31.2	25	14.5	47 8.3	107 18.8	167 29.4
48	26	27.0	26	31.4	25	14.7	48 8.4	108 19.0	168 29.5
49	26	27.3	26	31.7	25	14.9	49 8.6	109 19.2	169 29.7
50	26	27.5	26	31.9	25	15.2	50 8.8	110 19.3	170 29.9
51	26	27.8	26	32.2	25	15.4	51 9.0	111 19.5	171 30.1
52	26	28.0	26	32.4	25	15.7	52 9.1	112 19.7	172 30.2
53	26	28.3	26	32.7	25	15.9	53 9.3	113 19.9	173 30.4
54	26	28.5	26	32.9	25	16.1	54 9.5	114 20.0	174 30.6
55	26	28.8	26	33.2	25	16.4	55 9.7	115 20.2	175 30.8
56	26	29.0	26	33.4	25	16.6	56 9.8	116 20.4	176 30.9
57	26	29.3	26	33.7	25	16.9	57 10.0	117 20.6	177 31.1
58	26	29.5	26	33.9	25	17.1	58 10.2	118 20.7	178 31.3
59	26	29.8	26	34.2	25	17.3	59 10.4	119 20.9	179 31.5
60	26	30.0	26	34.4	25	17.6	60 10.6	120 21.1	180 31.7

1 h 46 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o /	o /	o /	/	/	/
0	26 30.0	26 34.4	25 17.6	0 .0	60 10.7	120 21.3
1	26 30.3	26 34.7	25 17.8	1 .2	61 10.8	121 21.5
2	26 30.5	26 34.9	25 18.0	2 .4	62 11.0	122 21.7
3	26 30.8	26 35.2	25 18.3	3 .5	63 11.2	123 21.8
4	26 31.0	26 35.4	25 18.5	4 .7	64 11.4	124 22.0
5	26 31.3	26 35.7	25 18.8	5 .9	65 11.5	125 22.2
6	26 31.5	26 35.9	25 19.0	6 1.1	66 11.7	126 22.4
7	26 31.8	26 36.2	25 19.2	7 1.2	67 11.9	127 22.5
8	26 32.0	26 36.4	25 19.5	8 1.4	68 12.1	128 22.7
9	26 32.3	26 36.7	25 19.7	9 1.6	69 12.2	129 22.9
10	26 32.5	26 36.9	25 20.0	10 1.8	70 12.4	130 23.1
11	26 32.8	26 37.2	25 20.2	11 2.0	71 12.6	131 23.3
12	26 33.0	26 37.4	25 20.4	12 2.1	72 12.8	132 23.4
13	26 33.3	26 37.7	25 20.7	13 2.3	73 13.0	133 23.6
14	26 33.5	26 37.9	25 20.9	14 2.5	74 13.1	134 23.8
15	26 33.8	26 38.2	25 21.1	15 2.7	75 13.3	135 24.0
16	26 34.0	26 38.4	25 21.4	16 2.8	76 13.5	136 24.1
17	26 34.3	26 38.7	25 21.6	17 3.0	77 13.7	137 24.3
18	26 34.5	26 38.9	25 21.9	18 3.2	78 13.8	138 24.5
19	26 34.8	26 39.2	25 22.1	19 3.4	79 14.0	139 24.7
20	26 35.0	26 39.4	25 22.3	20 3.6	80 14.2	140 24.9
21	26 35.3	26 39.7	25 22.6	21 3.7	81 14.4	141 25.0
22	26 35.5	26 39.9	25 22.8	22 3.9	82 14.6	142 25.2
23	26 35.8	26 40.2	25 23.1	23 4.1	83 14.7	143 25.4
24	26 36.0	26 40.4	25 23.3	24 4.3	84 14.9	144 25.6
25	26 36.3	26 40.7	25 23.5	25 4.4	85 15.1	145 25.7
26	26 36.5	26 40.9	25 23.8	26 4.6	86 15.3	146 25.9
27	26 36.8	26 41.2	25 24.0	27 4.8	87 15.4	147 26.1
28	26 37.0	26 41.4	25 24.2	28 5.0	88 15.6	148 26.3
29	26 37.3	26 41.7	25 24.5	29 5.1	89 15.8	149 26.4
30	26 37.5	26 41.9	25 24.7	30 5.3	90 16.0	150 26.6
31	26 37.8	26 42.2	25 25.0	31 5.5	91 16.2	151 26.8
32	26 38.0	26 42.4	25 25.2	32 5.7	92 16.3	152 27.0
33	26 38.3	26 42.7	25 25.4	33 5.9	93 16.5	153 27.2
34	26 38.5	26 42.9	25 25.7	34 6.0	94 16.7	154 27.3
35	26 38.8	26 43.2	25 25.9	35 6.2	95 16.9	155 27.5
36	26 39.0	26 43.4	25 26.2	36 6.4	96 17.0	156 27.7
37	26 39.3	26 43.7	25 26.4	37 6.6	97 17.2	157 27.9
38	26 39.5	26 43.9	25 26.6	38 6.7	98 17.4	158 28.0
39	26 39.8	26 44.2	25 26.9	39 6.9	99 17.6	159 28.2
40	26 40.0	26 44.4	25 27.1	40 7.1	100 17.8	160 28.4
41	26 40.3	26 44.7	25 27.3	41 7.3	101 17.9	161 28.6
42	26 40.5	26 44.9	25 27.6	42 7.5	102 18.1	162 28.8
43	26 40.8	26 45.2	25 27.8	43 7.6	103 18.3	163 28.9
44	26 41.0	26 45.4	25 28.1	44 7.8	104 18.5	164 29.1
45	26 41.3	26 45.7	25 28.3	45 8.0	105 18.6	165 29.3
46	26 41.5	26 45.9	25 28.5	46 8.2	106 18.8	166 29.5
47	26 41.8	26 46.2	25 28.8	47 8.3	107 19.0	167 29.6
48	26 42.0	26 46.5	25 29.0	48 8.5	108 19.2	168 29.8
49	26 42.3	26 46.7	25 29.3	49 8.7	109 19.3	169 30.0
50	26 42.5	26 47.0	25 29.5	50 8.9	110 19.5	170 30.2
51	26 42.8	26 47.2	25 29.7	51 9.1	111 19.7	171 30.4
52	26 43.0	26 47.5	25 30.0	52 9.2	112 19.9	172 30.5
53	26 43.3	26 47.7	25 30.2	53 9.4	113 20.1	173 30.7
54	26 43.5	26 48.0	25 30.5	54 9.6	114 20.2	174 30.9
55	26 43.8	26 48.2	25 30.7	55 9.8	115 20.4	175 31.1
56	26 44.0	26 48.5	25 30.9	56 9.9	116 20.6	176 31.2
57	26 44.3	26 48.7	25 31.2	57 10.1	117 20.8	177 31.4
58	26 44.5	26 49.0	25 31.4	58 10.3	118 20.9	178 31.6
59	26 44.8	26 49.2	25 31.6	59 10.5	119 21.1	179 31.8
60	26 45.0	26 49.5	25 31.9	60 10.7	120 21.3	180 32.0

1 h 47 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	o /	o /	o /	/	/	/
0	26 45.0	26 49.5	25 31.9	0 .0	60 10.8	120 21.5
1	26 45.3	26 49.7	25 32.1	1 .2	61 10.9	121 21.7
2	26 45.5	26 50.0	25 32.4	2 .4	62 11.1	122 21.9
3	26 45.8	26 50.2	25 32.6	3 .5	63 11.3	123 22.0
4	26 46.0	26 50.5	25 32.8	4 .7	64 11.5	124 22.2
5	26 46.3	26 50.7	25 33.1	5 .9	65 11.6	125 22.4
6	26 46.5	26 51.0	25 33.3	6 1.1	66 11.8	126 22.6
7	26 46.8	26 51.2	25 33.6	7 1.3	67 12.0	127 22.8
8	26 47.0	26 51.5	25 33.8	8 1.4	68 12.2	128 22.9
9	26 47.3	26 51.7	25 34.0	9 1.6	69 12.4	129 23.1
10	26 47.5	26 52.0	25 34.3	10 1.8	70 12.5	130 23.3
11	26 47.8	26 52.2	25 34.5	11 2.0	71 12.7	131 23.5
12	26 48.0	26 52.5	25 34.7	12 2.2	72 12.9	132 23.7
13	26 48.3	26 52.7	25 35.0	13 2.3	73 13.1	133 23.8
14	26 48.5	26 53.0	25 35.2	14 2.5	74 13.3	134 24.0
15	26 48.8	26 53.2	25 35.5	15 2.7	75 13.4	135 24.2
16	26 49.0	26 53.5	25 35.7	16 2.9	76 13.6	136 24.4
17	26 49.3	26 53.7	25 35.9	17 3.0	77 13.8	137 24.5
18	26 49.5	26 54.0	25 36.2	18 3.2	78 14.0	138 24.7
19	26 49.8	26 54.2	25 36.4	19 3.4	79 14.2	139 24.9
20	26 50.0	26 54.5	25 36.7	20 3.6	80 14.3	140 25.1
21	26 50.3	26 54.7	25 36.9	21 3.8	81 14.5	141 25.3
22	26 50.5	26 55.0	25 37.1	22 3.9	82 14.7	142 25.4
23	26 50.8	26 55.2	25 37.4	23 4.1	83 14.9	143 25.6
24	26 51.0	26 55.5	25 37.6	24 4.3	84 15.1	144 25.8
25	26 51.3	26 55.7	25 37.8	25 4.5	85 15.2	145 26.0
26	26 51.5	26 56.0	25 38.1	26 4.7	86 15.4	146 26.2
27	26 51.8	26 56.2	25 38.3	27 4.8	87 15.6	147 26.3
28	26 52.0	26 56.5	25 38.6	28 5.0	88 15.8	148 26.5
29	26 52.3	26 56.7	25 38.8	29 5.2	89 15.9	149 26.7
30	26 52.5	26 57.0	25 39.0	30 5.4	90 16.1	150 26.9
31	26 52.8	26 57.2	25 39.3	31 5.6	91 16.3	151 27.1
32	26 53.0	26 57.5	25 39.5	32 5.7	92 16.5	152 27.2
33	26 53.3	26 57.7	25 39.8	33 5.9	93 16.7	153 27.4
34	26 53.5	26 58.0	25 40.0	34 6.1	94 16.8	154 27.6
35	26 53.8	26 58.2	25 40.2	35 6.3	95 17.0	155 27.8
36	26 54.0	26 58.5	25 40.5	36 6.5	96 17.2	156 28.0
37	26 54.3	26 58.7	25 40.7	37 6.6	97 17.4	157 28.1
38	26 54.5	26 59.0	25 41.0	38 6.8	98 17.6	158 28.3
39	26 54.8	26 59.2	25 41.2	39 7.0	99 17.7	159 28.5
40	26 55.0	26 59.5	25 41.4	40 7.2	100 17.9	160 28.7
41	26 55.3	26 59.7	25 41.7	41 7.3	101 18.1	161 28.8
42	26 55.5	26 60.0	25 41.9	42 7.5	102 18.3	162 29.0
43	26 55.8	27 .2	25 42.1	43 7.7	103 18.5	163 29.2
44	26 56.0	27 .5	25 42.4	44 7.9	104 18.6	164 29.4
45	26 56.3	27 .7	25 42.6	45 8.1	105 18.8	165 29.6
46	26 56.5	27 1.0	25 42.9	46 8.2	106 19.0	166 29.7
47	26 56.8	27 1.2	25 43.1	47 8.4	107 19.2	167 29.9
48	26 57.0	27 1.5	25 43.3	48 8.6	108 19.4	168 30.1
49	26 57.3	27 1.7	25 43.6	49 8.8	109 19.5	169 30.3
50	26 57.5	27 2.0	25 43.8	50 9.0	110 19.7	170 30.5
51	26 57.8	27 2.2	25 44.1	51 9.1	111 19.9	171 30.6
52	26 58.0	27 2.5	25 44.3	52 9.3	112 20.1	172 30.8
53	26 58.3	27 2.7	25 44.5	53 9.5	113 20.2	173 31.0
54	26 58.5	27 3.0	25 44.8	54 9.7	114 20.4	174 31.2
55	26 58.8	27 3.2	25 45.0	55 9.9	115 20.6	175 31.4
56	26 59.0	27 3.5	25 45.2	56 10.0	116 20.8	176 31.5
57	26 59.3	27 3.7	25 45.5	57 10.2	117 21.0	177 31.7
58	26 59.5	27 4.0	25 45.7	58 10.4	118 21.1	178 31.9
59	26 59.8	27 4.2	25 46.0	59 10.6	119 21.3	179 32.1
60	27 .0	27 4.5	25 46.2	60 10.8	120 21.5	180 32.3

1 h 48 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	27	.0	27	4.5	25	46.2	0 .0	60 10.9	120 21.7
1	27	.3	27	4.8	25	46.4	1 .2	61 11.0	121 21.9
2	27	.5	27	5.0	25	46.7	2 .4	62 11.2	122 22.1
3	27	.8	27	5.3	25	46.9	3 .5	63 11.4	123 22.2
4	27	1.0	27	5.5	25	47.2	4 .7	64 11.6	124 22.4
5	27	1.3	27	5.8	25	47.4	5 .9	65 11.8	125 22.6
6	27	1.5	27	6.0	25	47.6	6 1.1	66 11.9	126 22.8
7	27	1.8	27	6.3	25	47.9	7 1.3	67 12.1	127 23.0
8	27	2.0	27	6.5	25	48.1	8 1.4	68 12.3	128 23.1
9	27	2.3	27	6.8	25	48.3	9 1.6	69 12.5	129 23.3
10	27	2.5	27	7.0	25	48.6	10 1.8	70 12.7	130 23.5
11	27	2.8	27	7.3	25	48.8	11 2.0	71 12.8	131 23.7
12	27	3.0	27	7.5	25	49.1	12 2.2	72 13.0	132 23.9
13	27	3.3	27	7.8	25	49.3	13 2.4	73 13.2	133 24.1
14	27	3.5	27	8.0	25	49.5	14 2.5	74 13.4	134 24.2
15	27	3.8	27	8.3	25	49.8	15 2.7	75 13.6	135 24.4
16	27	4.0	27	8.5	25	50.0	16 2.9	76 13.7	136 24.6
17	27	4.3	27	8.8	25	50.3	17 3.1	77 13.9	137 24.8
18	27	4.5	27	9.0	25	50.5	18 3.3	78 14.1	138 25.0
19	27	4.8	27	9.3	25	50.7	19 3.4	79 14.3	139 25.1
20	27	5.0	27	9.5	25	51.0	20 3.6	80 14.5	140 25.3
21	27	5.3	27	9.8	25	51.2	21 3.8	81 14.6	141 25.5
22	27	5.5	27	10.0	25	51.4	22 4.0	82 14.8	142 25.7
23	27	5.8	27	10.3	25	51.7	23 4.2	83 15.0	143 25.9
24	27	6.0	27	10.5	25	51.9	24 4.3	84 15.2	144 26.0
25	27	6.3	27	10.8	25	52.2	25 4.5	85 15.4	145 26.2
26	27	6.5	27	11.0	25	52.4	26 4.7	86 15.6	146 26.4
27	27	6.8	27	11.3	25	52.6	27 4.9	87 15.7	147 26.6
28	27	7.0	27	11.5	25	52.9	28 5.1	88 15.9	148 26.8
29	27	7.3	27	11.8	25	53.1	29 5.2	89 16.1	149 26.9
30	27	7.5	27	12.0	25	53.4	30 5.4	90 16.3	150 27.1
31	27	7.8	27	12.3	25	53.6	31 5.6	91 16.5	151 27.3
32	27	8.0	27	12.5	25	53.8	32 5.8	92 16.6	152 27.5
33	27	8.3	27	12.8	25	54.1	33 6.0	93 16.8	153 27.7
34	27	8.5	27	13.0	25	54.3	34 6.1	94 17.0	154 27.8
35	27	8.8	27	13.3	25	54.6	35 6.3	95 17.2	155 28.0
36	27	9.0	27	13.5	25	54.8	36 6.5	96 17.4	156 28.2
37	27	9.3	27	13.8	25	55.0	37 6.7	97 17.5	157 28.4
38	27	9.5	27	14.0	25	55.3	38 6.9	98 17.7	158 28.6
39	27	9.8	27	14.3	25	55.5	39 7.1	99 17.9	159 28.8
40	27	10.0	27	14.5	25	55.7	40 7.2	100 18.1	160 28.9
41	27	10.3	27	14.8	25	56.0	41 7.4	101 18.3	161 29.1
42	27	10.5	27	15.0	25	56.2	42 7.6	102 18.4	162 29.3
43	27	10.8	27	15.3	25	56.5	43 7.8	103 18.6	163 29.5
44	27	11.0	27	15.5	25	56.7	44 8.0	104 18.8	164 29.7
45	27	11.3	27	15.8	25	56.9	45 8.1	105 19.0	165 29.8
46	27	11.5	27	16.0	25	57.2	46 8.3	106 19.2	166 30.0
47	27	11.8	27	16.3	25	57.4	47 8.5	107 19.3	167 30.2
48	27	12.0	27	16.5	25	57.7	48 8.7	108 19.5	168 30.4
49	27	12.3	27	16.8	25	57.9	49 8.9	109 19.7	169 30.6
50	27	12.5	27	17.0	25	58.1	50 9.0	110 19.9	170 30.7
51	27	12.8	27	17.3	25	58.4	51 9.2	111 20.1	171 30.9
52	27	13.0	27	17.5	25	58.6	52 9.4	112 20.3	172 31.1
53	27	13.3	27	17.8	25	58.8	53 9.6	113 20.4	173 31.3
54	27	13.5	27	18.0	25	59.1	54 9.8	114 20.6	174 31.5
55	27	13.8	27	18.3	25	59.3	55 9.9	115 20.8	175 31.6
56	27	14.0	27	18.5	25	59.6	56 10.1	116 21.0	176 31.8
57	27	14.3	27	18.8	25	59.8	57 10.3	117 21.2	177 32.0
58	27	14.5	27	19.0	26	.0	58 10.5	118 21.3	178 32.2
59	27	14.8	27	19.3	26	.3	59 10.7	119 21.5	179 32.4
60	27	15.0	27	19.5	26	.5	60 10.9	120 21.7	180 32.6

