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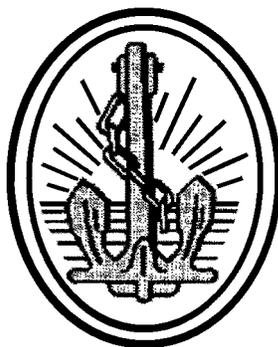
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Godina LXXIV



NAUTIČKI GODIŠNJAK

— ZA —
2016
— 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 —
2016
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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 drugi broj NAUTIČKOG GODIŠNJAKA koji izdaje Stevo Šegan za 2016. godinu, koji je sedamdesetičetvrti u ukupnom nizu izdanja ove publikacije na našim prostorima.

Za sedamdesetičetiri broja Nautičkog godišnjaka, do sada, možemo zahvaliti nekim 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 32 godine je period u kojem je Stevo Šegan pripremio preostala 32 broja.

Put je išao preko preuzimanja ruskih Nautičkih godišnjaka, koji su prevedeni na naš jezik, kada su ručno ukucavane brojeve vrednosti 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 tridesetjedan, izvršio je prof. dr Stevo Šegan, sa Katedre za astronomiju Matematičkog fakulteta u Beogradu.

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_γ Greenwich Mean Time of the Upper Transit on the Meridian of Greenwich</p> <p>T_ε 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		dan h min	dan h min					
Januar	10	1	31				24	1	46				2	5	30	Januar
Februar	8	14	39				22	18	20				1	3	28	Februar
Mart	9	1	54				15	17	3				31	15	17	Mart
April	7	11	24				14	3	59				30	3	29	April
Maj	6	19	30				13	17	2				29	12	12	Maj
Jun	5	3	00				12	8	10				27	18	19	Jun
Jul	4	11	1				12	0	52				26	23	00	Jul
Avgust	2	20	45				10	18	21				25	3	41	Avgust
Septembar	1	9	3				9	11	49				23	9	56	Septembar
Oktoabar	1	0	12	30	17	38	9	4	33				22	19	14	Oktoabar
Novembar				29	12	18	7	19	51				21	8	33	Novembar
Decembar				29	6	53	7	9	3				21	1	56	Decembar

PERIGEJ I APOGEJ MESECA											
PERIGEJ			APOGEJ								
mesec	dan h min	dan h min	dan h min	dan h min	mesec	mesec					
Januar	15	2	10.0		2	11	53.0	30	9	10.0	Januar
Februar	11	2	42.0					27	3	28.0	Februar
Mart	10	7	2.0					25	14	16.0	Mart
April	7	17	36.0					21	16	5.0	April
Maj	6	4	14.0					18	22	6.0	Maj
Jun	3	10	55.0					15	12	0.0	Jun
Jul	1	6	45.0	27	11	25.0		13	5	24.0	Jul
Avgust				22	1	20.0		10	0	45.0	Avgust
Septembar				18	17	00.0		6	18	44.0	Septembar
Oktoabar				16	23	36.0		31	19	29.0	Oktoabar
Novembar				14	11	23.0		27	20	8.0	Novembar
Decembar				12	23	27.0		25	5	55.0	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				1. V			14. VII					
♂ Mars												
♃ Jupiter								13. IX		10. X		
♄ Saturn											23. XI	28

POČECI GODIŠNJIH DOBA			
PROLEĆE	LETO	JESEN	ZIMA
20. mart u 4 ^h 30 ^m 0	20. jun u 22 ^h 34 ^m 0	22. septembar u 14 ^h 21 ^m 0	21. decembar u 10 ^h 44 ^m 0

POMRAČENJA SUNCA I MESECA u 2016. godini

DESIĆE SE UKUPNO ČETRI POMRAČENJA:
JEDNO POTPUNO I JEDNO PRSTENASTO POMRAČENJE SUNCA
I DVA POMRAČENJA MESECA POLUSENKOM

2.	9. MART	 POTPUNO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
• ••• •••• ••• •	→ ←→ ←→ ←→ ←	POČETAK POMRAČENJA POČETAK POTPUNOG POMRAČENJA MAKSIMUM POMRAČENJA KRAJ POTPUNOG POMRAČENJA KRAJ POMRAČENJA	9 23 19.3 10 0 17.5 10 1 57.2 10 3 36.7 10 4 34.9
		VIDLJIVOST: JUGOISTOČNA AZIJA, INDONEZIJA, CENTRALNI PACIFIK	

1.	23. MART	 POMRAČENJE MESECA POLUSENKOM	univerzalno (svetsko) vreme dan h min
• •••• •	→ ←→ ←	ULAZAK MESECA U POLUSENKU SREDINA POMRAČENJA IZLAZAK MESECA IZ POLUSENKE	23 9 39.5 23 11 48.4 23 13 54.8

3.	1. SEPTEMBAR	 PRSTENASTO POMRAČENJE SUNCA	univerzalno (svetsko) vreme dan h min
• •••• •	→ ←→ ←	POČETAK POMRAČENJA SREDINA POMRAČENJA KRAJ POMRAČENJA	1 6 13.1 1 9 06.9 1 12 00.7
		VIDLJIVOST: JUGOISTOČNI ATLANTIK, CENTRALNA AFRIKA, INDIJSKI OKEAN, PACIFIK	

3.	16. SEPTEMBAR	 POMRAČENJE MESECA POLUSENKOM	univerzalno (svetsko) vreme dan h min
• •••• •	→ ←→ ←	ULAZAK MESECA U POLUSENKU SREDINA POMRAČENJA IZLAZAK MESECA IZ POLUSENKE	16 16 54.7 16 18 54.3 16 20 53.9

KALENDAR

za prestupnu 2016. 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			
PE	1	1	7388.5	PO	1	32	7419.5	UT	1	61	7448.5	PE	1	92	7479.5	NE ₁₈	1	122	7509.5	SR	1	153	7540.5
SU	2	2	7389.5	UT	2	33	7420.5	SR	2	62	7449.5	SU	2	93	7480.5	PO	2	123	7510.5	CE	2	154	7541.5
NE ₁	3	3	7390.5	SR	3	34	7421.5	ČE	3	63	7450.5	NE ₁₄	3	94	7481.5	UT	3	124	7511.5	PE	3	155	7542.5
PO	4	4	7391.5	ČE	4	35	7422.5	PE	4	64	7451.5	PO	4	95	7482.5	SR	4	125	7512.5	SU	4	156	7543.5
UT	5	5	7392.5	PE	5	36	7423.5	SU	5	65	7452.5	UT	5	96	7483.5	CE	5	126	7513.5	NE ₂₃	5	157	7544.5
SR	6	6	7393.5	SU	6	37	7424.5	NE ₁₀	6	66	7453.5	SR	6	97	7484.5	PE	6	127	7514.5	PO	6	158	7545.5
ČE	7	7	7394.5	NE ₆	7	38	7425.5	PO	7	67	7454.5	ČE	7	98	7485.5	SU	7	128	7515.5	UT	7	159	7546.5
PE	8	8	7395.5	PO	8	39	7426.5	UT	8	68	7455.5	PE	8	99	7486.5	NE ₁₉	8	129	7516.5	SR	8	160	7547.5
SU	9	9	7396.5	UT	9	40	7427.5	SR	9	69	7456.5	SU	9	100	7487.5	PO	9	130	7517.5	ČE	9	161	7548.5
NE ₂	10	10	7397.5	SR	10	41	7428.5	ČE	10	70	7457.5	NE ₁₅	10	101	7488.5	UT	10	131	7518.5	PE	10	162	7549.5
PO	11	11	7398.5	ČE	11	42	7429.5	PE	11	71	7458.5	PO	11	102	7489.5	SR	11	132	7519.5	SU	11	163	7550.5
UT	12	12	7399.5	PE	12	43	7430.5	SU	12	72	7459.5	UT	12	103	7490.5	ČE	12	133	7520.5	NE ₂₄	12	164	7551.5
SR	13	13	7400.5	SU	13	44	7431.5	NE ₁₁	13	73	7460.5	SR	13	104	7491.5	PE	13	134	7521.5	PO	13	165	7552.5
ČE	14	14	7401.5	NE ₇	14	45	7432.5	PO	14	74	7461.5	ČE	14	105	7492.5	SU	14	135	7522.5	UT	14	166	7553.5
PE	15	15	7402.5	PO	15	46	7433.5	UT	15	75	7462.5	PE	15	106	7493.5	NE ₂₀	15	136	7523.5	SR	15	167	7554.5
SU	16	16	7403.5	UT	16	47	7434.5	SR	16	76	7463.5	SU	16	107	7494.5	PO	16	137	7524.5	ČE	16	168	7555.5
NE ₃	17	17	7404.5	SR	17	48	7435.5	ČE	17	77	7464.5	NE ₁₆	17	108	7495.5	UT	17	138	7525.5	PE	17	169	7556.5
PO	18	18	7405.5	ČE	18	49	7436.5	PE	18	78	7465.5	PO	18	109	7496.5	SR	18	139	7526.5	SU	18	170	7557.5
UT	19	19	7406.5	PE	19	50	7437.5	SU	19	79	7466.5	UT	19	110	7497.5	ČE	19	140	7527.5	NE ₂₅	19	171	7558.5
SR	20	20	7407.5	SU	20	51	7438.5	NE ₁₂	20	80	7467.5	SR	20	111	7498.5	PE	20	141	7528.5	PO	20	172	7559.5
ČE	21	21	7408.5	NE ₈	21	52	7439.5	PO	21	81	7468.5	ČE	21	112	7499.5	SU	21	142	7529.5	UT	21	173	7560.5
PE	22	22	7409.5	PO	22	53	7440.5	UT	22	82	7469.5	PE	22	113	7500.5	NE ₂₁	22	143	7530.5	SR	22	174	7561.5
SU	23	23	7410.5	UT	23	54	7441.5	SR	23	83	7470.5	SU	23	114	7501.5	PO	23	144	7531.5	ČE	23	175	7562.5
NE ₄	24	24	7411.5	SR	24	55	7442.5	ČE	24	84	7471.5	NE ₁₇	24	115	7502.5	UT	24	145	7532.5	PE	24	176	7563.5
PO	25	25	7412.5	ČE	25	56	7443.5	PE	25	85	7472.5	PO	25	116	7503.5	SR	25	146	7533.5	SU	25	177	7564.5
UT	26	26	7413.5	PE	26	57	7444.5	SU	26	86	7473.5	UT	26	117	7504.5	ČE	26	147	7534.5	NE ₂₆	26	178	7565.5
SR	27	27	7414.5	SU	27	58	7445.5	NE ₁₃	27	87	7474.5	SR	27	118	7505.5	PE	27	148	7535.5	PO	27	179	7566.5
ČE	28	28	7415.5	NE ₉	28	59	7446.5	PO	28	88	7475.5	ČE	28	119	7506.5	SU	28	149	7536.5	UT	28	180	7567.5
PE	29	29	7416.5	PO	29	60	7447.5	UT	29	89	7476.5	PE	29	120	7507.5	NE ₂₂	29	150	7537.5	SR	29	181	7568.5
SU	30	30	7417.5					SR	30	90	7477.5	SU	30	121	7508.5	PO	30	151	7538.5	ČE	30	182	7569.5
NE ₅	31	31	7418.5					ČE	31	91	7478.5					UT	31	152	7539.5				

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			
PE	1	183	7570.5	PO	1	214	7601.5	ČE	1	245	7632.5	SU	1	275	7662.5	UT	1	306	7693.5	ČE	1	336	7723.5
SU	2	184	7571.5	UT	2	215	7602.5	PE	2	246	7633.5	NE ₄₀	2	276	7663.5	SR	2	307	7694.5	PE	2	337	7724.5
NE ₂₇	3	185	7572.5	SR	3	216	7603.5	SU	3	247	7634.5	PO	3	277	7664.5	ČE	3	308	7695.5	SU	3	338	7725.5
PO	4	186	7573.5	ČE	4	217	7604.5	NE ₃₆	4	248	7635.5	UT	4	278	7665.5	PE	4	309	7696.5	NE ₄₄	4	339	7726.5
UT	5	187	7574.5	PE	5	218	7605.5	PO	5	249	7636.5	SR	5	279	7666.5	SU	5	310	7697.5	PO	5	340	7727.5
SR	6	188	7575.5	SU	6	219	7606.5	UT	6	250	7637.5	ČE	6	280	7667.5	NE ₄₅	6	311	7698.5	UT	6	341	7728.5
ČE	7	189	7576.5	NE ₃₂	7	220	7607.5	SR	7	251	7638.5	PE	7	281	7668.5	PO	7	312	7699.5	SR	7	342	7729.5
PE	8	190	7577.5	PO	8	221	7608.5	PE	8	252	7639.5	SU	8	282	7669.5	UT	8	313	7700.5	ČE	8	343	7730.5
SU	9	191	7578.5	UT	9	222	7609.5	ČE	9	253	7640.5	NE ₄₁	9	283	7670.5	SR	9	314	7701.5	PE	9	344	7731.5
NE ₂₈	10	192	7579.5	SR	10	223	7610.5	SU	10	254	7641.5	PO	10	284	7671.5	ČE	10	315	7702.5	SU	10	345	7732.5
PO	11	193	7580.5	ČE	11	224	7611.5	NE ₃₇	11	255	7642.5	UT	11	285	7672.5	PE	11	316	7703.5	NE ₅₀	11	346	7733.5
UT	12	194	7581.5	PE	12	225	7612.5	PO	12	256	7643.5	SR	12	286	7673.5	SU	12	317	7704.5	PO	12	347	7734.5
SR	13	195	7582.5	SU	13	226	7613.5	UT	13	257	7644.5	ČE	13	287	7674.5	NE ₄₆	13	318	7705.5	UT	13	348	7735.5
ČE	14	196	7583.5	NE ₃₃	14	227	7614.5	SR	14	258	7645.5	PE	14	288	7675.5	PO	14	319	7706.5	SR	14	349	7736.5
PE	15	197	7584.5	PO	15	228	7615.5	ČE	15	259	7646.5	SU	15	289	7676.5	UT	15	320	7707.5	ČE	15	350	7737.5
SU	16	198	7585.5	UT	16	229	7616.5	PE	16	260	7647.5	NE ₄₂	16	290	7677.5	SR	16	321	7708.5	PE	16	351	7738.5
NE ₂₉	17	199	7586.5	SR	17	230	7617.5	SU	17	261	7648.5	PO	17	291	7678.5	ČE	17	322	7709.5	SU	17	352	7739.5
PO	18	200	7587.5	ČE	18	231	7618.5	NE ₃₈	18	262	7649.5	UT	18	292	7679.5	PE	18	323	7710.5	NE ₅₁	18	353	7740.5
UT	19	201	7588.5	PE	19	232	7619.5	PO	19	263	7650.5	SR	19	293	7680.5	SU	19	324	7711.5	PO	19	354	7741.5
SR	20	202	7589.5	SU	20	233	7620.5	UT	20	264	7651.5	ČE	20	294	7681.5	NE ₄₇	20	325	7712.5	UT	20	355	7742.5
ČE	21	203	7590.5	NE ₃₄	21	234	7621.5	SR	21	265	7652.5	PE	21	295	7682.5	PO	21	326	7713.5	SR	21	356	7743.5
PE	22	204	7591.5	PO	22	235	7622.5	ČE	22	266	7653.5	SU	22	296	7683.5	UT	22	327	7714.5	ČE	22	357	7744.5
SU	23	205	7592.5	UT	23	236	7623.5	PE	23	267	7654.5	NE ₄₃	23	297	7684.5	SR	23	328	7715.5	PE	23	358	7745.5
NE ₃₀	24	206	7593.5	SR	24	237	7624.5	SU	24	268	7655.5	PO	24	298	7685.5	ČE	24	329	7716.5	SU	24	359	7746.5
PO	25	207	7594.5	ČE	25																		



Efemeride

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

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S _☉		δ _☉		S _☿		δ _☿		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	13.7	-23	3.5	100	5.2	219	42.5	-18	36.9	253	1.2	-9	33.5
2	209	13.1	-23	3.2	130	10.1	249	41.2	-18	38.3	283	3.5	-9	34.5
4	239	12.5	-23	2.8	160	15.1	279	39.9	-18	39.6	313	5.8	-9	35.5
6	269	11.9	-23	2.4	190	20.0	309	38.6	-18	40.9	343	8.1	-9	36.5
8	299	11.3	-23	2.0	220	24.9	339	37.3	-18	42.2	373	10.4	-9	37.5
10	329	10.7	-23	1.6	250	29.9	369	35.9	-18	43.6	403	12.7	-9	38.4
12	359	10.2	-23	1.2	280	34.8	399	34.6	-18	44.9	433	15.0	-9	39.4
14	29	9.6	-23	.8	310	39.7	429	33.3	-18	46.2	463	17.3	-9	40.4
16	59	9.0	-23	.4	340	44.6	459	31.9	-18	47.5	493	19.6	-9	41.4
18	89	8.4	-23	.0	370	49.6	489	30.6	-18	48.8	523	21.9	-9	42.4
20	119	7.8	-22	59.6	40	54.5	519	29.3	-18	50.1	553	24.1	-9	43.3
22	149	7.2	-22	59.2	70	59.4	549	27.9	-18	51.4	583	26.4	-9	44.3
Δ		-3		2				-7		-7		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	9 2	15 4	0 57	2 44	23 39	1.5	11 29	2.9
55	8 25	15 42	0 45	2 17	23 40	1.6	11 29	2.7
50	7 59	16 8	0 38	1 59	23 42	1.6	11 28	2.6
45	7 38	16 29	0 34	1 46	23 43	1.6	11 28	2.4
40	7 22	16 45	0 30	1 37	23 44	1.7	11 28	2.3
35	7 8	16 59	0 28	1 30	23 45	1.7	11 28	2.2
30	6 56	17 11	0 26	1 25	23 45	1.7	11 28	2.1
20	6 35	17 32	0 24	1 18	23 47	1.7	11 27	2.0
10	6 17	17 50	0 23	1 15	23 48	1.7	11 27	1.9
0	5 60	18 7	0 22	1 15	23 49	1.8	11 27	1.8
10	5 42	18 24	0 23	1 17	23 50	1.8	11 27	1.6
20	5 24	18 43	0 24	1 24	23 51	1.8	11 27	1.5
30	5 2	19 5	0 27	1 36	23 53	1.8	11 26	1.4
35	4 49	19 17	0 30	1 46	23 54	1.9	11 26	1.3
40	4 34	19 32	0 33	2 2	23 55	1.9	11 26	1.2
45	4 17	19 50	0 37	2 30	23 56	1.9	11 26	1.1
50	3 55	20 12	0 44	:::	23 58	1.9	11 25	1.0
55	3 25	20 41	0 57	:::	23 59	1.9	11 25	.8
60	2 42	21 24	1 36	:::	...	.0	11 25	.6