1 h 49 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	27	15.0	27	19.5	26	.5	0 .0	60 11.0	120 21.9
1	27	15.3	27	19.8	26	.8	1 .2	61 11.1	121 22.1
2	27	15.5	27	20.0	26	1.0	2 .4	62 11.3	122 22.3
3	27	15.8	27	20.3	26	1.2	3 .5	63 11.5	123 22.4
4	27	16.0	27	20.5	26	1.5	4 .7	64 11.7	124 22.6
5	27	16.3	27	20.8	26	1.7	5 .9	65 11.9	125 22.8
6	27	16.5	27	21.0	26	1.9	6 1.1	66 12.0	126 23.0
7	27	16.8	27	21.3	26	2.2	7 1.3	67 12.2	127 23.2
8	27	17.0	27	21.5	26	2.4	8 1.5	68 12.4	128 23.4
9	27	17.3	27	21.8	26	2.7	9 1.6	69 12.6	129 23.5
10	27	17.5	27	22.0	26	2.9	10 1.8	70 12.8	130 23.7
11	27	17.8	27	22.3	26	3.1	11 2.0	71 13.0	131 23.9
12	27	18.0	27	22.6	26	3.4	12 2.2	72 13.1	132 24.1
13	27	18.3	27	22.8	26	3.6	13 2.4	73 13.3	133 24.3
14	27	18.5	27	23.1	26	3.9	14 2.6	74 13.5	134 24.5
15	27	18.8	27	23.3	26	4.1	15 2.7	75 13.7	135 24.6
16	27	19.0	27	23.6	26	4.3	16 2.9	76 13.9	136 24.8
17	27	19.3	27	23.8	26	4.6	17 3.1	77 14.1	137 25.0
18	27	19.5	27	24.1	26	4.8	18 3.3	78 14.2	138 25.2
19	27	19.8	27	24.3	26	5.1	19 3.5	79 14.4	139 25.4
20	27	20.0	27	24.6	26	5.3	20 3.7	80 14.6	140 25.6
21	27	20.3	27	24.8	26	5.5	21 3.8	81 14.8	141 25.7
22	27	20.5	27	25.1	26	5.8	22 4.0	82 15.0	142 25.9
23	27	20.8	27	25.3	26	6.0	23 4.2	83 15.1	143 26.1
24	27	21.0	27	25.6	26	6.2	24 4.4	84 15.3	144 26.3
25	27	21.3	27	25.8	26	6.5	25 4.6	85 15.5	145 26.5
26	27	21.5	27	26.1	26	6.7	26 4.7	86 15.7	146 26.6
27	27	21.8	27	26.3	26	7.0	27 4.9	87 15.9	147 26.8
28	27	22.0	27	26.6	26	7.2	28 5.1	88 16.1	148 27.0
29	27	22.3	27	26.8	26	7.4	29 5.3	89 16.2	149 27.2
30	27	22.5	27	27.1	26	7.7	30 5.5	90 16.4	150 27.4
31	27	22.8	27	27.3	26	7.9	31 5.7	91 16.6	151 27.6
32	27	23.0	27	27.6	26	8.2	32 5.8	92 16.8	152 27.7
33	27	23.3	27	27.8	26	8.4	33 6.0	93 17.0	153 27.9
34	27	23.5	27	28.1	26	8.6	34 6.2	94 17.2	154 28.1
35	27	23.8	27	28.3	26	8.9	35 6.4	95 17.3	155 28.3
36	27	24.0	27	28.6	26	9.1	36 6.6	96 17.5	156 28.5
37	27	24.3	27	28.8	26	9.3	37 6.8	97 17.7	157 28.7
38	27	24.5	27	29.1	26	9.6	38 6.9	98 17.9	158 28.8
39	27	24.8	27	29.3	26	9.8	39 7.1	99 18.1	159 29.0
40	27	25.0	27	29.6	26	10.1	40 7.3	100 18.3	160 29.2
41	27	25.3	27	29.8	26	10.3	41 7.5	101 18.4	161 29.4
42	27	25.5	27	30.1	26	10.5	42 7.7	102 18.6	162 29.6
43	27	25.8	27	30.3	26	10.8	43 7.8	103 18.8	163 29.7
44	27	26.0	27	30.6	26	11.0	44 8.0	104 19.0	164 29.9
45	27	26.3	27	30.8	26	11.3	45 8.2	105 19.2	165 30.1
46	27	26.5	27	31.1	26	11.5	46 8.4	106 19.3	166 30.3
47	27	26.8	27	31.3	26	11.7	47 8.6	107 19.5	167 30.5
48	27	27.0	27	31.6	26	12.0	48 8.8	108 19.7	168 30.7
49	27	27.3	27	31.8	26	12.2	49 8.9	109 19.9	169 30.8
50	27	27.5	27	32.1	26	12.4	50 9.1	110 20.1	170 31.0
51	27	27.8	27	32.3	26	12.7	51 9.3	111 20.3	171 31.2
52	27	28.0	27	32.6	26	12.9	52 9.5	112 20.4	172 31.4
53	27	28.3	27	32.8	26	13.2	53 9.7	113 20.6	173 31.6
54	27	28.5	27	33.1	26	13.4	54 9.9	114 20.8	174 31.8
55	27	28.8	27	33.3	26	13.6	55 10.0	115 21.0	175 31.9
56	27	29.0	27	33.6	26	13.9	56 10.2	116 21.2	176 32.1
57	27	29.3	27	33.8	26	14.1	57 10.4	117 21.4	177 32.3
58	27	29.5	27	34.1	26	14.4	58 10.6	118 21.5	178 32.5
59	27	29.8	27	34.3	26	14.6	59 10.8	119 21.7	179 32.7
60	27	30.0	27	34.6	26	14.8	60 11.0	120 21.9	180 32.9

1 h 50 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	27 30.0	27 34.6	26 14.8	0 .0	60 11.1	120 22.1
1	27 30.3	27 34.8	26 15.1	1 .2	61 11.2	121 22.3
2	27 30.5	27 35.1	26 15.3	2 .4	62 11.4	122 22.5
3	27 30.8	27 35.3	26 15.5	3 .6	63 11.6	123 22.7
4	27 31.0	27 35.6	26 15.8	4 .7	64 11.8	124 22.8
5	27 31.3	27 35.8	26 16.0	5 .9	65 12.0	125 23.0
6	27 31.5	27 36.1	26 16.3	6 1.1	66 12.2	126 23.2
7	27 31.8	27 36.3	26 16.5	7 1.3	67 12.3	127 23.4
8	27 32.0	27 36.6	26 16.7	8 1.5	68 12.5	128 23.6
9	27 32.3	27 36.8	26 17.0	9 1.7	69 12.7	129 23.8
10	27 32.5	27 37.1	26 17.2	10 1.8	70 12.9	130 23.9
11	27 32.8	27 37.3	26 17.5	11 2.0	71 13.1	131 24.1
12	27 33.0	27 37.6	26 17.7	12 2.2	72 13.3	132 24.3
13	27 33.3	27 37.8	26 17.9	13 2.4	73 13.4	133 24.5
14	27 33.5	27 38.1	26 18.2	14 2.6	74 13.6	134 24.7
15	27 33.8	27 38.3	26 18.4	15 2.8	75 13.8	135 24.9
16	27 34.0	27 38.6	26 18.7	16 2.9	76 14.0	136 25.0
17	27 34.3	27 38.8	26 18.9	17 3.1	77 14.2	137 25.2
18	27 34.5	27 39.1	26 19.1	18 3.3	78 14.4	138 25.4
19	27 34.8	27 39.3	26 19.4	19 3.5	79 14.5	139 25.6
20	27 35.0	27 39.6	26 19.6	20 3.7	80 14.7	140 25.8
21	27 35.3	27 39.8	26 19.8	21 3.9	81 14.9	141 26.0
22	27 35.5	27 40.1	26 20.1	22 4.1	82 15.1	142 26.2
23	27 35.8	27 40.3	26 20.3	23 4.2	83 15.3	143 26.3
24	27 36.0	27 40.6	26 20.6	24 4.4	84 15.5	144 26.5
25	27 36.3	27 40.9	26 20.8	25 4.6	85 15.7	145 26.7
26	27 36.5	27 41.1	26 21.0	26 4.8	86 15.8	146 26.9
27	27 36.8	27 41.4	26 21.3	27 5.0	87 16.0	147 27.1
28	27 37.0	27 41.6	26 21.5	28 5.2	88 16.2	148 27.3
29	27 37.3	27 41.9	26 21.8	29 5.3	89 16.4	149 27.4
30	27 37.5	27 42.1	26 22.0	30 5.5	90 16.6	150 27.6
31	27 37.8	27 42.4	26 22.2	31 5.7	91 16.8	151 27.8
32	27 38.0	27 42.6	26 22.5	32 5.9	92 16.9	152 28.0
33	27 38.3	27 42.9	26 22.7	33 6.1	93 17.1	153 28.2
34	27 38.5	27 43.1	26 22.9	34 6.3	94 17.3	154 28.4
35	27 38.8	27 43.4	26 23.2	35 6.4	95 17.5	155 28.5
36	27 39.0	27 43.6	26 23.4	36 6.6	96 17.7	156 28.7
37	27 39.3	27 43.9	26 23.7	37 6.8	97 17.9	157 28.9
38	27 39.5	27 44.1	26 23.9	38 7.0	98 18.0	158 29.1
39	27 39.8	27 44.4	26 24.1	39 7.2	99 18.2	159 29.3
40	27 40.0	27 44.6	26 24.4	40 7.4	100 18.4	160 29.5
41	27 40.3	27 44.9	26 24.6	41 7.6	101 18.6	161 29.7
42	27 40.5	27 45.1	26 24.9	42 7.7	102 18.8	162 29.8
43	27 40.8	27 45.4	26 25.1	43 7.9	103 19.0	163 30.0
44	27 41.0	27 45.6	26 25.3	44 8.1	104 19.2	164 30.2
45	27 41.3	27 45.9	26 25.6	45 8.3	105 19.3	165 30.4
46	27 41.5	27 46.1	26 25.8	46 8.5	106 19.5	166 30.6
47	27 41.8	27 46.4	26 26.0	47 8.7	107 19.7	167 30.8
48	27 42.0	27 46.6	26 26.3	48 8.8	108 19.9	168 30.9
49	27 42.3	27 46.9	26 26.5	49 9.0	109 20.1	169 31.1
50	27 42.5	27 47.1	26 26.8	50 9.2	110 20.3	170 31.3
51	27 42.8	27 47.4	26 27.0	51 9.4	111 20.4	171 31.5
52	27 43.0	27 47.6	26 27.2	52 9.6	112 20.6	172 31.7
53	27 43.3	27 47.9	26 27.5	53 9.8	113 20.8	173 31.9
54	27 43.5	27 48.1	26 27.7	54 9.9	114 21.0	174 32.0
55	27 43.8	27 48.4	26 28.0	55 10.1	115 21.2	175 32.2
56	27 44.0	27 48.6	26 28.2	56 10.3	116 21.4	176 32.4
57	27 44.3	27 48.9	26 28.4	57 10.5	117 21.5	177 32.6
58	27 44.5	27 49.1	26 28.7	58 10.7	118 21.7	178 32.8
59	27 44.8	27 49.4	26 28.9	59 10.9	119 21.9	179 33.0
60	27 45.0	27 49.6	26 29.2	60 11.1	120 22.1	180 33.2

1 h 51 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA (	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	27 45.0	27 49.6	26 29.2	0 .0	60 11.2	120 22.3
1	27 45.3	27 49.9	26 29.4	1 .2	61 11.3	121 22.5
2	27 45.5	27 50.1	26 29.6	2 .4	62 11.5	122 22.7
3	27 45.8	27 50.4	26 29.9	3 .6	63 11.7	123 22.9
4	27 46.0	27 50.6	26 30.1	4 .7	64 11.9	124 23.0
5	27 46.3	27 50.9	26 30.3	5 .9	65 12.1	125 23.2
6	27 46.5	27 51.1	26 30.6	6 1.1	66 12.3	126 23.4
7	27 46.8	27 51.4	26 30.8	7 1.3	67 12.5	127 23.6
8	27 47.0	27 51.6	26 31.1	8 1.5	68 12.6	128 23.8
9	27 47.3	27 51.9	26 31.3	9 1.7	69 12.8	129 24.0
10	27 47.5	27 52.1	26 31.5	10 1.9	70 13.0	130 24.2
11	27 47.8	27 52.4	26 31.8	11 2.0	71 13.2	131 24.3
12	27 48.0	27 52.6	26 32.0	12 2.2	72 13.4	132 24.5
13	27 48.3	27 52.9	26 32.3	13 2.4	73 13.6	133 24.7
14	27 48.5	27 53.1	26 32.5	14 2.6	74 13.8	134 24.9
15	27 48.8	27 53.4	26 32.7	15 2.8	75 13.9	135 25.1
16	27 49.0	27 53.6	26 33.0	16 3.0	76 14.1	136 25.3
17	27 49.3	27 53.9	26 33.2	17 3.2	77 14.3	137 25.5
18	27 49.5	27 54.1	26 33.4	18 3.3	78 14.5	138 25.6
19	27 49.8	27 54.4	26 33.7	19 3.5	79 14.7	139 25.8
20	27 50.0	27 54.6	26 33.9	20 3.7	80 14.9	140 26.0
21	27 50.3	27 54.9	26 34.2	21 3.9	81 15.1	141 26.2
22	27 50.5	27 55.1	26 34.4	22 4.1	82 15.2	142 26.4
23	27 50.8	27 55.4	26 34.6	23 4.3	83 15.4	143 26.6
24	27 51.0	27 55.6	26 34.9	24 4.5	84 15.6	144 26.8
25	27 51.3	27 55.9	26 35.1	25 4.6	85 15.8	145 26.9
26	27 51.5	27 56.1	26 35.4	26 4.8	86 16.0	146 27.1
27	27 51.8	27 56.4	26 35.6	27 5.0	87 16.2	147 27.3
28	27 52.0	27 56.6	26 35.8	28 5.2	88 16.4	148 27.5
29	27 52.3	27 56.9	26 36.1	29 5.4	89 16.5	149 27.7
30	27 52.5	27 57.1	26 36.3	30 5.6	90 16.7	150 27.9
31	27 52.8	27 57.4	26 36.5	31 5.8	91 16.9	151 28.1
32	27 53.0	27 57.6	26 36.8	32 5.9	92 17.1	152 28.2
33	27 53.3	27 57.9	26 37.0	33 6.1	93 17.3	153 28.4
34	27 53.5	27 58.1	26 37.3	34 6.3	94 17.5	154 28.6
35	27 53.8	27 58.4	26 37.5	35 6.5	95 17.7	155 28.8
36	27 54.0	27 58.7	26 37.7	36 6.7	96 17.8	156 29.0
37	27 54.3	27 58.9	26 38.0	37 6.9	97 18.0	157 29.2
38	27 54.5	27 59.2	26 38.2	38 7.1	98 18.2	158 29.4
39	27 54.8	27 59.4	26 38.5	39 7.2	99 18.4	159 29.5
40	27 55.0	27 59.7	26 38.7	40 7.4	100 18.6	160 29.7
41	27 55.3	27 59.9	26 38.9	41 7.6	101 18.8	161 29.9
42	27 55.5	28 .2	26 39.2	42 7.8	102 19.0	162 30.1
43	27 55.8	28 .4	26 39.4	43 8.0	103 19.1	163 30.3
44	27 56.0	28 .7	26 39.6	44 8.2	104 19.3	164 30.5
45	27 56.3	28 .9	26 39.9	45 8.4	105 19.5	165 30.7
46	27 56.5	28 1.2	26 40.1	46 8.5	106 19.7	166 30.8
47	27 56.8	28 1.4	26 40.4	47 8.7	107 19.9	167 31.0
48	27 57.0	28 1.7	26 40.6	48 8.9	108 20.1	168 31.2
49	27 57.3	28 1.9	26 40.8	49 9.1	109 20.3	169 31.4
50	27 57.5	28 2.2	26 41.1	50 9.3	110 20.4	170 31.6
51	27 57.8	28 2.4	26 41.3	51 9.5	111 20.6	171 31.8
52	27 58.0	28 2.7	26 41.6	52 9.7	112 20.8	172 32.0
53	27 58.3	28 2.9	26 41.8	53 9.8	113 21.0	173 32.1
54	27 58.5	28 3.2	26 42.0	54 10.0	114 21.2	174 32.3
55	27 58.8	28 3.4	26 42.3	55 10.2	115 21.4	175 32.5
56	27 59.0	28 3.7	26 42.5	56 10.4	116 21.6	176 32.7
57	27 59.3	28 3.9	26 42.8	57 10.6	117 21.7	177 32.9
58	27 59.5	28 4.2	26 43.0	58 10.8	118 21.9	178 33.1
59	27 59.8	28 4.4	26 43.2	59 11.0	119 22.1	179 33.3
60	28 .0	28 4.7	26 43.5	60 11.2	120 22.3	180 33.5