UT	MESEC				JUPITER			SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	283	3.6	152	1 27.8	-94	285	53.4	3 51.3	210	16.3	-20	29.6
2	312	11.9	152	1 9.0	-94	315	58.2	3 51.3	240	20.6	-20	29.7
4	341	20.3	152	0 50.3	-94	346	3.0	3 51.3	270	25.0	-20	29.7
6	10	28.8	153	0 31.5	-94	16	7.8	3 51.3	300	29.3	-20	29.8
8	39	37.3	153	0 12.7	-34	46	12.6	3 51.2	330	33.7	-20	29.9
10	68	45.9	153	0 6.0	94	76	17.4	3 51.2	0	38.1	-20	30.0
12	97	54.5	153	0 24.7	94	106	22.3	3 51.2	30	42.4	-20	30.0
14	127	3.1	153	0 43.4	93	136	27.1	3 51.2	60	46.8	-20	30.1
16	156	11.7	153	1 2.1	93	166	31.9	3 51.2	90	51.1	-20	30.2
18	185	20.4	153	1 20.8	93	196	36.7	3 51.1	120	55.5	-20	30.2
20	214	29.1	153	1 39.4	93	226	41.6	3 51.1	150	59.8	-20	30.3
22	243	37.7	153	1 58.0	93	256	46.4	3 51.1	181	4.2	-20	30.4
Δ						24		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	- 3 5.2	-1.2	16.3	T _m	5 17	1.7	54.4 14.8
12	- 3 19.4	T _{m☉}	12 h 3.3 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	'	°	
♃	9 22	.1	120	-3.7	♃	4 56	.0	186	-1.8
♄	7 7	.1	153	.9	♄	9 57	.0	110	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S _☉		δ _☉		S _☿		δ _☿		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	6.6	-22	58.7	101	4.3	219	26.6	-18	52.7	253	28.7	-9	45.3
2	209	6.0	-22	58.3	131	9.3	249	25.3	-18	54.0	283	31.0	-9	46.3
4	239	5.4	-22	57.9	161	14.2	279	23.9	-18	55.3	313	33.3	-9	47.2
6	269	4.9	-22	57.5	191	19.1	309	22.6	-18	56.6	343	35.6	-9	48.2
8	299	4.3	-22	57.0	221	24.1	339	21.2	-18	57.9	373	37.9	-9	49.2
10	329	3.7	-22	56.6	251	29.0	369	19.9	-18	59.1	403	40.2	-9	50.2
12	359	3.1	-22	56.2	281	33.9	399	18.5	-19	.4	43	42.5	-9	51.1
14	29	2.5	-22	55.7	311	38.8	429	17.2	-19	1.7	103	44.8	-9	52.1
16	59	1.9	-22	55.3	341	43.8	459	15.8	-19	3.0	133	47.1	-9	53.1
18	89	1.3	-22	54.8	371	48.7	489	14.4	-19	4.2	163	49.4	-9	54.0
20	119	.8	-22	54.4	401	53.6	519	13.1	-19	5.5	193	51.7	-9	55.0
22	149	.2	-22	53.9	431	58.6	549	11.7	-19	6.8	223	54.0	-9	56.0
Δ		-3		2				-7		-6		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	9 2	15 6	0 57	2 44	...	.0	12 39	2.9
55	8 25	15 43	0 45	2 17	...	.0	12 34	2.7
50	7 58	16 9	0 38	1 59	...	.0	12 30	2.6
45	7 38	16 29	0 34	1 46	...	.0	12 26	2.4
40	7 22	16 46	0 30	1 37	...	.0	12 24	2.3
35	7 8	16 60	0 28	1 30	...	.0	12 21	2.2
30	6 56	17 12	0 26	1 25	...	.0	12 19	2.1
20	6 35	17 32	0 24	1 18	...	.0	12 16	2.0
10	6 17	17 50	0 23	1 15	...	.0	12 12	1.9
0	5 60	18 7	0 22	1 15	...	.0	12 9	1.8
10	5 43	18 25	0 23	1 17	...	.0	12 6	1.7
20	5 24	18 43	0 24	1 24	...	.0	12 3	1.6
30	5 3	19 5	0 27	1 36	...	.0	11 60	1.4
35	4 50	19 17	0 30	1 46	...	.0	11 57	1.3
40	4 35	19 32	0 33	2 2	...	.0	11 55	1.3
45	4 18	19 50	0 37	2 29	...	.0	11 52	1.2
50	3 56	20 11	0 44	:::	...	.0	11 49	1.0
55	3 27	20 40	0 56	:::	...	.0	11 45	.9
60	2 44	21 23	1 35	:::	0 6	2.9	11 40	.7

UT	MESEC				JUPITER			SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	272	46.4	153	2 16.6	93	286	51.2	3 51.1	211	8.5	-20	30.5
2	301	55.1	153	2 35.1	92	316	56.0	3 51.1	241	12.9	-20	30.5
4	331	3.7	153	2 53.5	92	347	.9	3 51.1	271	17.3	-20	30.6
6	0	12.4	153	3 12.0	92	17	5.7	3 51.0	301	21.6	-20	30.7
8	29	21.0	153	3 30.3	92	47	10.5	3 51.0	331	26.0	-20	30.7
10	58	29.6	153	3 48.6	91	77	15.4	3 51.0	1	30.3	-20	30.8
12	87	38.1	152	4 6.9	91	107	20.2	3 51.0	31	34.7	-20	30.9
14	116	46.6	152	4 25.1	91	137	25.0	3 51.0	61	39.0	-20	31.0
16	145	55.0	152	4 43.2	90	167	29.9	3 51.0	91	43.4	-20	31.0
18	175	3.4	152	5 1.2	90	197	34.7	3 50.9	121	47.8	-20	31.1
20	204	11.7	151	5 19.2	89	227	39.5	3 50.9	151	52.1	-20	31.2
22	233	20.0	151	5 37.1	89	257	44.4	3 50.9	181	56.5	-20	31.2
Δ						24		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	- 3 33.5	-1.2	16.3	T _m	5 59	1.8	54.3 14.8
12	- 3 47.6	T _{m☉}	12 h 3.8 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	'	°	
♃	9 23	.1	118	-3.7	♃	4 52	.0	186	-1.8
♄	7 6	.1	152	.9	♄	9 54	.0	110	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 59.6	-22 53.5	102 3.5	219 10.4	-19 8.0	253 56.3	-9 56.9
2	208 59.0	-22 53.0	132 8.4	249 9.0	-19 9.3	283 58.6	-9 57.9
4	238 58.4	-22 52.5	162 13.3	279 7.6	-19 10.5	314 .9	-9 58.9
6	268 57.9	-22 52.1	192 18.3	309 6.3	-19 11.8	344 3.2	-9 59.9
8	298 57.3	-22 51.6	222 23.2	339 4.9	-19 13.0	14 5.5	-10 .8
10	328 56.7	-22 51.1	252 28.1	9 3.5	-19 14.2	44 7.8	-10 1.8
12	358 56.1	-22 50.7	282 33.1	39 2.1	-19 15.5	74 10.1	-10 2.7
14	28 55.5	-22 50.2	312 38.0	69 .7	-19 16.7	104 12.4	-10 3.7
16	58 55.0	-22 49.7	342 42.9	98 59.4	-19 17.9	134 14.7	-10 4.7
18	88 54.4	-22 49.2	12 47.8	128 58.0	-19 19.2	164 17.0	-10 5.6
20	118 53.8	-22 48.7	42 52.8	158 56.6	-19 20.4	194 19.3	-10 6.6
22	148 53.2	-22 48.2	72 57.7	188 55.2	-19 21.6	224 21.6	-10 7.6
Δ	-3	2		-7	-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	9 1	15 7	0 56	2 44	0 10	.7	13 49	2.9
55	8 24	15 44	0 45	2 16	0 -3	.9	13 39	2.7
50	7 58	16 10	0 38	1 59	0 2	1.1	13 31	2.6
45	7 38	16 30	0 34	1 46	0 7	1.2	13 25	2.4
40	7 22	16 47	0 30	1 37	0 11	1.3	13 19	2.3
35	7 8	17 0	0 28	1 30	0 14	1.4	13 15	2.3
30	6 56	17 12	0 26	1 25	0 17	1.4	13 11	2.2
20	6 36	17 33	0 24	1 18	0 22	1.6	13 4	2.0
10	6 18	17 51	0 23	1 15	0 27	1.7	12 58	1.9
0	6 1	18 8	0 22	1 15	0 31	1.8	12 52	1.8
10	5 43	18 25	0 23	1 17	0 36	1.9	12 46	1.7
20	5 25	18 44	0 24	1 24	0 40	2.0	12 40	1.6
30	5 3	19 5	0 27	1 36	0 46	2.2	12 34	1.5
35	4 51	19 18	0 29	1 46	0 49	2.2	12 30	1.4
40	4 36	19 32	0 33	2 1	0 53	2.3	12 25	1.3
45	4 19	19 50	0 37	2 29	0 57	2.4	12 20	1.2
50	3 57	20 11	0 44	:::	1 2	2.6	12 14	1.1
55	3 28	20 40	0 56	:::	1 8	2.7	12 6	1.0
60	2 45	21 22	1 33	:::	1 16	2.9	11 56	.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	262 28.2	151	5 54.8	89	287 49.2	3 50.9	212 .8	-20 31.3
2	291 36.3	150	6 12.5	88	317 54.1	3 50.9	242 5.2	-20 31.4
4	320 44.3	150	6 30.2	88	347 58.9	3 50.9	272 9.6	-20 31.5
6	349 52.2	149	6 47.7	87	18 3.8	3 50.9	302 13.9	-20 31.5
8	19 .1	149	7 5.1	86	48 8.6	3 50.9	332 18.3	-20 31.6
10	48 7.8	148	7 22.4	86	78 13.5	3 50.9	2 22.6	-20 31.7
12	77 15.4	148	7 39.6	85	108 18.3	3 50.8	32 27.0	-20 31.7
14	106 22.9	147	7 56.6	85	138 23.2	3 50.8	62 31.4	-20 31.8
16	135 30.3	146	8 13.6	84	168 28.0	3 50.8	92 35.7	-20 31.9
18	164 37.6	146	8 30.4	84	198 32.9	3 50.8	122 40.1	-20 31.9
20	193 44.7	145	8 47.1	83	228 37.7	3 50.8	152 44.4	-20 32.0
22	222 51.7	144	9 3.7	82	258 42.6	3 50.8	182 48.8	-20 32.1
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	- 4 1.6	-1.2	16.3	T _m	6 42	1.8	54.3 14.8
12	- 4 15.5	T _{m☉}	12 h 4.3 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	'	°	
♂	9 24	.1	117	-3.7	♃	4 48	.0	186	-1.8
♂	7 4	.1	152	.9	♄	9 51	.0	110	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 52.7	-22 47.7	103 2.6	218 53.8	-19 22.8	254 23.9	-10 8.5
2	208 52.1	-22 47.2	133 7.6	248 52.4	-19 24.0	284 26.2	-10 9.5
4	238 51.5	-22 46.7	163 12.5	278 51.0	-19 25.2	314 28.5	-10 10.5
6	268 50.9	-22 46.2	193 17.4	308 49.6	-19 26.4	344 30.9	-10 11.4
8	298 50.4	-22 45.7	223 22.3	338 48.3	-19 27.6	14 33.2	-10 12.4
10	328 49.8	-22 45.2	253 27.3	8 46.9	-19 28.8	44 35.5	-10 13.3
12	358 49.2	-22 44.7	283 32.2	38 45.5	-19 30.0	74 37.8	-10 14.3
14	28 48.7	-22 44.2	313 37.1	68 44.1	-19 31.2	104 40.1	-10 15.2
16	58 48.1	-22 43.7	343 42.1	98 42.6	-19 32.4	134 42.4	-10 16.2
18	88 47.5	-22 43.1	13 47.0	128 41.2	-19 33.6	164 44.7	-10 17.2
20	118 46.9	-22 42.6	43 51.9	158 39.8	-19 34.8	194 47.0	-10 18.1
22	148 46.4	-22 42.1	73 56.8	188 38.4	-19 36.0	224 49.3	-10 19.1
Δ	-3	3		-7	-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	9 1	15 9	0 56	2 43	0 7	.8	14 59	2.9
55	8 24	15 46	0 45	2 16	0 19	1.0	14 44	2.7
50	7 58	16 11	0 38	1 58	0 28	1.2	14 32	2.6
45	7 38	16 31	0 34	1 46	0 36	1.3	14 23	2.4
40	7 22	16 48	0 30	1 37	0 42	1.4	14 15	2.4
35	7 8	17 1	0 28	1 30	0 47	1.5	14 9	2.3
30	6 56	17 13	0 26	1 25	0 52	1.5	14 3	2.2
20	6 36	17 34	0 24	1 18	1 0	1.7	13 53	2.1
10	6 18	17 52	0 23	1 15	1 8	1.8	13 44	2.0
0	6 1	18 8	0 22	1 15	1 15	1.9	13 36	1.9
10	5 44	18 25	0 23	1 17	1 22	2.0	13 28	1.8
20	5 26	18 44	0 24	1 23	1 29	2.1	13 19	1.7
30	5 4	19 5	0 27	1 36	1 38	2.2	13 9	1.6
35	4 52	19 18	0 29	1 46	1 43	2.3	13 4	1.5
40	4 37	19 32	0 32	2 1	1 48	2.3	12 57	1.5
45	4 20	19 49	0 37	2 28	1 55	2.4	12 50	1.4
50	3 58	20 11	0 44	:::	2 3	2.6	12 41	1.3
55	3 29	20 40	0 56	:::	2 13	2.7	12 29	1.1
60	2 47	21 21	1 31	:::	2 26	2.9	12 15	.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	251 58.6	144	9 20.1	81	288 47.4	3 50.8	212 53.2	-20 32.2
2	281 5.3	143	9 36.4	81	318 52.3	3 50.8	242 57.5	-20 32.2
4	310 11.9	142	9 52.5	80	348 57.1	3 50.8	273 1.9	-20 32.3
6	339 18.3	141	10 8.5	79	19 2.0	3 50.8	303 6.2	-20 32.4
8	8 24.6	141	10 24.4	78	49 6.9	3 50.8	333 10.6	-20 32.4
10	37 30.7	140	10 40.0	78	79 11.7	3 50.8	3 15.0	-20 32.5
12	66 36.6	139	10 55.6	77	109 16.6	3 50.8	33 19.3	-20 32.6
14	95 42.4	138	11 10.9	76	139 21.4	3 50.8	63 23.7	-20 32.6
16	124 48.0	137	11 26.1	75	169 26.3	3 50.8	93 28.1	-20 32.7
18	153 53.4	136	11 41.0	74	199 31.2	3 50.8	123 32.4	-20 32.8
20	182 58.6	135	11 55.8	73	229 36.0	3 50.8	153 36.8	-20 32.9
22	212 3.7	134	12 10.5	72	259 40.9	3 50.8	183 41.2	-20 32.9
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	- 4 29.4	-1.1	16.3	T _m	7 25	1.9	54.4 14.8
12	- 4 43.1	T _{m☉}	12 h 4.7 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	'	°	
♂	9 25	.1	116	-3.7	♃	4 44	.0	186	-1.8
♂	7 2	.1	151	.9	♄	9 47	.0	110	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}	δ_{\odot}	S_{Υ}	S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}	S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'
0	178 45.8	-22 41.6	104 1.8	218 37.0	-19 37.1	254 51.6	-10 20.0	254 51.6	-10 20.0	
2	208 45.2	-22 41.0	134 6.7	248 35.6	-19 38.3	284 53.9	-10 21.0	284 53.9	-10 21.0	
4	238 44.7	-22 40.5	164 11.6	278 34.2	-19 39.5	314 56.2	-10 21.9	314 56.2	-10 21.9	
6	268 44.1	-22 39.9	194 16.6	308 32.8	-19 40.6	344 58.5	-10 22.9	344 58.5	-10 22.9	
8	298 43.6	-22 39.4	224 21.5	338 31.3	-19 41.8	15 .8	-10 23.8	15 .8	-10 23.8	
10	328 43.0	-22 38.8	254 26.4	8 29.9	-19 43.0	45 3.1	-10 24.8	45 3.1	-10 24.8	
12	358 42.4	-22 38.3	284 31.3	38 28.5	-19 44.1	75 5.5	-10 25.7	75 5.5	-10 25.7	
14	28 41.9	-22 37.7	314 36.3	68 27.1	-19 45.3	105 7.8	-10 26.7	105 7.8	-10 26.7	
16	58 41.3	-22 37.2	344 41.2	98 25.6	-19 46.4	135 10.1	-10 27.6	135 10.1	-10 27.6	
18	88 40.7	-22 36.6	14 46.1	128 24.2	-19 47.5	165 12.4	-10 28.6	165 12.4	-10 28.6	
20	118 40.2	-22 36.1	44 51.0	158 22.8	-19 48.7	195 14.7	-10 29.5	195 14.7	-10 29.5	
22	148 39.6	-22 35.5	74 56.0	188 21.4	-19 49.8	225 17.0	-10 30.5	225 17.0	-10 30.5	
Δ	-3	3		-7	-6	12	-5	12	-5	