1 h 52 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	o	'	o		
0	28	.0	28	4.7	26	43.5	0 .0	60 11.3	120 22.5
1	28	.3	28	4.9	26	43.7	1 .2	61 11.4	121 22.7
2	28	.5	28	5.2	26	43.9	2 .4	62 11.6	122 22.9
3	28	.8	28	5.4	26	44.2	3 .6	63 11.8	123 23.1
4	28	1.0	28	5.7	26	44.4	4 .8	64 12.0	124 23.3
5	28	1.3	28	5.9	26	44.7	5 .9	65 12.2	125 23.4
6	28	1.5	28	6.2	26	44.9	6 1.1	66 12.4	126 23.6
7	28	1.8	28	6.4	26	45.1	7 1.3	67 12.6	127 23.8
8	28	2.0	28	6.7	26	45.4	8 1.5	68 12.8	128 24.0
9	28	2.3	28	6.9	26	45.6	9 1.7	69 12.9	129 24.2
10	28	2.5	28	7.2	26	45.9	10 1.9	70 13.1	130 24.4
11	28	2.8	28	7.4	26	46.1	11 2.1	71 13.3	131 24.6
12	28	3.0	28	7.7	26	46.3	12 2.3	72 13.5	132 24.8
13	28	3.3	28	7.9	26	46.6	13 2.4	73 13.7	133 24.9
14	28	3.5	28	8.2	26	46.8	14 2.6	74 13.9	134 25.1
15	28	3.8	28	8.4	26	47.0	15 2.8	75 14.1	135 25.3
16	28	4.0	28	8.7	26	47.3	16 3.0	76 14.3	136 25.5
17	28	4.3	28	8.9	26	47.5	17 3.2	77 14.4	137 25.7
18	28	4.5	28	9.2	26	47.8	18 3.4	78 14.6	138 25.9
19	28	4.8	28	9.4	26	48.0	19 3.6	79 14.8	139 26.1
20	28	5.0	28	9.7	26	48.2	20 3.8	80 15.0	140 26.3
21	28	5.3	28	9.9	26	48.5	21 3.9	81 15.2	141 26.4
22	28	5.5	28	10.2	26	48.7	22 4.1	82 15.4	142 26.6
23	28	5.8	28	10.4	26	49.0	23 4.3	83 15.6	143 26.8
24	28	6.0	28	10.7	26	49.2	24 4.5	84 15.8	144 27.0
25	28	6.3	28	10.9	26	49.4	25 4.7	85 15.9	145 27.2
26	28	6.5	28	11.2	26	49.7	26 4.9	86 16.1	146 27.4
27	28	6.8	28	11.4	26	49.9	27 5.1	87 16.3	147 27.6
28	28	7.0	28	11.7	26	50.1	28 5.3	88 16.5	148 27.8
29	28	7.3	28	11.9	26	50.4	29 5.4	89 16.7	149 27.9
30	28	7.5	28	12.2	26	50.6	30 5.6	90 16.9	150 28.1
31	28	7.8	28	12.4	26	50.9	31 5.8	91 17.1	151 28.3
32	28	8.0	28	12.7	26	51.1	32 6.0	92 17.3	152 28.5
33	28	8.3	28	12.9	26	51.3	33 6.2	93 17.4	153 28.7
34	28	8.5	28	13.2	26	51.6	34 6.4	94 17.6	154 28.9
35	28	8.8	28	13.4	26	51.8	35 6.6	95 17.8	155 29.1
36	28	9.0	28	13.7	26	52.1	36 6.8	96 18.0	156 29.3
37	28	9.3	28	13.9	26	52.3	37 6.9	97 18.2	157 29.4
38	28	9.5	28	14.2	26	52.5	38 7.1	98 18.4	158 29.6
39	28	9.8	28	14.4	26	52.8	39 7.3	99 18.6	159 29.8
40	28	10.0	28	14.7	26	53.0	40 7.5	100 18.8	160 30.0
41	28	10.3	28	14.9	26	53.2	41 7.7	101 18.9	161 30.2
42	28	10.5	28	15.2	26	53.5	42 7.9	102 19.1	162 30.4
43	28	10.8	28	15.4	26	53.7	43 8.1	103 19.3	163 30.6
44	28	11.0	28	15.7	26	54.0	44 8.3	104 19.5	164 30.8
45	28	11.3	28	15.9	26	54.2	45 8.4	105 19.7	165 30.9
46	28	11.5	28	16.2	26	54.4	46 8.6	106 19.9	166 31.1
47	28	11.8	28	16.4	26	54.7	47 8.8	107 20.1	167 31.3
48	28	12.0	28	16.7	26	54.9	48 9.0	108 20.3	168 31.5
49	28	12.3	28	17.0	26	55.2	49 9.2	109 20.4	169 31.7
50	28	12.5	28	17.2	26	55.4	50 9.4	110 20.6	170 31.9
51	28	12.8	28	17.5	26	55.6	51 9.6	111 20.8	171 32.1
52	28	13.0	28	17.7	26	55.9	52 9.8	112 21.0	172 32.3
53	28	13.3	28	18.0	26	56.1	53 9.9	113 21.2	173 32.4
54	28	13.5	28	18.2	26	56.4	54 10.1	114 21.4	174 32.6
55	28	13.8	28	18.5	26	56.6	55 10.3	115 21.6	175 32.8
56	28	14.0	28	18.7	26	56.8	56 10.5	116 21.8	176 33.0
57	28	14.3	28	19.0	26	57.1	57 10.7	117 21.9	177 33.2
58	28	14.5	28	19.2	26	57.3	58 10.9	118 22.1	178 33.4
59	28	14.8	28	19.5	26	57.5	59 11.1	119 22.3	179 33.6
60	28	15.0	28	19.7	26	57.8	60 11.3	120 22.5	180 33.8

1 h 53 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	o	'	o		
0	28	15.0	28	19.7	26	57.8	0 .0	60 11.4	120 22.7
1	28	15.3	28	20.0	26	58.0	1 .2	61 11.5	121 22.9
2	28	15.5	28	20.2	26	58.3	2 .4	62 11.7	122 23.1
3	28	15.8	28	20.5	26	58.5	3 .6	63 11.9	123 23.3
4	28	16.0	28	20.7	26	58.7	4 .8	64 12.1	124 23.5
5	28	16.3	28	21.0	26	59.0	5 .9	65 12.3	125 23.6
6	28	16.5	28	21.2	26	59.2	6 1.1	66 12.5	126 23.8
7	28	16.8	28	21.5	26	59.5	7 1.3	67 12.7	127 24.0
8	28	17.0	28	21.7	26	59.7	8 1.5	68 12.9	128 24.2
9	28	17.3	28	22.0	26	59.9	9 1.7	69 13.1	129 24.4
10	28	17.5	28	22.2	27	.2	10 1.9	70 13.2	130 24.6
11	28	17.8	28	22.5	27	.4	11 2.1	71 13.4	131 24.8
12	28	18.0	28	22.7	27	.6	12 2.3	72 13.6	132 25.0
13	28	18.3	28	23.0	27	.9	13 2.5	73 13.8	133 25.2
14	28	18.5	28	23.2	27	1.1	14 2.6	74 14.0	134 25.3
15	28	18.8	28	23.5	27	1.4	15 2.8	75 14.2	135 25.5
16	28	19.0	28	23.7	27	1.6	16 3.0	76 14.4	136 25.7
17	28	19.3	28	24.0	27	1.8	17 3.2	77 14.6	137 25.9
18	28	19.5	28	24.2	27	2.1	18 3.4	78 14.8	138 26.1
19	28	19.8	28	24.5	27	2.3	19 3.6	79 14.9	139 26.3
20	28	20.0	28	24.7	27	2.6	20 3.8	80 15.1	140 26.5
21	28	20.3	28	25.0	27	2.8	21 4.0	81 15.3	141 26.7
22	28	20.5	28	25.2	27	3.0	22 4.2	82 15.5	142 26.9
23	28	20.8	28	25.5	27	3.3	23 4.4	83 15.7	143 27.1
24	28	21.0	28	25.7	27	3.5	24 4.5	84 15.9	144 27.2
25	28	21.3	28	26.0	27	3.7	25 4.7	85 16.1	145 27.4
26	28	21.5	28	26.2	27	4.0	26 4.9	86 16.3	146 27.6
27	28	21.8	28	26.5	27	4.2	27 5.1	87 16.5	147 27.8
28	28	22.0	28	26.7	27	4.5	28 5.3	88 16.6	148 28.0
29	28	22.3	28	27.0	27	4.7	29 5.5	89 16.8	149 28.2
30	28	22.5	28	27.2	27	4.9	30 5.7	90 17.0	150 28.4
31	28	22.8	28	27.5	27	5.2	31 5.9	91 17.2	151 28.6
32	28	23.0	28	27.7	27	5.4	32 6.1	92 17.4	152 28.8
33	28	23.3	28	28.0	27	5.7	33 6.2	93 17.6	153 28.9
34	28	23.5	28	28.2	27	5.9	34 6.4	94 17.8	154 29.1
35	28	23.8	28	28.5	27	6.1	35 6.6	95 18.0	155 29.3
36	28	24.0	28	28.7	27	6.4	36 6.8	96 18.2	156 29.5
37	28	24.3	28	29.0	27	6.6	37 7.0	97 18.3	157 29.7
38	28	24.5	28	29.2	27	6.9	38 7.2	98 18.5	158 29.9
39	28	24.8	28	29.5	27	7.1	39 7.4	99 18.7	159 30.1
40	28	25.0	28	29.7	27	7.3	40 7.6	100 18.9	160 30.3
41	28	25.3	28	30.0	27	7.6	41 7.8	101 19.1	161 30.5
42	28	25.5	28	30.2	27	7.8	42 7.9	102 19.3	162 30.6
43	28	25.8	28	30.5	27	8.0	43 8.1	103 19.5	163 30.8
44	28	26.0	28	30.7	27	8.3	44 8.3	104 19.7	164 31.0
45	28	26.3	28	31.0	27	8.5	45 8.5	105 19.9	165 31.2
46	28	26.5	28	31.2	27	8.8	46 8.7	106 20.1	166 31.4
47	28	26.8	28	31.5	27	9.0	47 8.9	107 20.2	167 31.6
48	28	27.0	28	31.7	27	9.2	48 9.1	108 20.4	168 31.8
49	28	27.3	28	32.0	27	9.5	49 9.3	109 20.6	169 32.0
50	28	27.5	28	32.2	27	9.7	50 9.5	110 20.8	170 32.2
51	28	27.8	28	32.5	27	10.0	51 9.6	111 21.0	171 32.3
52	28	28.0	28	32.7	27	10.2	52 9.8	112 21.2	172 32.5
53	28	28.3	28	33.0	27	10.4	53 10.0	113 21.4	173 32.7
54	28	28.5	28	33.2	27	10.7	54 10.2	114 21.6	174 32.9
55	28	28.8	28	33.5	27	10.9	55 10.4	115 21.8	175 33.1
56	28	29.0	28	33.7	27	11.1	56 10.6	116 21.9	176 33.3
57	28	29.3	28	34.0	27	11.4	57 10.8	117 22.1	177 33.5
58	28	29.5	28	34.2	27	11.6	58 11.0	118 22.3	178 33.7
59	28	29.8	28	34.5	27	11.9	59 11.2	119 22.5	179 33.9
60	28	30.0	28	34.8	27	12.1	60 11.4	120 22.7	180 34.1

1 h 54 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	28 30.0	28 34.8	27 12.1	0 .0	60 11.5	120 22.9
1	28 30.3	28 35.0	27 12.3	1 .2	61 11.6	121 23.1
2	28 30.5	28 35.3	27 12.6	2 .4	62 11.8	122 23.3
3	28 30.8	28 35.5	27 12.8	3 .6	63 12.0	123 23.5
4	28 31.0	28 35.8	27 13.1	4 .8	64 12.2	124 23.7
5	28 31.3	28 36.0	27 13.3	5 1.0	65 12.4	125 23.9
6	28 31.5	28 36.3	27 13.5	6 1.1	66 12.6	126 24.0
7	28 31.8	28 36.5	27 13.8	7 1.3	67 12.8	127 24.2
8	28 32.0	28 36.8	27 14.0	8 1.5	68 13.0	128 24.4
9	28 32.3	28 37.0	27 14.2	9 1.7	69 13.2	129 24.6
10	28 32.5	28 37.3	27 14.5	10 1.9	70 13.4	130 24.8
11	28 32.8	28 37.5	27 14.7	11 2.1	71 13.5	131 25.0
12	28 33.0	28 37.8	27 15.0	12 2.3	72 13.7	132 25.2
13	28 33.3	28 38.0	27 15.2	13 2.5	73 13.9	133 25.4
14	28 33.5	28 38.3	27 15.4	14 2.7	74 14.1	134 25.6
15	28 33.8	28 38.5	27 15.7	15 2.9	75 14.3	135 25.8
16	28 34.0	28 38.8	27 15.9	16 3.1	76 14.5	136 26.0
17	28 34.3	28 39.0	27 16.2	17 3.2	77 14.7	137 26.1
18	28 34.5	28 39.3	27 16.4	18 3.4	78 14.9	138 26.3
19	28 34.8	28 39.5	27 16.6	19 3.6	79 15.1	139 26.5
20	28 35.0	28 39.8	27 16.9	20 3.8	80 15.3	140 26.7
21	28 35.3	28 40.0	27 17.1	21 4.0	81 15.5	141 26.9
22	28 35.5	28 40.3	27 17.3	22 4.2	82 15.6	142 27.1
23	28 35.8	28 40.5	27 17.6	23 4.4	83 15.8	143 27.3
24	28 36.0	28 40.8	27 17.8	24 4.6	84 16.0	144 27.5
25	28 36.3	28 41.0	27 18.1	25 4.8	85 16.2	145 27.7
26	28 36.5	28 41.3	27 18.3	26 5.0	86 16.4	146 27.9
27	28 36.8	28 41.5	27 18.5	27 5.2	87 16.6	147 28.1
28	28 37.0	28 41.8	27 18.8	28 5.3	88 16.8	148 28.2
29	28 37.3	28 42.0	27 19.0	29 5.5	89 17.0	149 28.4
30	28 37.5	28 42.3	27 19.3	30 5.7	90 17.2	150 28.6
31	28 37.8	28 42.5	27 19.5	31 5.9	91 17.4	151 28.8
32	28 38.0	28 42.8	27 19.7	32 6.1	92 17.6	152 29.0
33	28 38.3	28 43.0	27 20.0	33 6.3	93 17.7	153 29.2
34	28 38.5	28 43.3	27 20.2	34 6.5	94 17.9	154 29.4
35	28 38.8	28 43.5	27 20.5	35 6.7	95 18.1	155 29.6
36	28 39.0	28 43.8	27 20.7	36 6.9	96 18.3	156 29.8
37	28 39.3	28 44.0	27 20.9	37 7.1	97 18.5	157 30.0
38	28 39.5	28 44.3	27 21.2	38 7.3	98 18.7	158 30.2
39	28 39.8	28 44.5	27 21.4	39 7.4	99 18.9	159 30.3
40	28 40.0	28 44.8	27 21.6	40 7.6	100 19.1	160 30.5
41	28 40.3	28 45.0	27 21.9	41 7.8	101 19.3	161 30.7
42	28 40.5	28 45.3	27 22.1	42 8.0	102 19.5	162 30.9
43	28 40.8	28 45.5	27 22.4	43 8.2	103 19.7	163 31.1
44	28 41.0	28 45.8	27 22.6	44 8.4	104 19.8	164 31.3
45	28 41.3	28 46.0	27 22.8	45 8.6	105 20.0	165 31.5
46	28 41.5	28 46.3	27 23.1	46 8.8	106 20.2	166 31.7
47	28 41.8	28 46.5	27 23.3	47 9.0	107 20.4	167 31.9
48	28 42.0	28 46.8	27 23.6	48 9.2	108 20.6	168 32.1
49	28 42.3	28 47.0	27 23.8	49 9.4	109 20.8	169 32.3
50	28 42.5	28 47.3	27 24.0	50 9.5	110 21.0	170 32.4
51	28 42.8	28 47.5	27 24.3	51 9.7	111 21.2	171 32.6
52	28 43.0	28 47.8	27 24.5	52 9.9	112 21.4	172 32.8
53	28 43.3	28 48.0	27 24.7	53 10.1	113 21.6	173 33.0
54	28 43.5	28 48.3	27 25.0	54 10.3	114 21.8	174 33.2
55	28 43.8	28 48.5	27 25.2	55 10.5	115 21.9	175 33.4
56	28 44.0	28 48.8	27 25.5	56 10.7	116 22.1	176 33.6
57	28 44.3	28 49.0	27 25.7	57 10.9	117 22.3	177 33.8
58	28 44.5	28 49.3	27 25.9	58 11.1	118 22.5	178 34.0
59	28 44.8	28 49.5	27 26.2	59 11.3	119 22.7	179 34.2
60	28 45.0	28 49.8	27 26.4	60 11.5	120 22.9	180 34.4

1 h 55 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta		
s	SUNCA I PLANETA	PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.
	° /	° /	° /	/	/	/
0	28 45.0	28 49.8	27 26.4	0 .0	60 11.6	120 23.1
1	28 45.3	28 50.0	27 26.7	1 .2	61 11.7	121 23.3
2	28 45.5	28 50.3	27 26.9	2 .4	62 11.9	122 23.5
3	28 45.8	28 50.5	27 27.1	3 .6	63 12.1	123 23.7
4	28 46.0	28 50.8	27 27.4	4 .8	64 12.3	124 23.9
5	28 46.3	28 51.0	27 27.6	5 1.0	65 12.5	125 24.1
6	28 46.5	28 51.3	27 27.8	6 1.2	66 12.7	126 24.3
7	28 46.8	28 51.5	27 28.1	7 1.3	67 12.9	127 24.4
8	28 47.0	28 51.8	27 28.3	8 1.5	68 13.1	128 24.6
9	28 47.3	28 52.0	27 28.6	9 1.7	69 13.3	129 24.8
10	28 47.5	28 52.3	27 28.8	10 1.9	70 13.5	130 25.0
11	28 47.8	28 52.5	27 29.0	11 2.1	71 13.7	131 25.2
12	28 48.0	28 52.8	27 29.3	12 2.3	72 13.9	132 25.4
13	28 48.3	28 53.1	27 29.5	13 2.5	73 14.1	133 25.6
14	28 48.5	28 53.3	27 29.8	14 2.7	74 14.2	134 25.8
15	28 48.8	28 53.6	27 30.0	15 2.9	75 14.4	135 26.0
16	28 49.0	28 53.8	27 30.2	16 3.1	76 14.6	136 26.2
17	28 49.3	28 54.1	27 30.5	17 3.3	77 14.8	137 26.4
18	28 49.5	28 54.3	27 30.7	18 3.5	78 15.0	138 26.6
19	28 49.8	28 54.6	27 31.0	19 3.7	79 15.2	139 26.8
20	28 50.0	28 54.8	27 31.2	20 3.9	80 15.4	140 27.0
21	28 50.3	28 55.1	27 31.4	21 4.0	81 15.6	141 27.1
22	28 50.5	28 55.3	27 31.7	22 4.2	82 15.8	142 27.3
23	28 50.8	28 55.6	27 31.9	23 4.4	83 16.0	143 27.5
24	28 51.0	28 55.8	27 32.1	24 4.6	84 16.2	144 27.7
25	28 51.3	28 56.1	27 32.4	25 4.8	85 16.4	145 27.9
26	28 51.5	28 56.3	27 32.6	26 5.0	86 16.6	146 28.1
27	28 51.8	28 56.6	27 32.9	27 5.2	87 16.7	147 28.3
28	28 52.0	28 56.8	27 33.1	28 5.4	88 16.9	148 28.5
29	28 52.3	28 57.1	27 33.3	29 5.6	89 17.1	149 28.7
30	28 52.5	28 57.3	27 33.6	30 5.8	90 17.3	150 28.9
31	28 52.8	28 57.6	27 33.8	31 6.0	91 17.5	151 29.1
32	28 53.0	28 57.8	27 34.1	32 6.2	92 17.7	152 29.3
33	28 53.3	28 58.1	27 34.3	33 6.4	93 17.9	153 29.5
34	28 53.5	28 58.3	27 34.5	34 6.5	94 18.1	154 29.6
35	28 53.8	28 58.6	27 34.8	35 6.7	95 18.3	155 29.8
36	28 54.0	28 58.8	27 35.0	36 6.9	96 18.5	156 30.0
37	28 54.3	28 59.1	27 35.2	37 7.1	97 18.7	157 30.2
38	28 54.5	28 59.3	27 35.5	38 7.3	98 18.9	158 30.4
39	28 54.8	28 59.6	27 35.7	39 7.5	99 19.1	159 30.6
40	28 55.0	28 59.8	27 36.0	40 7.7	100 19.3	160 30.8
41	28 55.3	29 .1	27 36.2	41 7.9	101 19.4	161 31.0
42	28 55.5	29 .3	27 36.4	42 8.1	102 19.6	162 31.2
43	28 55.8	29 .6	27 36.7	43 8.3	103 19.8	163 31.4
44	28 56.0	29 .8	27 36.9	44 8.5	104 20.0	164 31.6
45	28 56.3	29 1.1	27 37.2	45 8.7	105 20.2	165 31.8
46	28 56.5	29 1.3	27 37.4	46 8.9	106 20.4	166 32.0
47	28 56.8	29 1.6	27 37.6	47 9.0	107 20.6	167 32.1
48	28 57.0	29 1.8	27 37.9	48 9.2	108 20.8	168 32.3
49	28 57.3	29 2.1	27 38.1	49 9.4	109 21.0	169 32.5
50	28 57.5	29 2.3	27 38.3	50 9.6	110 21.2	170 32.7
51	28 57.8	29 2.6	27 38.6	51 9.8	111 21.4	171 32.9
52	28 58.0	29 2.8	27 38.8	52 10.0	112 21.6	172 33.1
53	28 58.3	29 3.1	27 39.1	53 10.2	113 21.8	173 33.3
54	28 58.5	29 3.3	27 39.3	54 10.4	114 21.9	174 33.5
55	28 58.8	29 3.6	27 39.5	55 10.6	115 22.1	175 33.7
56	28 59.0	29 3.8	27 39.8	56 10.8	116 22.3	176 33.9
57	28 59.3	29 4.1	27 40.0	57 11.0	117 22.5	177 34.1
58	28 59.5	29 4.3	27 40.3	58 11.2	118 22.7	178 34.3
59	28 59.8	29 4.6	27 40.5	59 11.4	119 22.9	179 34.5
60	29 .0	29 4.8	27 40.7	60 11.6	120 23.1	180 34.7