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	241 8.5	133 12	24.9	71	289 45.8	3 50.8	213 45.5	-20 33.0
2	270 13.2	132 12	39.1	70	319 50.7	3 50.8	243 49.9	-20 33.1
4	299 17.6	131 12	53.1	69	349 55.5	3 50.8	273 54.3	-20 33.1
6	328 21.9	130 13	6.9	68	20 .4	3 50.8	303 58.6	-20 33.2
8	357 25.9	129 13	20.5	67	50 5.3	3 50.8	334 3.0	-20 33.3
10	26 29.7	128 13	33.8	66	80 10.2	3 50.8	4 7.4	-20 33.3
12	55 33.4	127 13	47.0	65	110 15.0	3 50.8	34 11.7	-20 33.4
14	84 36.8	126 13	59.9	63	140 19.9	3 50.8	64 16.1	-20 33.5
16	113 40.0	125 14	12.6	62	170 24.8	3 50.8	94 20.5	-20 33.5
18	142 43.0	124 14	25.0	61	200 29.7	3 50.8	124 24.8	-20 33.6
20	171 45.7	123 14	37.2	60	230 34.6	3 50.8	154 29.2	-20 33.7
22	200 48.3	122 14	49.1	58	260 39.5	3 50.8	184 33.6	-20 33.7
Δ					24	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	9 0	15 11	0 56	2 43	0 27	1.0	16 9	2.8
55	8 24	15 47	0 45	2 16	0 44	1.2	15 49	2.7
50	7 58	16 13	0 38	1 58	0 56	1.4	15 34	2.5
45	7 38	16 32	0 33	1 46	1 7	1.5	15 22	2.4
40	7 22	16 48	0 30	1 37	1 15	1.5	15 12	2.4
35	7 8	17 2	0 28	1 30	1 23	1.6	15 4	2.3
30	6 57	17 14	0 26	1 25	1 29	1.7	14 56	2.3
20	6 36	17 34	0 24	1 18	1 40	1.8	14 43	2.2
10	6 18	17 52	0 23	1 15	1 50	1.9	14 32	2.1
0	6 1	18 9	0 22	1 15	1 60	2.0	14 22	2.0
10	5 44	18 26	0 23	1 17	2 9	2.0	14 11	1.9
20	5 26	18 44	0 24	1 23	2 19	2.1	14 0	1.8
30	5 5	19 5	0 27	1 35	2 30	2.2	13 48	1.7
35	4 52	19 18	0 29	1 45	2 37	2.3	13 40	1.7
40	4 38	19 32	0 32	2 0	2 45	2.4	13 32	1.6
45	4 21	19 49	0 37	2 27	2 54	2.5	13 22	1.6
50	3 59	20 11	0 43	:::	3 5	2.6	13 11	1.5
55	3 31	20 39	0 56	:::	3 18	2.7	12 56	1.3
60	2 49	21 21	1 30	:::	3 36	2.9	12 37	1.2

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min s	s	'	h min	min	'	'
00	- 4 56.7	-1.1	16.3	T_m	8 11	2.0	54.8 14.9
12	- 5 10.2	$T_{m\odot}$	12 h 5.2 min	Starost	24.6 d	Faza	☉

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
ζ	h min	'	°		μ	h min	'	°	
σ	9 26	.1	115	-3.6	η	4 40	.0	186	-1.8
	7 0	.1	151	.9	η	9 44	.0	110	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}	δ_{\odot}	S_{Υ}	S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}	S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'
0	178 39.1	-22 34.9	105 .9	218 19.9	-19 50.9	255 19.3	-10 31.4	255 19.3	-10 31.4	
2	208 38.5	-22 34.4	135 5.8	248 18.5	-19 52.1	285 21.6	-10 32.4	285 21.6	-10 32.4	
4	238 38.0	-22 33.8	165 10.8	278 17.0	-19 53.2	315 23.9	-10 33.3	315 23.9	-10 33.3	
6	268 37.4	-22 33.2	195 15.7	308 15.6	-19 54.3	345 26.2	-10 34.3	345 26.2	-10 34.3	
8	298 36.8	-22 32.6	225 20.6	338 14.2	-19 55.4	15 28.6	-10 35.2	15 28.6	-10 35.2	
10	328 36.3	-22 32.0	255 25.5	8 12.7	-19 56.5	45 30.9	-10 36.2	45 30.9	-10 36.2	
12	358 35.7	-22 31.4	285 30.5	38 11.3	-19 57.7	75 33.2	-10 37.1	75 33.2	-10 37.1	
14	28 35.2	-22 30.8	315 35.4	68 9.8	-19 58.8	105 35.5	-10 38.1	105 35.5	-10 38.1	
16	58 34.6	-22 30.3	345 40.3	98 8.4	-19 59.9	135 37.8	-10 39.0	135 37.8	-10 39.0	
18	88 34.1	-22 29.7	15 45.3	128 6.9	-20 1.0	165 40.1	-10 39.9	165 40.1	-10 39.9	
20	118 33.5	-22 29.1	45 50.2	158 5.5	-20 2.1	195 42.4	-10 40.9	195 42.4	-10 40.9	
22	148 33.0	-22 28.5	75 55.1	188 4.0	-20 3.1	225 44.8	-10 41.8	225 44.8	-10 41.8	
Δ	-3	3		-7	-6	12	-5	12	-5	

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	229 50.6	120 15	.7	57	290 44.3	3 50.8	214 37.9	-20 33.8
2	258 52.7	119 15	12.1	56	320 49.2	3 50.8	244 42.3	-20 33.9
4	287 54.5	118 15	23.3	54	350 54.1	3 50.9	274 46.7	-20 33.9
6	316 56.2	117 15	34.1	53	20 59.0	3 50.9	304 51.1	-20 34.0
8	345 57.6	116 15	44.7	51	51 3.9	3 50.9	334 55.4	-20 34.1
10	14 58.8	115 15	55.0	50	81 8.8	3 50.9	4 59.8	-20 34.1
12	43 59.7	114 16	5.0	48	111 13.7	3 50.9	35 4.2	-20 34.2
14	73 .4	112 16	14.7	47	141 18.6	3 50.9	65 8.5	-20 34.3
16	102 .9	111 16	24.1	45	171 23.5	3 50.9	95 12.9	-20 34.3
18	131 1.2	110 16	33.2	44	201 28.4	3 50.9	125 17.3	-20 34.4
20	160 1.2	109 16	41.9	42	231 33.3	3 50.9	155 21.7	-20 34.5
22	189 1.0	108 16	50.4	41	261 38.2	3 50.9	185 26.0	-20 34.5
Δ					24	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	8 59	15 12	0 56	2 42	0 52	1.3	17 17	2.7
55	8 23	15 48	0 45	2 16	1 13	1.5	16 53	2.5
50	7 58	16 14	0 38	1 58	1 29	1.6	16 35	2.5
45	7 38	16 33	0 33	1 46	1 42	1.7	16 21	2.4
40	7 22	16 49	0 30	1 37	1 52	1.7	16 9	2.3
35	7 9	17 3	0 28	1 30	2 1	1.8	15 59	2.3
30	6 57	17 15	0 26	1 25	2 9	1.8	15 50	2.3
20	6 36	17 35	0 24	1 18	2 23	1.9	15 35	2.2
10	6 19	17 53	0 23	1 15	2 35	2.0	15 22	2.2
0	6 2	18 9	0 22	1 15	2 46	2.1	15 10	2.1
10	5 45	18 26	0 23	1 17	2 58	2.1	14 58	2.0
20	5 27	18 44	0 24	1 23	3 10	2.2	14 45	2.0
30	5 6	19 5	0 27	1 35	3 24	2.3	14 30	1.9
35	4 53	19 18	0 29	1 45	3 32	2.3	14 21	1.9
40	4 39	19 32	0 32	2 0	3 42	2.4	14 11	1.8
45	4 22	19 49	0 37	2 26	3 53	2.4	13 60	1.8
50	4 0	20 10	0 43	:::	4 6	2.5	13 46	1.7
55	3 32	20 39	0 55	:::	4 23	2.6	13 28	1.6
60	2 51	21 20	1 28	:::	4 45	2.8	13 5	1.5

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min s	s	'	h min	min	'	'
00	- 5 23.7	-1.1	16.3	T_m	8 58	2.1	55.2 15.1
12	- 5 37.0	$T_{m\odot}$	12 h 5.6 min	Starost	25.6 d	Faza	☉