1 h 56 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	.0	29	4.8	27	40.7	0 .0	60 11.7	120 23.3
1	29	.3	29	5.1	27	41.0	1 .2	61 11.8	121 23.5
2	29	.5	29	5.3	27	41.2	2 .4	62 12.0	122 23.7
3	29	.8	29	5.6	27	41.4	3 .6	63 12.2	123 23.9
4	29	1.0	29	5.8	27	41.7	4 .8	64 12.4	124 24.1
5	29	1.3	29	6.1	27	41.9	5 1.0	65 12.6	125 24.3
6	29	1.5	29	6.3	27	42.2	6 1.2	66 12.8	126 24.5
7	29	1.8	29	6.6	27	42.4	7 1.4	67 13.0	127 24.7
8	29	2.0	29	6.8	27	42.6	8 1.6	68 13.2	128 24.9
9	29	2.3	29	7.1	27	42.9	9 1.7	69 13.4	129 25.0
10	29	2.5	29	7.3	27	43.1	10 1.9	70 13.6	130 25.2
11	29	2.8	29	7.6	27	43.4	11 2.1	71 13.8	131 25.4
12	29	3.0	29	7.8	27	43.6	12 2.3	72 14.0	132 25.6
13	29	3.3	29	8.1	27	43.8	13 2.5	73 14.2	133 25.8
14	29	3.5	29	8.3	27	44.1	14 2.7	74 14.4	134 26.0
15	29	3.8	29	8.6	27	44.3	15 2.9	75 14.6	135 26.2
16	29	4.0	29	8.8	27	44.6	16 3.1	76 14.8	136 26.4
17	29	4.3	29	9.1	27	44.8	17 3.3	77 15.0	137 26.6
18	29	4.5	29	9.3	27	45.0	18 3.5	78 15.1	138 26.8
19	29	4.8	29	9.6	27	45.3	19 3.7	79 15.3	139 27.0
20	29	5.0	29	9.8	27	45.5	20 3.9	80 15.5	140 27.2
21	29	5.3	29	10.1	27	45.7	21 4.1	81 15.7	141 27.4
22	29	5.5	29	10.3	27	46.0	22 4.3	82 15.9	142 27.6
23	29	5.8	29	10.6	27	46.2	23 4.5	83 16.1	143 27.8
24	29	6.0	29	10.9	27	46.5	24 4.7	84 16.3	144 28.0
25	29	6.3	29	11.1	27	46.7	25 4.9	85 16.5	145 28.2
26	29	6.5	29	11.4	27	46.9	26 5.0	86 16.7	146 28.3
27	29	6.8	29	11.6	27	47.2	27 5.2	87 16.9	147 28.5
28	29	7.0	29	11.9	27	47.4	28 5.4	88 17.1	148 28.7
29	29	7.3	29	12.1	27	47.7	29 5.6	89 17.3	149 28.9
30	29	7.5	29	12.4	27	47.9	30 5.8	90 17.5	150 29.1
31	29	7.8	29	12.6	27	48.1	31 6.0	91 17.7	151 29.3
32	29	8.0	29	12.9	27	48.4	32 6.2	92 17.9	152 29.5
33	29	8.3	29	13.1	27	48.6	33 6.4	93 18.1	153 29.7
34	29	8.5	29	13.4	27	48.8	34 6.6	94 18.3	154 29.9
35	29	8.8	29	13.6	27	49.1	35 6.8	95 18.4	155 30.1
36	29	9.0	29	13.9	27	49.3	36 7.0	96 18.6	156 30.3
37	29	9.3	29	14.1	27	49.6	37 7.2	97 18.8	157 30.5
38	29	9.5	29	14.4	27	49.8	38 7.4	98 19.0	158 30.7
39	29	9.8	29	14.6	27	50.0	39 7.6	99 19.2	159 30.9
40	29	10.0	29	14.9	27	50.3	40 7.8	100 19.4	160 31.1
41	29	10.3	29	15.1	27	50.5	41 8.0	101 19.6	161 31.3
42	29	10.5	29	15.4	27	50.8	42 8.2	102 19.8	162 31.5
43	29	10.8	29	15.6	27	51.0	43 8.3	103 20.0	163 31.6
44	29	11.0	29	15.9	27	51.2	44 8.5	104 20.2	164 31.8
45	29	11.3	29	16.1	27	51.5	45 8.7	105 20.4	165 32.0
46	29	11.5	29	16.4	27	51.7	46 8.9	106 20.6	166 32.2
47	29	11.8	29	16.6	27	51.9	47 9.1	107 20.8	167 32.4
48	29	12.0	29	16.9	27	52.2	48 9.3	108 21.0	168 32.6
49	29	12.3	29	17.1	27	52.4	49 9.5	109 21.2	169 32.8
50	29	12.5	29	17.4	27	52.7	50 9.7	110 21.4	170 33.0
51	29	12.8	29	17.6	27	52.9	51 9.9	111 21.6	171 33.2
52	29	13.0	29	17.9	27	53.1	52 10.1	112 21.7	172 33.4
53	29	13.3	29	18.1	27	53.4	53 10.3	113 21.9	173 33.6
54	29	13.5	29	18.4	27	53.6	54 10.5	114 22.1	174 33.8
55	29	13.8	29	18.6	27	53.9	55 10.7	115 22.3	175 34.0
56	29	14.0	29	18.9	27	54.1	56 10.9	116 22.5	176 34.2
57	29	14.3	29	19.1	27	54.3	57 11.1	117 22.7	177 34.4
58	29	14.5	29	19.4	27	54.6	58 11.3	118 22.9	178 34.6
59	29	14.8	29	19.6	27	54.8	59 11.5	119 23.1	179 34.8
60	29	15.0	29	19.9	27	55.1	60 11.7	120 23.3	180 35.0

1 h 57 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	15.0	29	19.9	27	55.1	0 .0	60 11.8	120 23.5
1	29	15.3	29	20.1	27	55.3	1 .2	61 11.9	121 23.7
2	29	15.5	29	20.4	27	55.5	2 .4	62 12.1	122 23.9
3	29	15.8	29	20.6	27	55.8	3 .6	63 12.3	123 24.1
4	29	16.0	29	20.9	27	56.0	4 .8	64 12.5	124 24.3
5	29	16.3	29	21.1	27	56.2	5 1.0	65 12.7	125 24.5
6	29	16.5	29	21.4	27	56.5	6 1.2	66 12.9	126 24.7
7	29	16.8	29	21.6	27	56.7	7 1.4	67 13.1	127 24.9
8	29	17.0	29	21.9	27	57.0	8 1.6	68 13.3	128 25.1
9	29	17.3	29	22.1	27	57.2	9 1.8	69 13.5	129 25.3
10	29	17.5	29	22.4	27	57.4	10 2.0	70 13.7	130 25.5
11	29	17.8	29	22.6	27	57.7	11 2.2	71 13.9	131 25.7
12	29	18.0	29	22.9	27	57.9	12 2.4	72 14.1	132 25.9
13	29	18.3	29	23.1	27	58.2	13 2.5	73 14.3	133 26.0
14	29	18.5	29	23.4	27	58.4	14 2.7	74 14.5	134 26.2
15	29	18.8	29	23.6	27	58.6	15 2.9	75 14.7	135 26.4
16	29	19.0	29	23.9	27	58.9	16 3.1	76 14.9	136 26.6
17	29	19.3	29	24.1	27	59.1	17 3.3	77 15.1	137 26.8
18	29	19.5	29	24.4	27	59.3	18 3.5	78 15.3	138 27.0
19	29	19.8	29	24.6	27	59.6	19 3.7	79 15.5	139 27.2
20	29	20.0	29	24.9	27	59.8	20 3.9	80 15.7	140 27.4
21	29	20.3	29	25.1	28	.1	21 4.1	81 15.9	141 27.6
22	29	20.5	29	25.4	28	.3	22 4.3	82 16.1	142 27.8
23	29	20.8	29	25.6	28	.5	23 4.5	83 16.3	143 28.0
24	29	21.0	29	25.9	28	.8	24 4.7	84 16.5	144 28.2
25	29	21.3	29	26.1	28	1.0	25 4.9	85 16.6	145 28.4
26	29	21.5	29	26.4	28	1.3	26 5.1	86 16.8	146 28.6
27	29	21.8	29	26.6	28	1.5	27 5.3	87 17.0	147 28.8
28	29	22.0	29	26.9	28	1.7	28 5.5	88 17.2	148 29.0
29	29	22.3	29	27.1	28	2.0	29 5.7	89 17.4	149 29.2
30	29	22.5	29	27.4	28	2.2	30 5.9	90 17.6	150 29.4
31	29	22.8	29	27.6	28	2.4	31 6.1	91 17.8	151 29.6
32	29	23.0	29	27.9	28	2.7	32 6.3	92 18.0	152 29.8
33	29	23.3	29	28.1	28	2.9	33 6.5	93 18.2	153 30.0
34	29	23.5	29	28.4	28	3.2	34 6.7	94 18.4	154 30.2
35	29	23.8	29	28.6	28	3.4	35 6.9	95 18.6	155 30.4
36	29	24.0	29	28.9	28	3.6	36 7.1	96 18.8	156 30.6
37	29	24.3	29	29.2	28	3.9	37 7.2	97 19.0	157 30.7
38	29	24.5	29	29.4	28	4.1	38 7.4	98 19.2	158 30.9
39	29	24.8	29	29.7	28	4.4	39 7.6	99 19.4	159 31.1
40	29	25.0	29	29.9	28	4.6	40 7.8	100 19.6	160 31.3
41	29	25.3	29	30.2	28	4.8	41 8.0	101 19.8	161 31.5
42	29	25.5	29	30.4	28	5.1	42 8.2	102 20.0	162 31.7
43	29	25.8	29	30.7	28	5.3	43 8.4	103 20.2	163 31.9
44	29	26.0	29	30.9	28	5.5	44 8.6	104 20.4	164 32.1
45	29	26.3	29	31.2	28	5.8	45 8.8	105 20.6	165 32.3
46	29	26.5	29	31.4	28	6.0	46 9.0	106 20.8	166 32.5
47	29	26.8	29	31.7	28	6.3	47 9.2	107 21.0	167 32.7
48	29	27.0	29	31.9	28	6.5	48 9.4	108 21.2	168 32.9
49	29	27.3	29	32.2	28	6.7	49 9.6	109 21.3	169 33.1
50	29	27.5	29	32.4	28	7.0	50 9.8	110 21.5	170 33.3
51	29	27.8	29	32.7	28	7.2	51 10.0	111 21.7	171 33.5
52	29	28.0	29	32.9	28	7.5	52 10.2	112 21.9	172 33.7
53	29	28.3	29	33.2	28	7.7	53 10.4	113 22.1	173 33.9
54	29	28.5	29	33.4	28	7.9	54 10.6	114 22.3	174 34.1
55	29	28.8	29	33.7	28	8.2	55 10.8	115 22.5	175 34.3
56	29	29.0	29	33.9	28	8.4	56 11.0	116 22.7	176 34.5
57	29	29.3	29	34.2	28	8.7	57 11.2	117 22.9	177 34.7
58	29	29.5	29	34.4	28	8.9	58 11.4	118 23.1	178 34.9
59	29	29.8	29	34.7	28	9.1	59 11.6	119 23.3	179 35.1
60	29	30.0	29	34.9	28	9.4	60 11.8	120 23.5	180 35.3

1 h 58 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	30.0	29	34.9	28	9.4	0 .0	60 11.9	120 23.7
1	29	30.3	29	35.2	28	9.6	1 .2	61 12.0	121 23.9
2	29	30.5	29	35.4	28	9.8	2 .4	62 12.2	122 24.1
3	29	30.8	29	35.7	28	10.1	3 .6	63 12.4	123 24.3
4	29	31.0	29	35.9	28	10.3	4 .8	64 12.6	124 24.5
5	29	31.3	29	36.2	28	10.6	5 1.0	65 12.8	125 24.7
6	29	31.5	29	36.4	28	10.8	6 1.2	66 13.0	126 24.9
7	29	31.8	29	36.7	28	11.0	7 1.4	67 13.2	127 25.1
8	29	32.0	29	36.9	28	11.3	8 1.6	68 13.4	128 25.3
9	29	32.3	29	37.2	28	11.5	9 1.8	69 13.6	129 25.5
10	29	32.5	29	37.4	28	11.8	10 2.0	70 13.8	130 25.7
11	29	32.8	29	37.7	28	12.0	11 2.2	71 14.0	131 25.9
12	29	33.0	29	37.9	28	12.2	12 2.4	72 14.2	132 26.1
13	29	33.3	29	38.2	28	12.5	13 2.6	73 14.4	133 26.3
14	29	33.5	29	38.4	28	12.7	14 2.8	74 14.6	134 26.5
15	29	33.8	29	38.7	28	12.9	15 3.0	75 14.8	135 26.7
16	29	34.0	29	38.9	28	13.2	16 3.2	76 15.0	136 26.9
17	29	34.3	29	39.2	28	13.4	17 3.4	77 15.2	137 27.1
18	29	34.5	29	39.4	28	13.7	18 3.6	78 15.4	138 27.3
19	29	34.8	29	39.7	28	13.9	19 3.8	79 15.6	139 27.5
20	29	35.0	29	39.9	28	14.1	20 4.0	80 15.8	140 27.7
21	29	35.3	29	40.2	28	14.4	21 4.1	81 16.0	141 27.8
22	29	35.5	29	40.4	28	14.6	22 4.3	82 16.2	142 28.0
23	29	35.8	29	40.7	28	14.9	23 4.5	83 16.4	143 28.2
24	29	36.0	29	40.9	28	15.1	24 4.7	84 16.6	144 28.4
25	29	36.3	29	41.2	28	15.3	25 4.9	85 16.8	145 28.6
26	29	36.5	29	41.4	28	15.6	26 5.1	86 17.0	146 28.8
27	29	36.8	29	41.7	28	15.8	27 5.3	87 17.2	147 29.0
28	29	37.0	29	41.9	28	16.0	28 5.5	88 17.4	148 29.2
29	29	37.3	29	42.2	28	16.3	29 5.7	89 17.6	149 29.4
30	29	37.5	29	42.4	28	16.5	30 5.9	90 17.8	150 29.6
31	29	37.8	29	42.7	28	16.8	31 6.1	91 18.0	151 29.8
32	29	38.0	29	42.9	28	17.0	32 6.3	92 18.2	152 30.0
33	29	38.3	29	43.2	28	17.2	33 6.5	93 18.4	153 30.2
34	29	38.5	29	43.4	28	17.5	34 6.7	94 18.6	154 30.4
35	29	38.8	29	43.7	28	17.7	35 6.9	95 18.8	155 30.6
36	29	39.0	29	43.9	28	18.0	36 7.1	96 19.0	156 30.8
37	29	39.3	29	44.2	28	18.2	37 7.3	97 19.2	157 31.0
38	29	39.5	29	44.4	28	18.4	38 7.5	98 19.4	158 31.2
39	29	39.8	29	44.7	28	18.7	39 7.7	99 19.6	159 31.4
40	29	40.0	29	44.9	28	18.9	40 7.9	100 19.8	160 31.6
41	29	40.3	29	45.2	28	19.1	41 8.1	101 19.9	161 31.8
42	29	40.5	29	45.4	28	19.4	42 8.3	102 20.1	162 32.0
43	29	40.8	29	45.7	28	19.6	43 8.5	103 20.3	163 32.2
44	29	41.0	29	45.9	28	19.9	44 8.7	104 20.5	164 32.4
45	29	41.3	29	46.2	28	20.1	45 8.9	105 20.7	165 32.6
46	29	41.5	29	46.4	28	20.3	46 9.1	106 20.9	166 32.8
47	29	41.8	29	46.7	28	20.6	47 9.3	107 21.1	167 33.0
48	29	42.0	29	47.0	28	20.8	48 9.5	108 21.3	168 33.2
49	29	42.3	29	47.2	28	21.1	49 9.7	109 21.5	169 33.4
50	29	42.5	29	47.5	28	21.3	50 9.9	110 21.7	170 33.6
51	29	42.8	29	47.7	28	21.5	51 10.1	111 21.9	171 33.8
52	29	43.0	29	48.0	28	21.8	52 10.3	112 22.1	172 34.0
53	29	43.3	29	48.2	28	22.0	53 10.5	113 22.3	173 34.2
54	29	43.5	29	48.5	28	22.3	54 10.7	114 22.5	174 34.4
55	29	43.8	29	48.7	28	22.5	55 10.9	115 22.7	175 34.6
56	29	44.0	29	49.0	28	22.7	56 11.1	116 22.9	176 34.8
57	29	44.3	29	49.2	28	23.0	57 11.3	117 23.1	177 35.0
58	29	44.5	29	49.5	28	23.2	58 11.5	118 23.3	178 35.2
59	29	44.8	29	49.7	28	23.4	59 11.7	119 23.5	179 35.4
60	29	45.0	29	50.0	28	23.7	60 11.9	120 23.7	180 35.6