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
ζ	h min	'	°		μ	h min	'	°	
σ	9 27	.1	113	-3.6	η	4 36	.0	186	-1.8
	6 58	.1	150	.8	η	9 40	.0	110	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 32.4	-22 27.8	106 .0	218 2.6	-20 4.2	255 47.1	-10 42.8
2	208 31.9	-22 27.2	136 5.0	248 1.1	-20 5.3	285 49.4	-10 43.7
4	238 31.3	-22 26.6	166 9.9	277 59.6	-20 6.4	315 51.7	-10 44.7
6	268 30.8	-22 26.0	196 14.8	307 58.2	-20 7.5	345 54.0	-10 45.6
8	298 30.2	-22 25.4	226 19.8	337 56.7	-20 8.5	15 56.3	-10 46.5
10	328 29.7	-22 24.8	256 24.7	7 55.2	-20 9.6	45 58.6	-10 47.5
12	358 29.1	-22 24.1	286 29.6	37 53.8	-20 10.7	76 1.0	-10 48.4
14	28 28.6	-22 23.5	316 34.5	67 52.3	-20 11.7	106 3.3	-10 49.3
16	58 28.1	-22 22.9	346 39.5	97 50.8	-20 12.8	136 5.6	-10 50.3
18	88 27.5	-22 22.2	16 44.4	127 49.4	-20 13.8	166 7.9	-10 51.2
20	118 27.0	-22 21.6	46 49.3	157 47.9	-20 14.9	196 10.2	-10 52.1
22	148 26.4	-22 21.0	76 54.3	187 46.4	-20 15.9	226 12.6	-10 53.1
Δ	-3	3		-7	-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	8 58	15 14	0 55	2 42	1 23	1.7	18 21	2.4
55	8 23	15 50	0 44	2 15	1 48	1.8	17 54	2.3
50	7 57	16 15	0 38	1 58	2 7	1.9	17 34	2.3
45	7 38	16 34	0 33	1 46	2 22	1.9	17 18	2.3
40	7 22	16 50	0 30	1 37	2 34	2.0	17 5	2.3
35	7 9	17 4	0 28	1 30	2 44	2.0	16 54	2.3
30	6 57	17 15	0 26	1 25	2 53	2.0	16 45	2.3
20	6 37	17 36	0 24	1 18	3 9	2.1	16 28	2.2
10	6 19	17 53	0 23	1 15	3 23	2.1	16 14	2.2
0	6 2	18 10	0 22	1 15	3 36	2.2	16 0	2.2
10	5 46	18 26	0 23	1 17	3 49	2.2	15 47	2.2
20	5 27	18 45	0 24	1 23	4 3	2.2	15 32	2.1
30	5 6	19 5	0 27	1 35	4 19	2.3	15 16	2.1
35	4 54	19 18	0 29	1 45	4 28	2.3	15 6	2.1
40	4 40	19 32	0 32	1 60	4 38	2.3	15 5	2.1
45	4 23	19 49	0 37	2 26	4 51	2.4	14 42	2.1
50	4 1	20 10	0 43	:::	5 6	2.4	14 27	2.0
55	3 33	20 38	0 55	:::	5 26	2.5	14 7	2.0
60	2 53	21 18	1 27	:::	5 52	2.5	13 40	1.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	218 .6	107 16	58.5 39	291 43.1	3 51.0	215 30.4	-20 34.6	
2	246 59.9	106 17	6.3 37	321 48.0	3 51.0	245 34.8	-20 34.7	
4	275 59.1	105 17	13.8 36	351 52.9	3 51.0	275 39.1	-20 34.7	
6	304 58.0	103 17	20.9 34	21 57.8	3 51.0	305 43.5	-20 34.8	
8	333 56.7	102 17	27.7 32	52 2.7	3 51.0	335 47.9	-20 34.9	
10	2 55.2	101 17	34.1 30	82 7.6	3 51.0	5 52.3	-20 34.9	
12	31 53.4	100 17	40.1 29	112 12.5	3 51.1	35 56.6	-20 35.0	
14	60 51.5	99 17	45.8 27	142 17.4	3 51.1	66 1.0	-20 35.1	
16	89 49.3	98 17	51.2 25	172 22.3	3 51.1	96 5.4	-20 35.1	
18	118 46.9	97 17	56.2 23	202 27.2	3 51.1	126 9.8	-20 35.2	
20	147 44.4	96 18	.7 21	232 32.1	3 51.1	156 14.1	-20 35.3	
22	176 41.6	95 18	5.0 19	262 37.1	3 51.1	186 18.5	-20 35.3	
Δ				25	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	- 5 50.3	-1.1	16.3	T _m	9 48	2.2	55.8 15.2
12	- 6 3.4	T _{m☉}	12 h 6.1 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	'	°	
♂	9 28	.1	112	-3.6	♄	4 32	.0	186	-1.8
♂	6 56	.1	150	.8	♂	9 37	.0	109	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 25.9	-22 20.3	106 59.2	217 44.9	-20 17.0	256 14.9	-10 54.0
2	208 25.4	-22 19.7	137 4.1	247 43.4	-20 18.0	286 17.2	-10 54.9
4	238 24.8	-22 19.0	167 9.0	277 42.0	-20 19.1	316 19.5	-10 55.9
6	268 24.3	-22 18.4	197 14.0	307 40.5	-20 20.1	346 21.8	-10 56.8
8	298 23.7	-22 17.7	227 18.9	337 39.0	-20 21.1	16 24.2	-10 57.7
10	328 23.2	-22 17.1	257 23.8	7 37.5	-20 22.1	46 26.5	-10 58.7
12	358 22.7	-22 16.4	287 28.8	37 36.0	-20 23.2	76 28.8	-10 59.6
14	28 22.1	-22 15.7	317 33.7	67 34.5	-20 24.2	106 31.1	-11 .5
16	58 21.6	-22 15.1	347 38.6	97 33.0	-20 25.2	136 33.4	-11 1.5
18	88 21.1	-22 14.4	17 43.5	127 31.5	-20 26.2	166 35.8	-11 2.4
20	118 20.6	-22 13.7	47 48.5	157 30.0	-20 27.2	196 38.1	-11 3.3
22	148 20.0	-22 13.0	77 53.4	187 28.5	-20 28.2	226 40.4	-11 4.2
Δ	-3	3		-7	-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	8 57	15 16	0 55	2 41	2 4	2.2	19 18	2.0
55	8 22	15 51	0 44	2 15	2 32	2.2	18 50	2.1
50	7 57	16 16	0 38	1 58	2 52	2.2	18 29	2.1
45	7 38	16 36	0 33	1 46	3 8	2.2	18 13	2.1
40	7 22	16 51	0 30	1 37	3 21	2.2	17 60	2.2
35	7 9	17 5	0 28	1 30	3 32	2.2	17 49	2.2
30	6 57	17 16	0 26	1 25	3 42	2.2	17 39	2.2
20	6 37	17 36	0 24	1 18	3 59	2.2	17 22	2.2
10	6 19	17 54	0 23	1 15	4 13	2.2	17 7	2.2
0	6 3	18 10	0 22	1 14	4 27	2.2	16 53	2.3
10	5 46	18 27	0 23	1 17	4 41	2.2	16 39	2.3
20	5 28	18 45	0 24	1 23	4 56	2.2	16 24	2.3
30	5 7	19 6	0 27	1 35	5 13	2.2	16 7	2.3
35	4 55	19 18	0 29	1 45	5 23	2.2	15 57	2.3
40	4 41	19 32	0 32	1 59	5 34	2.2	15 45	2.3
45	4 24	19 49	0 36	2 25	5 48	2.2	15 32	2.3
50	4 3	20 10	0 43	:::	6 4	2.2	15 15	2.4
55	3 35	20 37	0 55	:::	6 25	2.2	14 55	2.4
60	2 55	21 17	1 25	:::	6 53	2.2	14 26	2.4

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	205 38.6	94 18	8.8 17	292 42.0	3 51.2	216 22.9	-20 35.4	
2	234 35.5	93 18	12.2 15	322 46.9	3 51.2	246 27.3	-20 35.5	
4	263 32.2	92 18	15.3 13	352 51.8	3 51.2	276 31.6	-20 35.5	
6	292 28.6	92 18	17.9 11	22 56.7	3 51.2	306 36.0	-20 35.6	
8	321 25.0	91 18	20.2 9	53 1.6	3 51.3	336 40.4	-20 35.7	
10	350 21.1	90 18	22.0 7	83 6.6	3 51.3	6 44.8	-20 35.7	
12	19 17.1	89 18	23.4 5	113 11.5	3 51.3	36 49.2	-20 35.8	
14	48 12.9	88 18	24.5 3	143 16.4	3 51.3	66 53.5	-20 35.9	
16	77 8.6	88 18	25.1 1	173 21.3	3 51.3	96 57.9	-20 35.9	
18	106 4.1	87 18	25.3 -1	203 26.3	3 51.4	127 2.3	-20 36.0	
20	134 59.5	86 18	25.0 -3	233 31.2	3 51.4	157 6.7	-20 36.1	
22	163 54.7	86 18	24.4 -5	263 36.1	3 51.4	187 11.1	-20 36.1	
Δ				25	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	- 6 16.4	-1.1	16.3	T _m	10 40	2.2	56.5 15.4
12	- 6 29.2	T _{m☉}	12 h 6.5 min	Starost	27.6 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 29	.1	111	-3.6	♄	4 28	.0	186	-1.8
♂	6 54	.1	149	.8	♂	9 33	.0	109	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	19.5	-22	12.4	107	58.3	217	27.0	-20	29.2	256	42.7	-11	5.2	
2	208	19.0	-22	11.7	138	3.2	247	25.5	-20	30.2	286	45.1	-11	6.1	
4	238	18.4	-22	11.0	168	8.2	277	24.0	-20	31.2	316	47.4	-11	7.0	
6	268	17.9	-22	10.3	198	13.1	307	22.5	-20	32.2	346	49.7	-11	7.9	
8	298	17.4	-22	9.6	228	18.0	337	21.0	-20	33.2	16	52.0	-11	8.9	
10	328	16.9	-22	8.9	258	23.0	7	19.5	-20	34.1	46	54.4	-11	9.8	
12	358	16.3	-22	8.2	288	27.9	37	18.0	-20	35.1	76	56.7	-11	10.7	
14	28	15.8	-22	7.5	318	32.8	67	16.5	-20	36.1	106	59.0	-11	11.6	
16	58	15.3	-22	6.8	348	37.7	97	15.0	-20	37.0	137	1.3	-11	12.5	
18	88	14.8	-22	6.1	18	42.7	127	13.4	-20	38.0	167	3.7	-11	13.5	
20	118	14.3	-22	5.4	48	47.6	157	11.9	-20	39.0	197	6.0	-11	14.4	
22	148	13.7	-22	4.7	78	52.5	187	10.4	-20	39.9	227	8.3	-11	15.3	
Δ		-3		3				-8		-5		12			-5