1 h 59 min

POPRAVKA ČASOVNOG UGLA				POPRAVKA DRUGOG REDA za časovni ugao i deklinaciju Sunca, Meseca i planeta					
s	SUNCA I PLANETA		PROLEĆNE TAČKE ↑	MESECA ☾	Δ popr.	Δ popr.	Δ popr.		
	o	'	o	'	'	'	'		
0	29	45.0	29	50.0	28	23.7	0 .0	60 12.0	120 23.9
1	29	45.3	29	50.2	28	23.9	1 .2	61 12.1	121 24.1
2	29	45.5	29	50.5	28	24.2	2 .4	62 12.3	122 24.3
3	29	45.8	29	50.7	28	24.4	3 .6	63 12.5	123 24.5
4	29	46.0	29	51.0	28	24.6	4 .8	64 12.7	124 24.7
5	29	46.3	29	51.2	28	24.9	5 1.0	65 12.9	125 24.9
6	29	46.5	29	51.5	28	25.1	6 1.2	66 13.1	126 25.1
7	29	46.8	29	51.7	28	25.4	7 1.4	67 13.3	127 25.3
8	29	47.0	29	52.0	28	25.6	8 1.6	68 13.5	128 25.5
9	29	47.3	29	52.2	28	25.8	9 1.8	69 13.7	129 25.7
10	29	47.5	29	52.5	28	26.1	10 2.0	70 13.9	130 25.9
11	29	47.8	29	52.7	28	26.3	11 2.2	71 14.1	131 26.1
12	29	48.0	29	53.0	28	26.5	12 2.4	72 14.3	132 26.3
13	29	48.3	29	53.2	28	26.8	13 2.6	73 14.5	133 26.5
14	29	48.5	29	53.5	28	27.0	14 2.8	74 14.7	134 26.7
15	29	48.8	29	53.7	28	27.3	15 3.0	75 14.9	135 26.9
16	29	49.0	29	54.0	28	27.5	16 3.2	76 15.1	136 27.1
17	29	49.3	29	54.2	28	27.7	17 3.4	77 15.3	137 27.3
18	29	49.5	29	54.5	28	28.0	18 3.6	78 15.5	138 27.5
19	29	49.8	29	54.7	28	28.2	19 3.8	79 15.7	139 27.7
20	29	50.0	29	55.0	28	28.5	20 4.0	80 15.9	140 27.9
21	29	50.3	29	55.2	28	28.7	21 4.2	81 16.1	141 28.1
22	29	50.5	29	55.5	28	28.9	22 4.4	82 16.3	142 28.3
23	29	50.8	29	55.7	28	29.2	23 4.6	83 16.5	143 28.5
24	29	51.0	29	56.0	28	29.4	24 4.8	84 16.7	144 28.7
25	29	51.3	29	56.2	28	29.6	25 5.0	85 16.9	145 28.9
26	29	51.5	29	56.5	28	29.9	26 5.2	86 17.1	146 29.1
27	29	51.8	29	56.7	28	30.1	27 5.4	87 17.3	147 29.3
28	29	52.0	29	57.0	28	30.4	28 5.6	88 17.5	148 29.5
29	29	52.3	29	57.2	28	30.6	29 5.8	89 17.7	149 29.7
30	29	52.5	29	57.5	28	30.8	30 6.0	90 17.9	150 29.9
31	29	52.8	29	57.7	28	31.1	31 6.2	91 18.1	151 30.1
32	29	53.0	29	58.0	28	31.3	32 6.4	92 18.3	152 30.3
33	29	53.3	29	58.2	28	31.6	33 6.6	93 18.5	153 30.5
34	29	53.5	29	58.5	28	31.8	34 6.8	94 18.7	154 30.7
35	29	53.8	29	58.7	28	32.0	35 7.0	95 18.9	155 30.9
36	29	54.0	29	59.0	28	32.3	36 7.2	96 19.1	156 31.1
37	29	54.3	29	59.2	28	32.5	37 7.4	97 19.3	157 31.3
38	29	54.5	29	59.5	28	32.8	38 7.6	98 19.5	158 31.5
39	29	54.8	29	59.7	28	33.0	39 7.8	99 19.7	159 31.7
40	29	55.0	29	60.0	28	33.2	40 8.0	100 19.9	160 31.9
41	29	55.3	30	.2	28	33.5	41 8.2	101 20.1	161 32.1
42	29	55.5	30	.5	28	33.7	42 8.4	102 20.3	162 32.3
43	29	55.8	30	.7	28	33.9	43 8.6	103 20.5	163 32.5
44	29	56.0	30	1.0	28	34.2	44 8.8	104 20.7	164 32.7
45	29	56.3	30	1.2	28	34.4	45 9.0	105 20.9	165 32.9
46	29	56.5	30	1.5	28	34.7	46 9.2	106 21.1	166 33.1
47	29	56.8	30	1.7	28	34.9	47 9.4	107 21.3	167 33.3
48	29	57.0	30	2.0	28	35.1	48 9.6	108 21.5	168 33.5
49	29	57.3	30	2.2	28	35.4	49 9.8	109 21.7	169 33.7
50	29	57.5	30	2.5	28	35.6	50 10.0	110 21.9	170 33.9
51	29	57.8	30	2.7	28	35.9	51 10.2	111 22.1	171 34.1
52	29	58.0	30	3.0	28	36.1	52 10.4	112 22.3	172 34.3
53	29	58.3	30	3.2	28	36.3	53 10.6	113 22.5	173 34.5
54	29	58.5	30	3.5	28	36.6	54 10.8	114 22.7	174 34.7
55	29	58.8	30	3.7	28	36.8	55 11.0	115 22.9	175 34.9
56	29	59.0	30	4.0	28	37.0	56 11.2	116 23.1	176 35.1
57	29	59.3	30	4.2	28	37.3	57 11.4	117 23.3	177 35.3
58	29	59.5	30	4.5	28	37.5	58 11.6	118 23.5	178 35.5
59	29	59.8	30	4.7	28	37.8	59 11.8	119 23.7	179 35.7
60	30	.0	30	5.0	28	38.0	60 12.0	120 23.9	180 35.9

TABLICA ZA PRETVARANJE

UGAONIH U VREMENSKE VREDNOSTI

VREMENSKIH U UGAONE

UGAONIH U VREMENSKE VREDNOSTI												VREMENSKIH U UGAONE									
o	h	min	o	h	min	o	h	min	o	h	min	/'	min	s	''	s	h	o	min	o	/'
																			s	/'	''
0	0	0	60	4	0	120	8	0	180	12	0	240	16	0	300	20	0	0	0	0	0
1	0	4	61	4	4	121	8	4	181	12	4	241	16	4	301	20	4	1	0	15	0
2	0	8	62	4	8	122	8	8	182	12	8	242	16	8	302	20	8	2	0	30	0
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	45	0
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	15	0
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	30	15
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	45	30
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	15	45
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	30	0
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	45	15
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	30	30
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	45	45
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	30	0
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	45	15
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	30	30
15	1	0	75	5	0	135	9	0	195	13	0	255	17	0	315	21	0	15	1	0	45
16	1	4	76	5	4	136	9	4	196	13	4	256	17	4	316	21	4	16	1	4	0
17	1	8	77	5	8	137	9	8	197	13	8	257	17	8	317	21	8	17	1	13	15
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	27	30
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	45	45
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	20	0
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	24	15
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	28	30
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	32	45
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	36	0
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	40	15
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	44	30
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	48	45
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	52	0
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	56	15
30	2	0	90	6	0	150	10	0	210	14	0	270	18	0	330	22	0	30	2	0	30
31	2	4	91	6	4	151	10	4	211	14	4	271	18	4	331	22	4	31	2	4	45
32	2	8	92	6	8	152	10	8	212	14	8	272	18	8	332	22	8	32	2	8	0
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	12	15
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	16	30
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	20	45
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	24	0
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	28	15
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	32	30
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	36	45
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	40	0
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	44	15
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	48	30
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	52	45
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	56	0
45	3	0	105	7	0	165	11	0	225	15	0	285	19	0	345	23	0	45	3	0	15
46	3	4	106	7	4	166	11	4	226	15	4	286	19	4	346	23	4	46	3	4	30
47	3	8	107	7	8	167	11	8	227	15	8	287	19	8	347	23	8	47	3	8	45
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	12	0
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	16	15
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	20	30
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	24	45
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	28	0
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	32	15
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	36	30
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	40	45
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	44	0
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	48	15
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	52	30
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	56	45
60	4	0	120	8	0	180	12	0	240	16	0	300	20	0	360	24	0	60	4	0	0

★ ★ ★ ★ ★

Uputstvo

ZA

UPOTREBU NAUTIČKOG GODIŠNJAKA

UPUTSTVO

za upotrebu Nautičkog godišnjaka

Nautički godišnjak se sastoji od dva osnovna dela:

1. **Promenljivog** (efemeride Sunca, Meseca, Venere, Marsa, Jupitera, Saturna ...) i
2. **Stalnog** dela.

Efemeride se menjaju svake godine, dok su u stalnom delu prilozi koji se ne menjaju.

Efemeride sadrže:

- a) Mesečeve mene, perigej, apogej, vidljivost planeta, početke godišnjih doba, pomračenje Sunca i Meseca, te kalendar za 2018. godinu;
- b) časovni ugao i deklinaciju Sunca, Meseca, Venere, Marsa, Jupitera i Saturna, časovni ugao Prolećne tačke za svaki parni čas univerzalnog vremena sa jednočasovnim srednjim i stvarnim razlikama;
- c) vreme izlaza i zalaza Sunca i Meseca sa jednočasovnim izmenama za Mesec, i trajanje građanskog i astronomskog sumraka za svaki datum za geografske širine od 60° N do 60° S;
- d) jednačinu vremena za 00^{h} i 12^{h} univerzalnog vremena sa jednočasovnom izmenom, vreme gornjeg prolaza Sunca kroz meridijan u Griniču i prividni poluprečnik Sunca (r);
- e) vreme gornjeg prolaza Meseca kroz meridijan u Griniču sa jednočasovnom izmenom, horizontsku paralaksu Meseca i njegov prividni poluprečnik za 00^{h} u Griniču. Dalje slede starost Meseca u danima i glavne faze (mene) za određene dane;
- f) vreme gornjeg prolaza planeta kroz meridijan Griniča, horizontsku paralaksu, surektascenziju i prividnu veličinu za 00^{h} univerzalnog vremena;
- g) surektascenzije, deklinacije i vremena gornjih prolaza zvezda kroz meridijan Griniča za svaki prvi dan u mesecu;
- h) podatke za Severnjaču koje čine Tablice popravki I, II i III za određivanje geografske širine pomoću Severnjače i tablice azimuta Severnjače;
- i) ovo uputstvo.

Sadržaj **stalnog** dela je:

- a) interpolacione tablice za izračunavanje trenutaka izlaza-zalaza Sunca i Meseca za $\varphi = 0^{\circ}$ do 30° i za $\varphi = 30^{\circ}$ do 60° ;
- b) interpolacione tablice za određivanje λ_{v} kao popravke srednjeg vremena pri izračunavanju trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan;
- c) interpolacione tablice za popravku časovnog ugla Sunca i planeta, Prolećne tačke i Meseca i za popravku drugog reda za časovni ugao navedenih nebeskih tela. Tablice omogućuju i popravku deklinacije tih nebeskih tela, određivanje časovnog ugla i deklinacije za bilo koji trenutak;
- d) pomoćne tablice za pretvaranje vremenskih u lučne vrednosti i obratno;
- e) zvanična i zonska vremena i karta zonskih i zvaničnih vremena;
- f) karte zvezdanog neba.

Primeri za rad sa Godišnjakom grupisani su, radi lakšeg pronalaženja, prema sličnosti. Za vreme svakog izračunavanja mora se voditi računa o predznaku koji je jednako važan kao i sama brojka, jer su sva izračunavanja u vidu algebarskog sabiranja odnosno oduzimanja, gde predznak određuje da li će se vršiti sabiranje ili oduzimanje.

PREGLED PRIMERA ZA KORIŠĆENJE NAUTIČKOG GODIŠNJAKA

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- | | |
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| 1.2. Određivanje časovnog ugla i deklinacije Meseca | 3, 4 |
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| 1.4. Određivanje časovnog ugla i deklinacije zvezda | 7, 8 |

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- | | |
|---|--------|
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| 2.2. Određivanje izlaza i zalaza Meseca | 11, 12 |

3. Određivanje gornjeg prolaza nebeskih tela kroz meridijan	Primer:
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1. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE NEBESKIH TELA

Efemeride daju časovni ugao i deklinaciju Sunca, Meseca i planeta za svaki parni čas i datum, a pomoćne interpolacione tablice omogućuju određivanje časovnog ugla i deklinacije za bilo koji trenutak.

Popravka časovnog ugla određuje se pomoću interpolacionih tablica u koloni „Popravka časovnog ugla“, a popravka drugog reda za časovni ugao na istoj strani u koloni „Popravka drugog reda za časovni ugao i deklinaciju Sunca, Meseca i planeta“.

Prva popravka časovnog ugla određena je pod pretpostavkom da jednočasovne promene časovnih uglova za Sunce iznose 15° , za Prolećnu tačku $15^\circ 02' .5$ i za Mesec $14^\circ 19'$. Popravka drugog reda časovnog ugla Sunca, Meseca i planeta jeste popravka tih srednjih promena, jer stvarne časovne promene časovnih uglova razlikuju se za veće ili manje vrednosti od usvojenih srednjih promena. Veličina Δ za račun popravke drugog reda nalazi se na dnu efemerida Sunca i planeta, za Mesec desno od vrednosti časovnog ugla, a za popravku drugog reda Prolećne tačke ne uzima se u obzir jer su odstupanja od srednje vrednosti $15^\circ 02' .5$ praktično zanemarljiva.

Određivanje deklinacije nekog nebeskog tela za određeni trenutak vršimo na taj način da u efemeridama tog dana za parni čas pronađemo osnovnu vrednost deklinacije. Popravku za određeni trenutak pronalazimo u interpolacionim tablicama u koloni „Popravka drugog reda za časovni ugao i deklinaciju Sunca, Meseca i planeta“, a pomoću vrednosti Δ .

1.1. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE SUNCA

► **PRIMER 1.** Odrediti mesni časovni ugao i deklinaciju Sunca za 14. april 2018. godine u $UT = 7^h 31^m 46^s$ na $\lambda = 96^\circ 14' .6 E$.

a) časovni ugao	b) deklinacija
Sa strane za 14. april S za 6^h	Sa strane za 14. april δ za 6^h
Iz interpolacionih tablica za $1^h 31^m 46^s$ popravka časovnog ugla Sunca	Iz interpol. tablica za $1^h 31^m$ popravka za $\delta(\Delta = +9)$..
Iz interpolacionih tablica za $1^h 31^m$ popravka drugog reda za $S(\Delta = +2)$	<hr/>
.....	δ
<hr/>
S .....	.....
$+\lambda$ .....	.....
<hr/>	<hr/>
s .....	.....
.....	$389^\circ 06' .3 \rightarrow s_W = 29^\circ 06' .3$

► **PRIMER 2.** Odrediti mesni časovni ugao i deklinaciju Sunca za 18. septembar 2018. godine u $UT = 13^h 05^m 14^s$ na $\lambda = 28^\circ 53' .6 W$.

a) časovni ugao	b) deklinacija
Sa strane za 18. septembar S za 12^h	Sa strane za 18. septembar δ za 12^h
Iz interpolacionih tablica za $1^h 5^m 14^s$ popravka časovnog ugla Sunca	Iz interpol. tablica za $1^h 5^m$ popravka za $\delta(\Delta = -10)$..
Popravka drugog reda za $S(\Delta = +2)$	<hr/>
.....	δ
<hr/>
S .....	.....
$+\lambda$ .....	.....
<hr/>	<hr/>
s .....	.....
.....	$348^\circ 52' .9 \rightarrow s_E = 11^\circ 07' .1$

1.2. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE MESECA

► **PRIMER 3.** Odrediti mesni časovni ugao i deklinaciju Meseca za 15. mart 2018. godine u UT = 8^h15^m25^s na $\lambda = 15^{\circ}32'.0W$.

a) časovni ugao

Sa strane za 15. mart S za 8 ^h	321°25'.2
Iz interpolacionih tablica za 0 ^h 15 ^m 25 ^s popravka časovnog ugla Meseca	3°40'.7
Iz interpol. tablica za 0 ^h 15 ^m popravka za S($\Delta = +128$)	3'.3

S	325°9'.2
+ λ	- 15°32'.0

$$s_W \dots\dots\dots 309^{\circ}37'.2 \rightarrow s_E = 50^{\circ}22'.8$$

b) deklinacija

Sa strane za 15. mart δ za 8 ^h	13°4'.7
Iz interpol. tablica za 0 ^h 15 ^m popravka za $\delta(\Delta = -83)$	- 2'.1
δ	13°2'.6

► **PRIMER 4.** Odrediti mesni časovni ugao i deklinaciju Meseca za 20. jun 2018. godine u UT = 10^h31^m18^s na $\lambda = 34^{\circ}23'.8E$.

a) časovni ugao

Sa strane za 20. jun S za 10 ^h	238°13'.7
Iz interpolacionih tablica za 0 ^h 31 ^m 18 ^s popravka časovnog ugla Meseca	7°28'.1
Iz interpol. tablica za 0 ^h 31 ^m popravka za S($\Delta = +117$)	+6'.1

S	245°42'.1
+ λ	+ 34°23'.8

$$s_W \dots\dots\dots 280^{\circ}5'.9 \rightarrow s_E = 30^{\circ}5'.9$$

b) deklinacija

Sa strane za 20. jun δ za 10 ^h	+4°19'.6
Iz interpol. tablica za 0 ^h 31 ^m popravka za $\delta(\Delta = -118)$	- 6'.2
δ	+4°13'.4

1.3. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE PLANETA

► **PRIMER 5.** Odrediti mesni časovni ugao i deklinaciju Venere za 7. decembar 2018. godine u UT = 21^h15^m7^s na $\lambda = 58^{\circ}34'.2E$.

a) časovni ugao

Sa strane za 7. decembar S za 20 ^h	164°54'.5
Iz interpolacionih tablica za 1 ^h 15 ^m 7 ^s popravka časovnog ugla planete	18°46'.8
Iz interpolacionih tablica za 1 ^h 15 ^m popravka drugog reda za S($\Delta = 8$)	+ 1'.0

S	183°42'.3
+ λ	+ 58°34'.2

$$s_W \dots\dots\dots 242^{\circ}16'.5 \rightarrow s_E = 117^{\circ}43'.5$$

b) deklinacija

Sa strane za 7. decembar δ za 20 ^h	-10°28'.4
Iz interpol. tablica za 1 ^h 15 ^m popravka za $\delta(\Delta = -3)$	- 0'.4
δ	-10°28'.8

► **PRIMER 6.** Odrediti mesni časovni ugao i deklinaciju Jupitera za 23. oktobar 2018. godine u UT = 8^h55^m28^s na $\lambda = 145^{\circ}20'.1W$.

a) časovni ugao

Sa strane za 23. oktobar S za 8 ^h	277°18'.6
Iz interpolacionih tablica za 0 ^h 55 ^m 28 ^s popravka časovnog ugla planete	13°52'.0
Iz interpolacionih tablica za 0 ^h 55 ^m popravka drugog reda za S($\Delta = +19$)	1'.8

S	290°12'.4
+ λ	-145°20'.1

$$s \dots\dots\dots 144^{\circ}52'.3 \rightarrow s_E = 215^{\circ}7'.7$$

b) deklinacija

Sa strane za 23. oktobar δ za 8 ^h	-18°40'.9
Iz interpol. tablica za 0 ^h 55 ^m popravka za $\delta(\Delta = -1)$	- 0'.1
δ	-18°41'.0

1.4. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE ZVEZDE

Za određivanje časovnog ugla zvezde prvo se određuje časovni ugao Prolećne tačke S_{Υ} , odnosno vrednost zvezdanog vremena izražena u stepenima. Njoj dodajemo surektascenziju ($360^{\circ} - \alpha$) te zvezde prema jednačini $S_* = S_{\Upsilon} - \alpha_*$, odnosno $S_* = S_{\Upsilon} + (360^{\circ} - \alpha_*)$. Rektascenzija odnosno surektascenzija zvezda se tokom meseca neznatno menjaju, pa su stoga date njihove vrednosti samo za prvi dan meseca. U slučaju veće promene surektascenzije tokom meseca, njena interpolacija vrši se napamet. Isto tako, deklinacije zvezda date su za prvi dan meseca. U slučaju potrebe interpolacije, ista se vrši napamet.

► **PRIMER 7.** Odrediti mesni časovni ugao i deklinaciju zvezde Regulus (α Leo) za 16. mart 2018. godine u UT = 18^h11^m26^s na $\lambda = 62^{\circ}13'.2W$.

a) časovni ugao Prolećne (Υ) tačke

Sa strane za 16. mart S_{Υ} za 18^h 84°16'.3
Iz interpolacionih tablica za 0^h11^m26^s popravka časovnog ugla Υ tačke 2°52'.0

S_{Υ} 87°8'.3

Deklinacija (iz tablice deklinacija nautičkih zvezda pod r.b. 24 za 1. mart): δ +11°52'.6

b) časovni ugao zvezde

S_{Υ} 87°8'.3
Iz tablice surektascenzija nautičkih zvezda pod r.b. 24 za 1. mart 207°39'.8

S_{*} 294°48'.1
+ λ - 62°13'.2

S_{*} 232°34'.9
 S_E 127°25'.1

► **PRIMER 8.** Odrediti mesni časovni ugao i deklinaciju zvezde Deneb (α Cyg) za 10. avgust 2018. godine u UT = 21^h42^m8^s na $\lambda = 93^{\circ}14'.2E$.

a) časovni ugao Prolećne (Υ) tačke

Sa strane za 10. avgust S_{Υ} za 20^h 259°14'.7
Iz interpolacionih tablica za 1^h42^m8^s popravka časovnog ugla Υ tačke 25°36'.3

S_{Υ} 284°51'.0

Deklinacija (iz tablice deklinacija nautičkih zvezda pod r.b. 50 za 1. avgust): δ + 45°20'.9

b) časovni ugao zvezde

S_{Υ} 284°51'.0
Iz tablice surektascenzija nautičkih zvezda pod r.b. 50 za 1. avgust 49°28'.6

S_{*} 334°19'.6
+ λ + 93°14'.2

S_{*} 427°33'.8
 S_{*} 67°33'.8

2. ODREĐIVANJE IZLAZA I ZALAZA NEBESKIH TELA

2.1. ODREĐIVANJE IZLAZA I ZALAZA SUNCA, POČETKA I ZAVRŠETKA GRAĐANSKOG I ASTRONOMSKOG SUMRAKA

Vremena izlaza i zalaza Sunca (gornjeg ruba), te trajanja sumraka, data su u efemeridama za severne i južne širine od 0° do 60°. Početak građanskog ili astronomskog svitanja određuje se oduzimanjem vremena trajanja sumraka od vremena izlaza Sunca. Završetak građanskog ili astronomskog sumraka određuje se dodavanjem vremena trajanja sumraka vremenu zalaza Sunca. Data su vremena izlaza i zalaza Sunca, te trajanja sumraka, za svaki dan. Potrebno je izvršiti interpolaciju samo za određenu geografsku širinu pomoću dve interpolacione tablice. Prva tablica je za geografske širine od 0° do 30° N i S, a druga za širine od 30° do 60° N i S. Interpolacija vremena trajanja sumraka vrši se po potrebi samo za celobrojne vrednosti minuta.

► **PRIMER 9.** Odrediti vreme izlaza i zalaza Sunca, početak građanskog svitanja i završetak građanskog sumraka za 5. jul 2018. godine na $\varphi = 48^{\circ}28'.2S$, $\lambda = 72^{\circ}43'.6E$, $\varphi = 48^{\circ}.5S$, $\lambda = 4^{\text{h}}50^{\text{m}}.9$ ($x = +5^{\text{h}}$).

a) izlaz

UT = t_s izlaza za $\varphi = 45^{\circ}S$ 7^h38^m.0
Popravka za 3° .5 iz interpolacionih tablica ($\Delta = +20^{\text{m}}$) + 14^m.0

t_s izlaza za $\varphi = 48^{\circ}.5S$ 7^h52^m.0
+($x - \lambda$) + 9^m.1

t_x 8^h01^m.1
- trajanje građanskog sumraka - 37^m.0

početak građanskog svitanja 7^h24^m.1

b) zalaz

UT = t_s zalaza za $\varphi = 45^{\circ}S$ 16^h31^m.0
Popravka za 3° .5 iz interpolacionih tablica ($\Delta = -20^{\text{m}}$) - 14^m.0

t_s zalaza za $\varphi = 48^{\circ}.5S$ 16^h17^m.0
+($x - \lambda$) + 9^m.1

t_x 16^h26^m.1
+ trajanje građanskog sumraka + 37^m.0

završetak građanskog sumraka 17^h03^m.1

► **PRIMER 10.** Odrediti vreme izlaza i zalaza Sunca, početak astronomskog svitanja i završetak astronomskog sumraka za 21. septembar 2018. godine na $\varphi = 22^{\circ}14'.0N$, $\lambda = 56^{\circ}41'.2W$, $\varphi = 22^{\circ}.2N$, $\lambda = 3^{\text{h}}46^{\text{m}}.7$ ($x = -4^{\text{h}}$).

a) izlaz

UT = t_s izlaza za $\varphi = 20^{\circ}N$ 5^h49^m.0
Popravka za 2° .2 iz interpolacionih tablica ($\Delta = -1^{\text{m}}$) - 0^m.2

b) zalaz

UT = t_s zalaza za $\varphi = 20^{\circ}N$ 17^h57^m.0
Popravka za 2° .2 iz interpolacionih tablica ($\Delta = 0^{\text{m}}$) + 0^m.0

t_s izlaza za $\varphi = 22^\circ.2N$	5 ^h 48 ^m .8
+ (x - λ)	- 13 ^m .3
t_x	5 ^h 35 ^m .5
- trajanje astronomskog sumraka	- 1 ^h 14 ^m .5
početak astronomskog svitanja	4 ^h 21 ^m .0

t_s zalaza za $\varphi = 22^\circ.2N$	17 ^h 57 ^m .0
+ (x - λ)	- 13 ^m .3
t_x	17 ^h 43 ^m .7
+ trajanje astronomskog sumraka	+ 1 ^h 14 ^m .5
završetak astronomskog sumraka	18 ^h 58 ^m .2

2.2. ODREĐIVANJE IZLAZA I ZALAZA MESECA

Vremena izlaza i zalaza Meseca (gornjeg ruba) za svaki dan, za severne i južne geografske širine od 0° do 60° , te njihove promene za jedan čas $\Delta/24$ date su u efemeridama. Pomoću izmene $\Delta/24$ određuje se popravka λv prilikom određivanja izlaza i zalaza Meseca. U slučaju određivanja izlaza i zalaza Meseca na istočnim geografskim dužinama u cilju postizanja tačnosti uzima se vrednost $\Delta/24$ za prethodni dan. Vrednost $\Delta/24$ je uvek pozitivna zbog kašnjenja Meseca. Popravka λv se uvek algebarski oduzima od vremena izlaza ili zalaza Meseca u Griniču. Mora da se vodi računa o znacima vrednosti $\lambda \Delta/24$. Popravka λv data je u interpolacionoj tablici za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan. Prvo se vrši interpolacija za geografsku širinu pomoću interpolacione tablice za određivanje vremena Sunčevih i Mesečevih izlaza i zalaza, a zatim se određuje popravka za geografsku dužinu.

Moguće je da za određeni dan i širinu u efemeridama nema potrebnih podataka. Ta mesta označena su tačkama. U tim slučajevima koriste se podaci za naredni dan.

► **PRIMER 11.** Odrediti vreme izlaza i zalaza Meseca za 19. jun 2018. godine na $\varphi = 33^\circ 25' 0S$, $\lambda = 38^\circ 53' 0W$, $\varphi = 33^\circ.4S$, $\lambda = 2^h 35^m.5W$ ($x = -3^h$).

a) izlaz

UT = t_s izlaza za $\varphi = 30^\circ S$	+ 11 ^h 43 ^m .0
Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = -5^m$)	- 3 ^m .4
UT izlaza za $\varphi = 33^\circ.4S$	+ 11 ^h 39 ^m .6
$\lambda = 38^\circ.9W$	
$\Delta/24 = v = 1^m.6$	- λv - 4 ^m .1
t_s	+ 11 ^h 35 ^m .5
+ (x - λ)	- 24 ^m .5
t_x	+ 11 ^h 11 ^m .0

b) zalaz

UT = t_s zalaza za $\varphi = 30^\circ S$	23 ^h 31 ^m .0
Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = +6^m$)	+ 4 ^m .1
UT zalaza za $\varphi = 33^\circ.4S$	23 ^h 35 ^m .1
$\lambda = 38^\circ.9W$	
$\Delta/24 = v = 1^m.8$	- λv - 6 ^m .5
t_s	23 ^h 18 ^m .6
+ (x - λ)	- 24 ^m .5
t_x	22 ^h 54 ^m .1

► **PRIMER 12.** Odrediti vreme izlaza i zalaza Meseca za 23. oktobar 2018. godine na $\varphi = 17^\circ 36' 0N$, $\lambda = 72^\circ 15' 0E$, $\varphi = 17^\circ.6N$, $\lambda = 4^h 49^m.0E$ ($x = +5^h$).

a) izlaz

UT = t_s izlaza za $\varphi = 10^\circ N$	17 ^h 5 ^m .0
Popravka za $7^\circ.6$ iz interpolacionih tabl. ($\Delta = - 2^m$)	- 1 ^m .5
UT izlaza za $\varphi = 17^\circ.6N$	17 ^h 3 ^m .5
$\lambda = 72^\circ.3E$	
$\Delta/24 = v = 1^m.8$	- λv - 8 ^m .7
t_s	16 ^h 54 ^m .8
+ (x - λ)	+ 11 ^m .0
t_x	17 ^h 5 ^m .8

b) zalaz

UT = t_s zalaza za $\varphi = 10^\circ N$	4 ^h 43 ^m .0
Popravka za $7^\circ.6$ iz interpolacionih tabl. ($\Delta = + 0^m$)	+ 0 ^m .0
UT zalaza za $\varphi = 17^\circ.6N$	4 ^h 43 ^m .0
$\lambda = 72^\circ.3E$	
$\Delta/24 = v = 2^m.2$	- λv - 10 ^m .6
t_s	4 ^h 32 ^m .4
+ (x - λ)	+ 11 ^m .0
t_x	4 ^h 43 ^m .4

2.3. ODREĐIVANJE IZLAZA I ZALAZA PLANETA I ZVEZDA

Trenutak izlaza i zalaza planeta i zvezda se ne određuje jer se njihov izlaz i zalaz ne vide. Ali u slučaju potrebe može se odrediti vrednost poludnevnog luka na osnovu deklinacije određene zvezde i geografske širine posmatrača ili se ista vrednost odredi pomoću Nautičkih tablica na osnovu zadatih vrednosti. Tako određena vrednost poludnevnog luka oduzima se od vremena gornjeg prolaza određene zvezde kroz meridijan i dobija se vreme izlaza, ako se vrednost poludnevnog luka doda vremenu prolaza dobija se vreme zalaza.

3. ODREĐIVANJE GORNJEG PROLAZA NEBESKIH TELA KROZ MERIDIJAN

3.1. ODREĐIVANJE GORNJEG PROLAZA SUNCA KROZ MERIDIJAN

Za određivanje gornjeg prolaza Sunca kroz meridijan koristi se činjenica da Sunce u trenutku gornjeg prolaza kroz meridijan određenog mesta ima časovni ugao 0° . Zapadna geografska dužina određenog mesta, gde je časovni ugao Sunca 0° , odgovara u tom momentu časovnom uglu Sunca u Griniču, odnosno $\lambda_W = S_\odot$. Za istočne geografske širine koristi se jednačina $(360^\circ - \lambda_E) = S_\odot$. Dakle moramo odrediti univerzalno vreme u kojem je časovni ugao Sunca S_\odot jednak λ_W ili $(360^\circ - \lambda_E)$. Tako određenom vremenu dodaje se zonski indeks sa predznakom i dobija se zonsko vreme gornjeg prolaza Sunca kroz meridijan.

Na drugi način, gornji prolaz Sunca kroz meridijan određuje se pomoću jednačine vremena $T_p - e = UT$. U efemeridama su date vrednosti jednačine vremena $e = T_p - UT$ za 00^h i 12^h sa odgovarajućom jednočasovnom promenom. Pomoću jednačine vremena određuje se univerzalno vreme gornjeg prolaza Sunca kroz meridijan. Za istočne geografske širine koristi se $\Delta/24$ za prethodni dan radi postizanja veće tačnosti.

Treći (približni) način određivanja vremena gornjeg prolaza Sunca kroz meridijan, uz najveću moguću grešku do $\pm 0^m.2$, je ako vremenu gornjeg prolaza Sunca kroz meridijan u Griniču T_m dodamo $x - \lambda$ (primer 14b).

► **PRIMER 13.** Odrediti vreme gornjeg prolaza Sunca kroz meridijan za 8. mart 2018. godine na $\lambda = 103^\circ 28' .8W$, $\lambda = 6^h 53^m 55^s$ ($x = -7^h$).

a) pomoću časovnog ugla

$\lambda_W = S_\odot$	103°28'.8
u UT 18 ^h S_\odot	87°19'.4

Iz interpolacione tablice za Sunce u 1^h04^m37^s.5 ... 16° 9'.4

UT	19 ^h 04 ^m 37 ^s .5
+x	- 7 ^h 00 ^m 00 ^s .0

t_x

b) pomoću vremenskog izednačenja

t_p	12 ^h 00 ^m 00 ^s .0	e_{12^h}	-10 ^m 45 ^s .9
$-\lambda$	+ 6 ^h 53 ^m 55 ^s .0	$\Delta/24$	+ 0 ^s .6

T_p

$-e$	+ 10 ^m 41 ^s .8	Popravka	
UT	19 ^h 04 ^m 36 ^s .8	6.9 × 0.6	4 ^s .1

t_x

► **PRIMER 14.** Odrediti vreme gornjeg prolaza Sunca kroz meridijan za 22. januar 2018. godine na $\lambda = 145^\circ 52' .1E$, $\lambda = 9^h 43^m 28^s$ ($x = +10^h$).

a) pomoću časovnog ugla

$(360^\circ - \lambda_E) = S_\odot$	214°07'.9
u UT 2 ^h S_\odot	207° 8'.0

Iz interpolacione tablice za Sunce u 0^h27^m59^s.5 ... 6°59'.9

UT	2 ^h 27 ^m 59 ^s .5
+x	+10 ^h 00 ^m 00 ^s .0

t_x

b) skraćeni postupak

$T_m = t_m$	12 ^h 11 ^m .6	$T_m = t_m$	12 ^h 11 ^m .6
$-\lambda$	- 9 ^h 43 ^m .5	$+(x - \lambda)$	0 ^h 16 ^m .5

UT	2 ^h 28 ^m .1
+x	+10 ^h 00 ^m .0

t_x

3.2. ODREĐIVANJE GORNJEG PROLAZA MESECA KROZ MERIDIJAN

Način određivanja gornjeg prolaza Meseca kroz meridijan je isti kao određivanje izlaza i zalaza Meseca. Iz efemerida se dobija univerzalno vreme gornjeg prolaza Meseca kroz meridijan u Griniču uz odgovarajuću časovnu promenu $\Delta/24$. Ako se određuje popravka λ_v za zapadne geografske širine, vrednost $\Delta/24$ uzima se za dan prolaza Meseca kroz meridijan, a za istočne geografske širine uzima se vrednost $\Delta/24$ od prethodnog dana. Popravka λ_v data je u interpolacionoj tablici za izračunavanje trenutaka izlaza, zalaza i prolaza Meseca kroz meridijan.