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	192	49.8	85	18	23.3	-7	293	41.0	3	51.4	217	15.4	-20	36.2	
2	221	44.8	84	18	21.8	-10	323	46.0	3	51.5	247	19.8	-20	36.3	
4	250	39.7	84	18	19.9	-12	353	50.9	3	51.5	277	24.2	-20	36.3	
6	279	34.5	83	18	17.6	-14	23	55.8	3	51.5	307	28.6	-20	36.4	
8	308	29.2	83	18	14.8	-16	54	.8	3	51.6	337	33.0	-20	36.4	
10	337	23.7	82	18	11.6	-18	84	5.7	3	51.6	7	37.3	-20	36.5	
12	6	18.2	82	18	7.9	-20	114	10.7	3	51.6	37	41.7	-20	36.6	
14	35	12.7	82	18	3.8	-23	144	15.6	3	51.6	67	46.1	-20	36.6	
16	64	7.0	81	17	59.3	-25	174	20.5	3	51.7	97	50.5	-20	36.7	
18	93	1.3	81	17	54.4	-27	204	25.5	3	51.7	127	54.9	-20	36.8	
20	121	55.5	81	17	49.0	-29	234	30.4	3	51.7	157	59.3	-20	36.8	
22	150	49.6	81	17	43.2	-31	264	35.4	3	51.8	188	3.6	-20	36.9	
Δ								25		0		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 56	15 18	0 55	2 41	2 56	2.7	20 6	1.6
55	8 21	15 53	0 44	2 15	3 24	2.6	19 40	1.8
50	7 57	16 17	0 38	1 58	3 45	2.5	19 20	1.9
45	7 37	16 37	0 33	1 45	4 1	2.5	19 5	2.0
40	7 22	16 52	0 30	1 37	4 14	2.4	18 52	2.0
35	7 9	17 5	0 28	1 30	4 25	2.4	18 41	2.1
30	6 57	17 17	0 26	1 25	4 35	2.4	18 31	2.1
20	6 37	17 37	0 24	1 18	4 52	2.3	18 15	2.2
10	6 20	17 54	0 23	1 15	5 7	2.3	18 0	2.2
0	6 3	18 11	0 22	1 14	5 21	2.3	17 47	2.3
10	5 47	18 27	0 23	1 17	5 35	2.2	17 33	2.3
20	5 29	18 45	0 24	1 23	5 50	2.2	17 19	2.4
30	5 8	19 6	0 27	1 35	6 7	2.2	17 2	2.5
35	4 56	19 18	0 29	1 44	6 16	2.1	16 52	2.5
40	4 42	19 32	0 32	1 59	6 28	2.1	16 41	2.5
45	4 25	19 48	0 36	2 24	6 41	2.1	16 28	2.6
50	4 4	20 9	0 43	:::	6 57	2.0	16 12	2.7
55	3 36	20 37	0 54	:::	7 18	1.9	15 52	2.7
60	2 57	21 16	1 24	:::	7 46	1.8	15 24	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 42.0	-1.0	16.3	T _m	11 34	2.3	57.1	15.6
12	- 6 54.6	T _{m☉}	12 h 6.9 min	Starost	28.6 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 31	.1	109	-3.6	♄	4 25	.0	186	-1.8
♂	6 53	.1	149	.8	♂	9 30	.0	109	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	13.2	-22	4.0	108	57.5	217	8.9	-20	40.9	257	10.6	-11	16.2	
2	208	12.7	-22	3.2	139	2.4	247	7.4	-20	41.8	287	13.0	-11	17.1	
4	238	12.2	-22	2.5	169	7.3	277	5.8	-20	42.8	317	15.3	-11	18.1	
6	268	11.7	-22	1.8	199	12.2	307	4.3	-20	43.7	347	17.6	-11	19.0	
8	298	11.2	-22	1.1	229	17.2	337	2.8	-20	44.6	17	20.0	-11	19.9	
10	328	10.6	-22	.3	259	22.1	7	1.3	-20	45.6	47	22.3	-11	20.8	
12	358	10.1	-21	59.6	289	27.0	36	59.7	-20	46.5	77	24.6	-11	21.7	
14	28	9.6	-21	58.9	319	32.0	66	58.2	-20	47.4	107	27.0	-11	22.6	
16	58	9.1	-21	58.1	349	36.9	96	56.7	-20	48.3	137	29.3	-11	23.5	
18	88	8.6	-21	57.4	19	41.8	126	55.1	-20	49.2	167	31.6	-11	24.5	
20	118	8.1	-21	56.6	49	46.7	156	53.6	-20	50.2	197	34.0	-11	25.4	
22	148	7.6	-21	55.9	79	51.7	186	52.1	-20	51.1	227	36.3	-11	26.3	
Δ		-3		4				-8		-5		12			-5

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	43.8	80	17	37.0	-33	294	40.3	3	51.8	218	8.0	-20	37.0	
2	208	37.8	80	17	30.3	-36	324	45.3	3	51.8	248	12.4	-20	37.0	
4	237	31.9	80	17	23.2	-38	354	50.2	3	51.9	278	16.8	-20	37.1	
6	266	25.9	80	17	15.7	-40	24	55.2	3	51.9	308	21.2	-20	37.2	
8	295	19.9	80	17	7.7	-42	55	.1	3	51.9	338	25.6	-20	37.2	
10	324	13.9	80	16	59.3	-44	85	5.1	3	52.0	8	30.0	-20	37.3	
12	353	7.9	80	16	50.5	-46	115	10.0	3	52.0	38	34.3	-20	37.3	
14	22	1.9	80	16	41.3	-48	145	15.0	3	52.0	68	38.7	-20	37.4	
16	50	55.9	80	16	31.7	-50	175	19.9	3	52.1	98	43.1	-20	37.5	
18	79	49.9	80	16	21.6	-52	205	24.9	3	52.1	128	47.5	-20	37.5	
20	108	43.9	80	16	11.2	-54	235	29.8	3	52.2	158	51.9	-20	37.6	
22	137	38.0	80	16	.3	-56	265	34.8	3	52.2	188	56.3	-20	37.7	
Δ								25		0		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 55	15 20	0 55	2 40	3 60	3.1	20 46	1.3
55	8 21	15 54	0 44	2 14	4 26	2.9	20 23	1.5
50	7 56	16 19	0 38	1 57	4 45	2.8	20 5	1.6
45	7 37	16 38	0 33	1 45	5 0	2.7	19 51	1.8
40	7 22	16 53	0 30	1 36	5 13	2.6	19 40	1.8
35	7 8	17 6	0 28	1 30	5 23	2.6	19 30	1.9
30	6 57	17 18	0 26	1 25	5 33	2.5	19 22	2.0
20	6 37	17 38	0 24	1 18	5 48	2.4	19 7	2.1
10	6 20	17 55	0 23	1 15	6 2	2.4	18 54	2.2
0	6 4	18 11	0 22	1 14	6 15	2.3	18 42	2.3
10	5 47	18 27	0 23	1 17	6 28	2.2	18 29	2.4
20	5 29	18 45	0 24	1 23	6 42	2.1	18 16	2.5
30	5 9	19 6	0 27	1 34	6 58	2.0	18 1	2.6
35	4 57	19 18	0 29	1 44	7 7	2.0	17 52	2.6
40	4 43	19 32	0 32	1 58	7 18	1.9	17 42	2.7
45	4 26	19 48	0 36	2 23	7 30	1.9	17 30	2.8
50	4 5	20 9	0 43	3 44	7 45	1.8	17 16	2.9
55	3 38	20 36	0 54	:::	8 4	1.6	16 58	3.0
60	2 59	21 15	1 22	:::	8 30	1.5	16 33	3.2

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	- 7 7.1	-1.0	16.3	T _m	12 29	2.2	57.8	15.7
12	- 7 19.4	T _{m☉} </						