Moguće je da za određeni dan u efemeridama nema potrebnih podataka. Ta mesta označena su tačkama. U tim slučajevima koriste se podaci za naredni dan.

► **PRIMER 15.** Odrediti vreme gornjeg prolaza Meseca kroz meridijan za 18. januar 2018. godine na $\lambda = 48^\circ 6' .0W$.

T_m	13 ^h 15 ^m .0	$\Delta/24 = v$	2 ^m .0	x	- 3 ^h 00 ^m .0
$-\lambda_v$	+ 6 ^m .4	λ	48° .1	$-\lambda$	+ 3 ^h 12 ^m .4

t_m	13 ^h 21 ^m .4	λ_v	- 6 ^m .4	$+(x - \lambda)$	+ 0 ^h 12 ^m .4
$+(x - \lambda)$	12 ^m .4				

t_x

► **PRIMER 16.** Odrediti vreme gornjeg prolaza Meseca kroz meridijan u Griniču za 23. jun 2018. godine na $\lambda = 126^{\circ}40'.2E$.

T_m	$20^h43^m.0$	$\Delta/24 = v$	$1^m.9$	x	$+ 8^h00^m.0$
$-\lambda v$	$- 16^m.1$	λ	$126^{\circ}.7$	$-\lambda$	$- 8^h26^m.7$
<hr/>					
t_m	$20^h26^m.9$	λv	$16^m.1$	$+(x - \lambda)$	$- 0^h26^m.7$
$+(x - \lambda)$	$- 0^h26^m.7$				
<hr/>					
t_x	$20^h 0^m.2$				

3.3. ODREĐIVANJE GORNJEG PROLAZA PLANETA KROZ MERIDIJAN

Metodologija određivanja vremena gornjih prolaza planeta kroz meridijan ista je kao za Mesec, uz razliku da vrednost $\Delta/24$ može biti pozitivna, kada planeta kasni kao Mesec, ili negativna, kada planeta rani kao zvezde. Obično je vrednost $\Delta/24$ negativna.

Ako planeta rani u odnosu na prethodni dan na istočnim geografskim dužinama, vreme je veće od griničkog, a na zapadnim manje, t.j. suprotno nego kod Meseca. Ako planeta kasni postupak je isti kao u slučaju određivanja gornjeg prolaza Meseca kroz meridijan. Shodno tome, određuje se znak vrednosti λv . Obično je planetarni dan kraći od srednjeg sunčevog, pa se može desiti da planeta u jednom danu dva puta prolazi kroz meridijan mesta, odmah posle pola noći i nešto pre pola noći.

Pošto je razlika između dva vremena dva uzastopna prolaza kroz meridijan mala, vrednost λv se ne određuje (primer 17b); univerzalno vreme prolaza kroz meridijan je isto kao mesno srednje vreme kojem se samo dodaje $(x - \lambda)$ i na taj način se određuje zonsko vreme prolaza planeta kroz meridijan mesta.

► **PRIMER 17.** Odrediti vreme gornjeg prolaza Jupitera kroz meridijan za 14. jun 2018. godine na $\lambda = 46^{\circ}17'.3W$, $\lambda = 3^h5^m.2$ ($x = -3^h$).

a) tačan postupak	b) približan postupak—u praksi dovoljno tačan		
T_m	$21^h16^m.0$	T_m	$21^h16^m.0$
$-\lambda v$	$0^m.5$	$+(x - \lambda)$	$5^m.2$
<hr/>		<hr/>	
t_m	$21^h16^m.5$	t_x	$21^h21^m.2$
$+(x - \lambda)$	$+ 5^m.2$		
<hr/>			
t_x	$21^h21^m.7$		

3.4. ODREĐIVANJE GORNJEG PROLAZA ZVEZDA KROZ MERIDIJAN

Vreme gornjeg prolaza zvezda kroz meridijan Griniča dato je u efemeridama za svaki prvi dan u mesecu. U slučaju određivanja vremena prolaza kroz meridijan za bilo koji drugi dan u mesecu, od vrednosti iz efemerida oduzima se popravka koja se nalazi na donjem delu stranice za izabrani dan.

Vreme gornjeg prolaza kroz meridijan T_m izraženo u univerzalnom vremenu može da se uzme kao mesno srednje vreme prolaza kroz meridijan posmatrača t_m , što je približno, jer zvezda dnevno rani oko 4 minuta, a što na većim geografskim dužinama stvara greške od 1 do 2 minuta. Dakle, potrebno je odrediti λv , ali se to ne radi jer za svakodnevni rad tačnost je dovoljna, ako se griničko vreme prolaza kroz meridijan uzima kao mesno srednje vreme i, uz dodavanje $(x - \lambda)$, pretvara u zonsko.

► **PRIMER 18.** Odrediti vreme gornjeg prolaza zvezde Arcturus (α Boo) kroz meridijan 23. maja 2018. godine na $\lambda = 28^{\circ}14'.2E$, $\lambda = 1^h52^m.9$, ($x = +2^h$).

Iz tablice gornjih prolaza zvezda kroz meridijan za	
1. maj 2018. godine (r.b. zvezde 35) $T_m = t_m$	$23^h41^m.0$
Popravka za 23 dana iz iste tablice	$- 1^h27^m.0$
<hr/>	
t_m	$22^h14^m.0$
$+(x - \lambda)$	$7^m.1$
<hr/>	
t_x	$22^h21^m.1$

4. SEVERNJAČA

4.1. ODREĐIVANJE GEOGRAFSKE ŠIRINE POMOĆU VISINE SEVERNJAČE I ODREĐIVANJE AZIMUTA SEVERNJAČE

Izmerena visina Severnjače ispravlja se radi instrumentalnih grešaka k_i i k_e , depresije i refrakcije. Rezultat ispravki je V_p , kojem se dodaju popravke I, II i III iz tablica Godišnjaka. Ulazne vrednosti tablice azimuta Severnjače su mesni časovni ugao Prolećne tačke i geografska širina posmatrača.

► **PRIMER 19.** Odrediti geografsku širinu posmatrača pomoću visine zvezde Severnjače; odrediti njen azimut za 18. septembar 2018. godine u $UT = 22^h36^m00^s$ na $\varphi = 42^\circ23'N$ i $\lambda = 38^\circ47'W$ zbirne pozicije, ako je prava visina Severnjače $V_p = 41^\circ54'.2$.

a) određivanje mesnog časovnog ugla s_γ

S_γ za $UT\ 22^h$	$327^\circ46'.0$
Iz interpolacionih tablica popravka S_γ za 36^m	$9^\circ\ 1'.5$
<hr/>	
S_γ	$336^\circ47'.5$
$+\lambda$	$- 38^\circ47'.0$
<hr/>	
s_γ	$298^\circ\ 0'.5$

b) određivanje visine

V_p	$41^\circ54'.2$
I	$+ 10'.1$
II	$+ 0'.2$
III	$- 0'.0$
<hr/>	
φ	$42^\circ\ 4'.5$
ω	$1^\circ.0$

5. PRETVARANJE RAZNIH VRSTA VREMENA

5.1. PRETVARANJE ZONSKOG, MESNOG SREDNJEG VREMENA I VREMENA PO ČASOVNIKU U UNIVERZALNO VREME I OBRATNO

Podaci efemerida odnose se na grinički meridijan, pa je ulazna vrednost univerzalno vreme UT.

U slučaju da časovnik osmatrača pokazuje zonsko vreme, vreme posmatranja je zonsko vreme t_x . Isto tako, može to vreme biti vreme po časovniku t_c ili mesno zonsko vreme t_s , a što nije često.

► **PRIMER 20.** Odrediti UT ako su poznati zonsko vreme t_x , vreme po časovniku t_c i srednje mesno vreme t_s na $\lambda = 13^\circ51'.0E$, $\lambda = 0^h55^m24^s$ ($x = +1^h$).

a) prelaz sa t_x na UT

t_x	$7^h39^m19^s$
$-x$	$-1^h00^m00^s$
<hr/>	
UT	$6^h39^m19^s$

b) prelaz sa t_c na UT

t_c	$7^h31^m55^s$
$+U$	$- 53^m48^s$
<hr/>	
t_h	$6^h38^m07^s$
$+S$	$+ 1^m12^s$
<hr/>	
UT	$6^h39^m19^s$

c) prelaz sa t_s na UT

t_s	$7^h34^m43^s$
$-\lambda$	$- 55^m24^s$
<hr/>	
UT	$6^h36^m19^s$

Napomena: U—poređenje hronometra sa časovnikom,
S—stanje hronometra.

► **PRIMER 21.** Odrediti zonsko vreme t_x , vreme po časovniku t_c i srednje mesno vreme t_s za UT na $\lambda = 57^\circ24'.0E$, $\lambda = 3^h49^m36^s$ ($x = -4^h$).

a) prelaz sa UT na t_x

UT	$9^h46^m12^s$
$+x$	$-4^h00^m00^s$
<hr/>	
t_x	$5^h46^m12^s$

b) prelaz sa UT na t_c

UT	$9^h46^m12.0^s$
$-S$	$+ 2^m06^s.5$
<hr/>	
t_h	$9^h48^m18.5^s$
$-U$	$+3^h53^m27.5^s$
<hr/>	
t_c	$5^h54^m51.0^s$

c) prelaz sa UT na t_s

UT	$9^h46^m12^s$
$+\lambda$	$-3^h49^m36^s$
<hr/>	
t_s	$5^h56^m36^s$

Napomena: U—poređenje hronometra sa časovnikom,
S—stanje hronometra.

Prepoznavanje zvezde u posmatračevom zenitu je jednostavno, jer se tačka u zenitu nalazi na njegovom meridijanu, a deklinacija zvezde jednaka je geografskoj širini posmatrača. Stoga je surektascenzija zvezde oko $49^\circ.0$, a njena deklinacija oko $45^\circ 11'.0N$. Iz pregleda zvezda Godišnjaka ili zvezdane karte vidljivo je da je to zvezda Deneb (α Cyg) sa stvarnom surektascenzijom $49^\circ 28'.7$ i deklinacijom $45^\circ 20'.7$. Ostale zvezde koje nisu u zenitu raspoznaju se upoređenjem slike zvezdanog neba sa zvezdanom kartom.

► **PRIMER 25.** Odrediti za 22. januar 2018. godine u $t_x = 4^h 08^m.6$ ($x = +2$) na zvezdanoj karti meridijan posmatrača i prepoznati zvezdu blizu zenita. Posmatrač se nalazi na $\varphi = 54^\circ 50'N$, $\lambda = 47^\circ 20'.1E$.

a) određivanje UT	b) određivanje S_γ	c) određivanje surektascenzije zvezde pomoću izraza $(360^\circ - \alpha_w) = (360^\circ - \lambda_E) - S_\gamma$
t_x $4^h 08^m.6$	22. januar u $02^h S_\gamma$ $151^\circ 22'.5$	$(360^\circ - \lambda)$ $312^\circ 39'.9$
$-x$ $-2^h 00^m.0$	Popravka časovnog ugla Prolećne tačke za $08^m.6$ $2^\circ 09'.4$	$-S_\gamma$ $153^\circ 31'.9$
<hr/> UT $2^h 08^m.6$	<hr/> S_γ $153^\circ 31'.9$	<hr/> $(360^\circ - \alpha_w)$ $159^\circ 8'.0$

Iz zvezdane karte ili pregleda zvezda vidljivo je da je zvezda blizu zenita Mizar (ζ Ursae Majoris) čija je deklinacija $54^\circ 49'.7N$, a surektascenzija $158^\circ 50'.7$.

2. Zvezdana karta u Merkatorovoj projekciji na gornjem i donjem rubu ima upisane mesece i dane i time je posmatraču omogućeno da odmah vidi koji je deo zvezdanog neba vidljiv određenog datuma u pola noći. Ako želimo tačno odrediti meridijan posmatrača, moramo odrediti mesni časovni ugao Prolećne tačke (zvezdano mesno vreme) i izračunatu vrednost oduzeti od 360° . Na gornjem rubu karte pronalazimo odgovarajuću surektascenziju i time dobijamo mesto meridijana posmatrača. Zvezde desno od meridijana su prema zapadu, a levo prema istoku od posmatrača, koji je okrenut prema jugu.

► **PRIMER 26.** Odrediti meridijan posmatrača i prepoznajte zvezdu blizu zenita 14. aprila 2018. godine u $t_x = 23^h 17^m.9$ ($x = +2$) na $\varphi = 52^\circ 36'N$, $\lambda = 37^\circ 55'.6E$.

a) određivanje UT	b) određivanje s_γ
t_x $23^h 17^m.9$	14. april za $20^h S_\gamma$ $142^\circ 56'.3$
x $-2^h 00^m.0$	Popravka časovnog ugla Prolećne tačke za $1^h 17^m 53^s$ $19^\circ 31'.5$
<hr/> UT $21^h 17^m.9$	<hr/> $-S_\gamma$ $162^\circ 27'.8$
	$+\lambda$ $+37^\circ 55'.6$
	<hr/> s_γ $200^\circ 23'.4$
	α $200^\circ 23'.4$
	$(360^\circ - s_\gamma)$ $159^\circ 36'.6$
	$(360^\circ - \alpha)$ $159^\circ 36'.6$

Meridijan posmatrača nalazi se na skali surektascenzije na $159^\circ.5$. Pošto je vrednost posmatračeve geografske širine slična vrednosti deklinacije zvezde, zvezda blizu zenita može biti Mizar (ζ UMa), čija je stvarna deklinacija $54^\circ 49'.7$ i surektascenzija $158^\circ 50'.7$.

3. Prepoznavanje zvezde u blizini zenita moguće je i pomoću mesnog vremena posmatrača. Zvezdano nebo zvezdane karte prikazano je u pola noći, odnosno kada je $t_s = 00^h$ posmatrača. Znači da je određivanje zenita posmatrača lako, na karti se kao apscisa koristi određeni datum, a ordinata je geografska širina (φ) mesta posmatrača.

Ako se položaj zenita posmatrača određuje u drugo vreme, prvo se određuje zenit u ponoć i zatim se određuje vremenska razlika između $t_s = 0^h$ i mesnog vremena posmatrača, uzima u šestar na satnoj podeli donjeg ruba zvezdane karte i nanosi se od pozicije zenita u pola noći, ulevo ako je traženo vreme posle pola noći ili udesno ako je vreme pre pola noći. Dobijena tačka je pozicija zenita posmatrača.

Na taj način, određeni zenit posmatrača može poslužiti za približnu orijentaciju merenjem zenitne udaljenosti zvezda po levoj ili desnoj stepenskoj podeli deklinacije. Isto tako, može se odrediti približan azimut slično određivanju na pomorskoj karti. U tom slučaju, navigacijski trougao mora se okrenuti jer su E i W strane zvezdane karte suprotno okrenute u odnosu na navigacijsku kartu. Takođe je bitno da su na ovaj način određeni podaci u blizini horizonta posmatrača netačni.

► **PRIMER 27.** Prepoznajte zvezdu čiji je azimut $A_w = 168^\circ$ i zenitna udaljenost $z = 29^\circ$ dana 11. marta 2018. godine na poziciji $\varphi = 41^\circ 20'N$ i $\lambda = 17^\circ 56'E$ u $t_x = 22^h 15^m$ ($x = +1$).

a) određivanje t_s	b) razlika u odnosu na ponoć
t_x $22^h 15^m$	t_{s1} $0^h 00^m$
$-(x - \lambda)$ $+12^m$	$-t_{s2}$ $22^h 27^m$
<hr/> t_s $22^h 27^m$	<hr/> Δt_s (pre ponoći) $1^h 33^m$

Postupajući na gore opisani način, naći će se pozicija zenita u ponoć, sa koordinatama: $\phi = \delta = 41^\circ.3N$ i $(360^\circ - \alpha) = 215^\circ$ (11. mart). Od ove pozicije, približno u smeru 168° i na udaljenosti 29° , pronalazimo zvezdu Regulus (α Leonis).



Zvanična
/
ZONSKA VREMENA

ZVANIČNA I ZONSKA VREMENA

ZONSKO VREME

Podela Zemlje na vremenske zone izvršena je tako da svaka vremenska zona obuhvata područje od 15° geografske dužine. Početna vremenska zona sa zonskim indeksom 0 ($x = 0^h$) proteže se od griničkog meridijana na istok i na zapad do $\lambda = 7^\circ.5 E$ i $\lambda = 7^\circ.5 W$, a ostale zone nadovezuju se na ove prema istoku, i to sa zonskim indeksima $+1^h$ do $+12^h$, a prema zapadu one sa zonskim indeksima od -1^h do -12^h . Zone sa indeksima $+12^h$ i -12^h predstavljaju u stvari jednu te istu zonu sa indeksom $\pm 12^h$ koja se proteže između $\lambda = 172^\circ.5 E$ i $\lambda = 172^\circ.5 W$, sa središnjim meridijanom 180° po Griniču.

Za prelaz sa zonskog na griničko vreme koristi se obrazac, gde x označava zonski indeks:

$$UT = t_x - x$$

(O pretvaranju vremena vidi primer u poglavlju 5 Uputstva za upotrebu Nautičkog godišnjaka).

GRANICE DATUMA

Linija na čijem se prelazu vrši promena datuma zove se *datumska granica*. Ona se ne proteže tačno po meridijanu 180° , već zaobilazi nastanjeno kopno i ostrva, pa ide linijom koja se dobije spojnicom sledećih tačaka:

φ	λ	φ	λ
$90^\circ.0 N$	180°	$48^\circ.0 N$	180°
$75^\circ.0 N$	180°	$05^\circ.0 S$	180°
$68^\circ.0 N$	$168^\circ 58' 22'' W$ (ostrva Diomedea)	$15^\circ.0 S$	$172^\circ.5 W$
$65^\circ.5 N$	$168^\circ 58' 22'' W$ (Beringov moreuz)	$45^\circ.0 S$	$172^\circ.5 W$
$53^\circ.0 N$	$170^\circ E$	$51^\circ.0 S$	180°
		$90^\circ.0 S$	180°

Prilikom prelaza granice datuma, ploveći prema zapadu datum se *povećava* za jedan dan. Kada se ona prelazi ploveći prema istoku, *manjuje* se za jedan dan.

ZVANIČNO VREME I LETNJE VREME

Zvanično vreme, tj. ono vreme koje se unutar granica pojedinih država ili unutar njihovih određenih teritorija koristi u službenom i svakodnevnom životu, najčešće je jednako odgovarajućem zonskom vremenu ili tzv. zimskom vremenu (vidi „Pregled zvaničnih vremena“). Veće zemlje imaju više zvaničnih vremena od kojih svako važi za određene teritorije.

Neke zemlje uvode i *letnje vreme* zbog racionalnog iskorišćenja dnevnog svetla. Ono se obično razlikuje od zonskog (zimskog) vremena za 1^h , a načelno važi na severnoj hemisferi za razdoblje od aprila do oktobra, a na južnoj hemisferi od oktobra do marta. Ipak, neke zemlje ne utvrđuju ni jednake ni fiksne datume prelaska, već ih uvode od slučaja do slučaja na nekoliko dana pre prelaska.

Za prelaz sa *zvaničnog* na *griničko* vreme koristi se obrazac

$$UT = t_{zv} - zv,$$

gde zv označava indeks zvaničnog vremena.

HRONOLOŠKI CIKLUSI I ERE

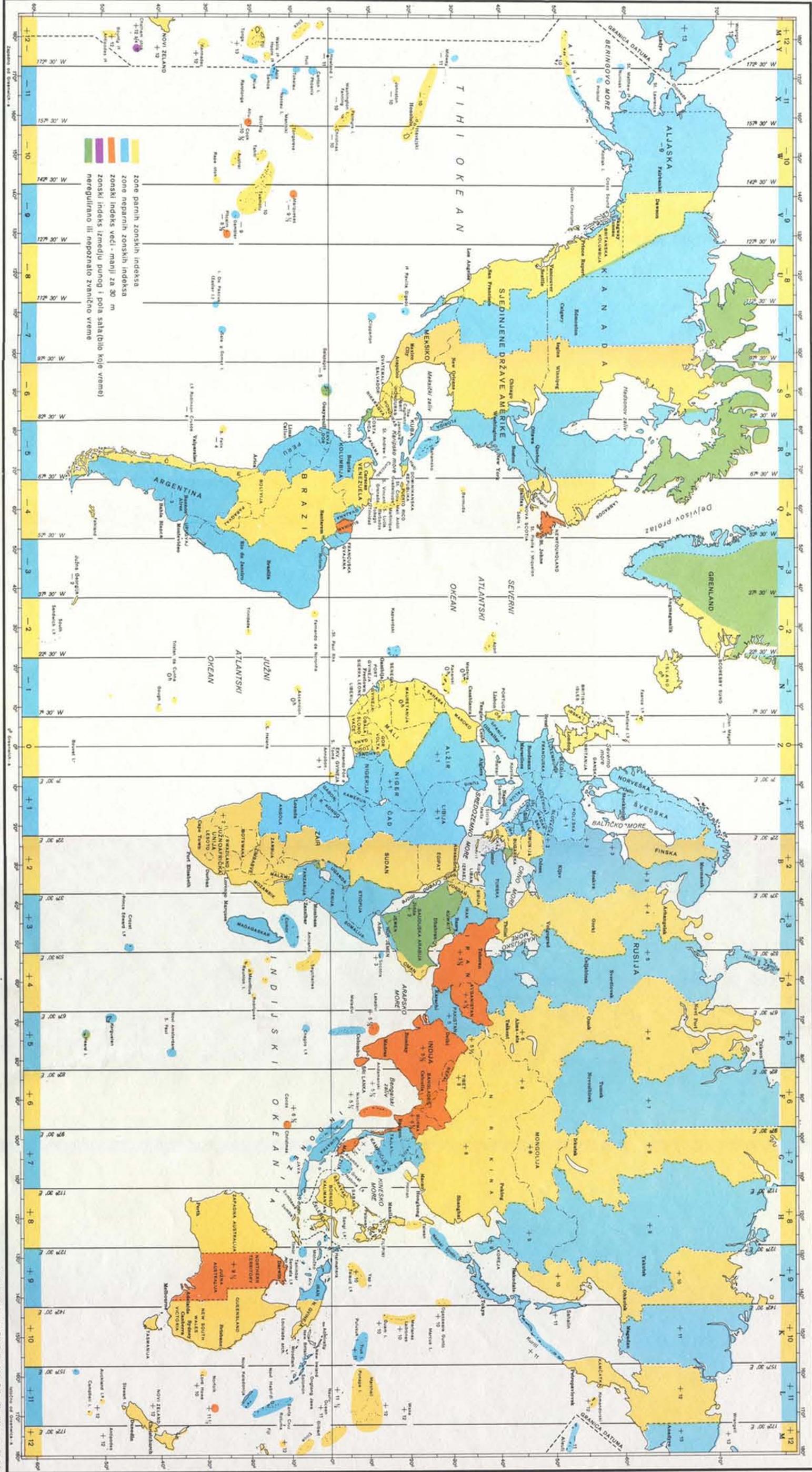
Epakta	13	Julijanski period	6731		
Zlatni broj (Mesečev ciklus)	V	Sunčev ciklus	11		
ERA	GODINA	POCINJE	ERA	GODINA	POCINJE
Vizantijska	7527	14. Sep.	Japanska	2678	1. Jan.
Jevrejska	5779	9. Sep.	Grčka (Seleukidova)	2330	14. Sep.
Kineska (wu-xu)	(4656)	16. Feb.	Indijska (Saka)	1940	22. Mart
Rimska	2771	14. Jan.	Dioklecijanov (Koptski)	1735	11. Sep.
Nabonasarova	2767	19. Apr.	Islamska (Hegira)	1440	11. Sep.

PREGLED ZVANIČNIH VREMENA

ISTOČNO OD GREENWICH-a	
[+]	
Albanija	1 00
Alžir	1 00
Angola	1 00
Australija:	
Capital Territory	10 00
New South Wales	10 00
Northern Territory	9 30
Queensland	10 00
South Australia	9 30
Tasmania	10 00
Victoria	10 00
Western Australia	8 00
Bahrein	3 00
Balearska ostrva	1 00
Bali	7 00
Bangladeš	6 00
Belgija	1 00
Benin (Dahomej)	1 00
Brunei	8 00
Bugarska	2 00
Burma	6 30
Burundi	2 00
Ceuta	1 00
Čad	1 00
Danska	1 00
Džibuti	3 00
Egipat	2 00
Etiopija	3 00
Fidži	12 00
Filipini	8 00
Finska	2 00
Francuska	1 00
Gabon	1 00
Gibraltar	1 00
Grčka	2 00
Holandija	1 00
Hong Kong	8 00
Indija	5 30
Indonezija:	
Bali, Java, Sumatra	7 00
Borneo, Flores, Timor	8 00
Irian, Molučka ostrva	9 00
Irak	3 00
Iran	3 30
Irska	0 00
Island	0 00
Italija	1 00
Izrael	2 00
Japan	9 00
Jemen	3 00
Jordan	2 00
Jugoslavija	1 00
Južnoafrička Republika	2 00
Kamčatka	12 00
Kamerun	1 00
Kampučija	7 00
Katar	3 00
Kenija	3 00
Kina	8 00
Kipar	2 00
Koreja	9 00
Krit	2 00
Kuvajt	3 00
Laos	7 00
Liban	2 00
Libija	1 00
Madagaskar	3 00
Makao	8 00
Maldivska ostrva	5 00
Malezija	8 00
Malta	1 00
Mandžurija	9 00
Marijanska ostrva	10 00
Mauricijus	4 00
Monako	1 00
Mozambik	2 00
Namibija	2 00
Nemačka	1 00
Nigerija	1 00
Norveška	1 00
Nova Kaledonija	11 00
Novi Zeland	12 00
Oman	4 00
Pakistan	5 00
Papua, Nova Gvineja	10 00
Poljska	1 00
Reunion	4 00
Rumunija	2 00
Rusija (10 zona):	
Novi Port	5 00
Sahalin	11 00
Sankt Petersburg	3 00
Vladivostok	10 00
Volgograd	4 00
Sao Tome i Principe	0 00
Sardinija	1 00
Saudijska Arabija	3 00
Sejšelska ostrva	4 00
Sicilija	1 00
Singapur	8 00
Sirija	2 00
Sokotra	3 00
Somalija	3 00
Šudan	2 00
Španija	1 00
Šri Lanka (Cejlon)	5 30
Švedska	1 00
Tajland	7 00
Tajvan	8 00
Tanzanija	3 00
Tunis	1 00
Turska	3 00
Uganda	3 00
Ujedinjeni Emirati	4 00
Velika Britanija	0 00
Vijetnam	7 00

ZAPADNO OD GREENWICH-a	
[-]	
Argentina	3 00
Azorska ostrva	1 00
Bahamska ostrva	5 00
Barbados	4 00
Belize	6 00
Bermuda	4 00
Bolivija	4 00
Brazil:	
Istočni deo	3 00
Srednji deo	4 00
Zapadni deo	5 00
Čile	4 00
Dominikanska Republika	4 00
Ekvador	5 00
Fokladska ostrva	4 00
Galapagos	6 00
Gambija	0 00
Gana	0 00
Grenada	4 00
Gvajana (Francuska)	3 00
Gvajana (Republika)	3 00
Gvatemala	6 00
Haiti	5 00
Honduras	6 00
Jamajka	5 00
Kajmanska ostrva	5 00
Kanada:	
British Columbia	8 00
Labrador	4 00
New Foundland	3 30
New Scotia	4 00
Yucan	8 00
Kanarska ostrva	0 00
Kapverdaska ostrva	1 00
Kolumbija	5 00
Kostarika	6 00
Kuba	5 00
Martinik	4 00
Meksiko	6 00
Midvej	11 00
Nikaragva	6 00
Panamski kanal	5 00
Peru	5 00
Portoriko	4 00
SAD (6 zona):	
Aljaska	9 00
Atlantska obala	5 00
Florida	5 00
Havaji	10 00
Meksički zaliv	6 00
Pacifička obala	8 00
Salvador	6 00
Samoa	11 00
Surinam	3 00
Tobago	4 00
Trinidad	4 00
Urugvaj	3 00
Venecuela	4 00

KARTA ZONSKIH I ZVANIČNIH VREMENA



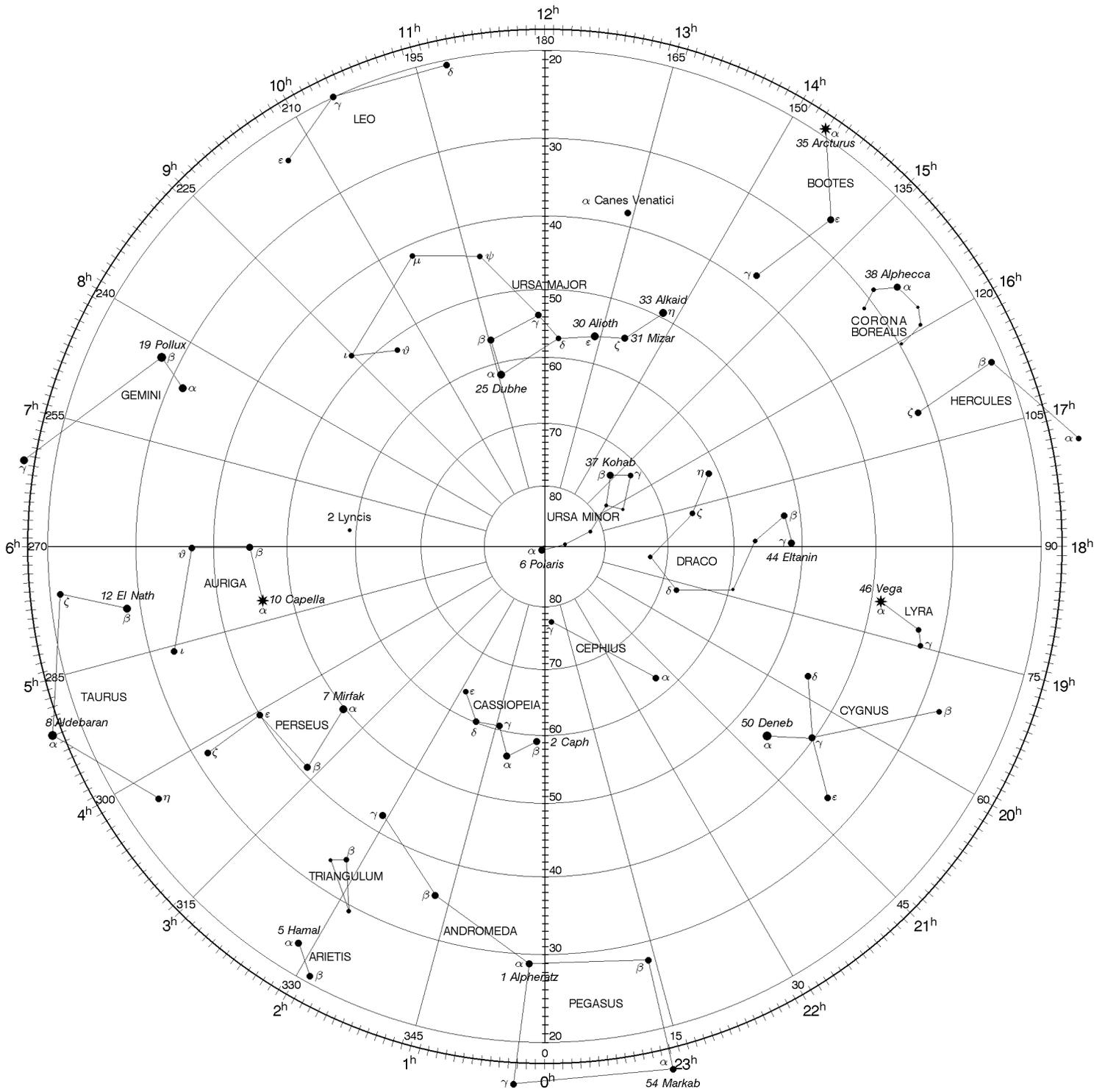
Hydrografički Institut, PIM Split, 1990 - Prilog Nautičkom godišnjaku



Karte

ZVEZDANOG NEBA

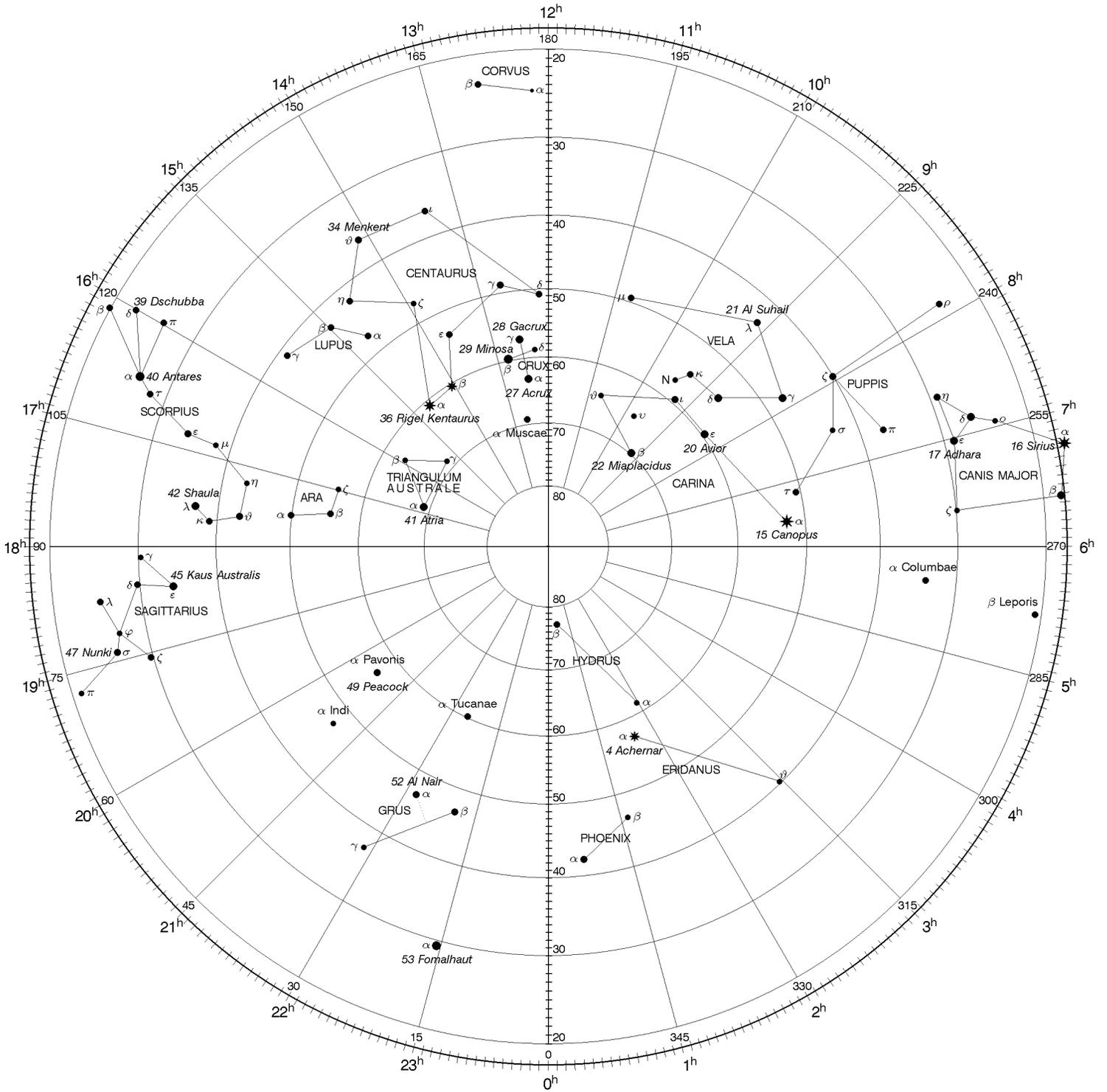
KARTA SAZVEŽDA SEVERNOG NEBA



VELIČINE ZVEZDA

- | | | | | | |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| * $0.0 \geq m$ | * $0.0 < m \leq 0.5$ | * $0.5 < m \leq 1.0$ | ● $1.0 < m \leq 1.5$ | ● $1.5 < m \leq 2.0$ | ● $2.0 < m \leq 2.5$ |
| ● $2.5 < m \leq 3.0$ | ● $3.0 < m \leq 3.5$ | ● $3.5 < m \leq 4.0$ | ● $4.0 < m \leq 4.5$ | ● $4.5 < m \leq 5.0$ | |

KARTA SAZVEŽDA JUŽNOG NEBA



VELIČINE ZVEZDA