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	7.1	-21	55.1	109	56.6	216	50.5	-20	52.0	257	38.6	-11	27.2	
2	208	6.6	-21	54.4	140	1.5	246	49.0	-20	52.9	287	41.0	-11	28.1	
4	238	6.1	-21	53.6	170	6.5	276	47.4	-20	53.8	317	43.3	-11	29.0	
6	268	5.6	-21	52.9	200	11.4	306	45.9	-20	54.7	347	45.6	-11	29.9	
8	298	5.1	-21	52.1	230	16.3	336	44.3	-20	55.5	17	48.0	-11	30.8	
10	328	4.6	-21	51.3	260	21.2	6	42.8	-20	56.4	47	50.3	-11	31.7	
12	358	4.1	-21	50.6	290	26.2	36	41.2	-20	57.3	77	52.6	-11	32.6	
14	28	3.6	-21	49.8	320	31.1	66	39.7	-20	58.2	107	55.0	-11	33.6	
16	58	3.1	-21	49.0	350	36.0	96	38.1	-20	59.1	137	57.3	-11	34.5	
18	88	2.6	-21	48.2	20	41.0	126	36.6	-20	59.9	167	59.6	-11	35.4	
20	118	2.1	-21	47.5	50	45.9	156	35.0	-21	.8	198	2.0	-11	36.3	
22	148	1.6	-21	46.7	80	50.8	186	33.5	-21	1.6	228	4.3	-11	37.2	
Δ		-2		4				-8		-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	8 54	15 22	0 54	2 40	5 14	3.4	21 17	1.1
55	8 20	15 56	0 44	2 14	5 36	3.1	20 59	1.3
50	7 56	16 20	0 37	1 57	5 52	3.0	20 45	1.5
45	7 37	16 39	0 33	1 45	6 5	2.8	20 34	1.6
40	7 21	16 54	0 30	1 36	6 16	2.8	20 24	1.7
35	7 8	17 7	0 28	1 30	6 25	2.7	20 16	1.8
30	6 57	17 19	0 26	1 24	6 33	2.6	20 9	1.9
20	6 37	17 38	0 24	1 18	6 47	2.5	19 57	2.0
10	6 20	17 55	0 23	1 15	6 59	2.4	19 46	2.1
0	6 4	18 11	0 22	1 14	7 10	2.3	19 36	2.2
10	5 48	18 28	0 23	1 17	7 21	2.2	19 26	2.4
20	5 30	18 45	0 24	1 23	7 34	2.0	19 15	2.5
30	5 10	19 6	0 27	1 34	7 47	1.9	19 2	2.6
35	4 58	19 17	0 29	1 44	7 55	1.9	18 55	2.7
40	4 44	19 31	0 32	1 58	8 4	1.8	18 47	2.8
45	4 27	19 48	0 36	2 22	8 15	1.7	18 37	2.9
50	4 7	20 8	0 42	3 34	8 28	1.5	18 25	3.0
55	3 40	20 35	0 53	:::	8 44	1.4	18 10	3.2
60	3 1	21 13	1 21	:::	9 5	1.2	17 50	3.4
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	166	32.1	81	15	49.1	-58	295	39.8	3	52.2	219	.7	-20	37.7
2	195	26.2	81	15	37.4	-60	325	44.7	3	52.3	249	5.1	-20	37.8
4	224	20.3	81	15	25.4	-62	355	49.7	3	52.3	279	9.5	-20	37.8
6	253	14.6	81	15	12.9	-64	25	54.6	3	52.4	309	13.8	-20	37.9
8	282	8.8	82	15	.1	-66	55	59.6	3	52.4	339	18.2	-20	38.0
10	311	3.1	82	14	46.9	-68	86	4.6	3	52.4	9	22.6	-20	38.0
12	339	57.5	82	14	33.4	-70	116	9.5	3	52.5	39	27.0	-20	38.1
14	8	52.0	83	14	19.4	-71	146	14.5	3	52.5	69	31.4	-20	38.2
16	37	46.5	83	14	5.1	-73	176	19.5	3	52.6	99	35.8	-20	38.2
18	66	41.1	83	13	50.5	-75	206	24.4	3	52.6	129	40.2	-20	38.3
20	95	35.7	84	13	35.5	-77	236	29.4	3	52.7	159	44.6	-20	38.3
22	124	30.5	84	13	20.2	-78	266	34.4	3	52.7	189	49.0	-20	38.4
Δ							25		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	- 7 31.7	-1.0	16.3	T _m	13 23	2.3	58.3	15.9	
12	- 7 43.7	T _{m☉}	12 h 7.7 min	Starost	.9 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 33	.1	107	-3.6	♄	4 17	.0	186	-1.8
	6 49	.1	148	.8	♅	9 23	.0	109	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	1.1	-21	45.9	110	55.7	216	31.9	-21	2.5	258	6.6	-11	38.1	
2	208	.6	-21	45.1	141	.7	246	30.3	-21	3.4	288	9.0	-11	39.0	
4	238	.1	-21	44.3	171	5.6	276	28.8	-21	4.2	318	11.3	-11	39.9	
6	267	59.6	-21	43.5	201	10.5	306	27.2	-21	5.0	348	13.7	-11	40.8	
8	297	59.1	-21	42.7	231	15.5	336	25.7	-21	5.9	18	16.0	-11	41.7	
10	327	58.6	-21	41.9	261	20.4	6	24.1	-21	6.7	48	18.3	-11	42.6	
12	357	58.1	-21	41.1	291	25.3	36	22.5	-21	7.5	78	20.7	-11	43.5	
14	27	57.7	-21	40.3	321	30.2	66	20.9	-21	8.4	108	23.0	-11	44.4	
16	57	57.2	-21	39.5	351	35.2	96	19.4	-21	9.2	138	25.4	-11	45.3	
18	87	56.7	-21	38.7	21	40.1	126	17.8	-21	10.0	168	27.7	-11	46.2	
20	117	56.2	-21	37.9	51	45.0	156	16.2	-21	10.8	198	30.1	-11	47.1	
22	147	55.7	-21	37.0	81	49.9	186	14.7	-21	11.6	228	32.4	-11	48.0	
Δ		-2		4				-8		-4			12		-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 53	15 24	0 54	2 39	6 34	3.5	21 42	.9
55	8 19	15 57	0 44	2 14	6 51	3.3	21 29	1.1
50	7 55	16 22	0 37	1 57	7 3	3.1	21 20	1.3
45	7 36	16 40	0 33	1 45	7 13	2.9	21 12	1.5
40	7 21	16 55	0 30	1 36	7 22	2.8	21 5	1.6
35	7 8	17 8	0 28	1 29	7 29	2.7	20 59	1.7
30	6 57	17 19	0 26	1 24	7 35	2.6	20 54	1.8
20	6 38	17 39	0 24	1 18	7 46	2.5	20 45	1.9
10	6 20	17 56	0 23	1 15	7 56	2.3	20 37	2.1
0	6 4	18 12	0 22	1 14	8 4	2.2	20 30	2.2
10	5 48	18 28	0 23	1 17	8 13	2.1	20 22	2.3
20	5 31	18 45	0 24	1 22	8 23	2.0	20 14	2.5
30	5 11	19 5	0 27	1 34	8 33	1.8	20 5	2.6
35	4 59	19 17	0 29	1 43	8 40	1.7	19 60	2.7
40	4 45	19 31	0 32	1 57	8 47	1.6	19 54	2.8
45	4 28	19 47	0 36	2 21	8 55	1.5	19 47	3.0
50	4 8	20 7	0 42	3 27	9 5	1.4	19 38	3.1
55	3 41	20 34	0 53	:::	9 17	1.2	19 27	3.3
60	3 3	21 12	1 19	:::	9 33	1.0	19 13	3.5
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	153	25.3	84	13	4.5	-80	296	39.4	3	52.8	219	53.4	-20	38.5
2	182	20.2	85	12	48.5	-82	326	44.3	3	52.8	249	57.8	-20	38.5
4	211	15.1	85	12	32.2	-83	356	49.3	3	52.8	280	2.2	-20	38.6
6	240	10.2	86	12	15.5	-85	26	54.3	3	52.9	310	6.5	-20	38.6
8	269	5.4	86	11	58.6	-86	56	59.3	3	52.9	340	10.9	-20	38.7
10	298	.6	87	11	41.3	-88	87	4.3	3	53.0	10	15.3	-20	38.8
12	326	56.0	87	11	23.8	-89	117	9.2	3	53.0	40	19.7	-20	38.8
14	355	51.4	88	11	6.0	-90	147	14.2	3	53.1	70	24.1	-20	38.9
16	24	46.9	88	10	47.9	-92	177	19.2	3	53.1	100	28.5	-20	39.0
18	53	42.5	89	10	29.5	-93	207	24.2	3	53.2	130	32.9	-20	39.0
20	82	38.2	89	10	10.9	-94	237	29.2	3	53.2	160	37.3	-20	39.1
22	111	34.0	89	9	52.0	-96	267	34.2	3	53.3	190	41.7	-20	39.1
Δ							25		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	- 7 55.7	-1.0	16.3	T _m	14 17	2.2	58.8	16.0
12	- 8 7.							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 55.2 -21 36.2		111 54.9	216 13.1 -21 12.4	258 34.7 -11 48.9		
2	207 54.8 -21 35.4		141 59.8	246 11.5 -21 13.3	288 37.1 -11 49.8		
4	237 54.3 -21 34.6		172 4.7	276 9.9 -21 14.1	318 39.4 -11 50.6		
6	267 53.8 -21 33.7		202 9.7	306 8.3 -21 14.8	348 41.8 -11 51.5		
8	297 53.3 -21 32.9		232 14.6	336 6.8 -21 15.6	18 44.1 -11 52.4		
10	327 52.8 -21 32.1		262 19.5	6 5.2 -21 16.4	48 46.5 -11 53.3		
12	357 52.4 -21 31.2		292 24.4	36 3.6 -21 17.2	78 48.8 -11 54.2		
14	27 51.9 -21 30.4		322 29.4	66 2.0 -21 18.0	108 51.2 -11 55.1		
16	57 51.4 -21 29.5		352 34.3	96 .4 -21 18.8	138 53.5 -11 56.0		
18	87 51.0 -21 28.7		22 39.2	125 58.8 -21 19.5	168 55.8 -11 56.9		
20	117 50.5 -21 27.8		52 44.2	155 57.2 -21 20.3	198 58.2 -11 57.8		
22	147 50.0 -21 27.0		82 49.1	185 55.6 -21 21.1	229 .5 -11 58.7		
Δ	-2	4		-8	-4	12	-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 51	15 26	0 54	2 39	7 58	3.6	22 4	.8
55	8 18	15 59	0 43	2 13	8 9	3.3	21 57	1.1
50	7 54	16 23	0 37	1 57	8 17	3.1	21 51	1.2
45	7 36	16 41	0 33	1 45	8 24	3.0	21 47	1.4
40	7 21	16 56	0 30	1 36	8 29	2.8	21 43	1.5
35	7 8	17 9	0 28	1 29	8 34	2.7	21 40	1.6
30	6 57	17 20	0 26	1 24	8 38	2.6	21 37	1.7
20	6 38	17 40	0 24	1 18	8 45	2.5	21 32	1.9
10	6 21	17 56	0 23	1 14	8 52	2.3	21 27	2.0
0	6 5	18 12	0 22	1 14	8 58	2.2	21 23	2.2
10	5 49	18 28	0 23	1 16	9 4	2.0	21 18	2.3
20	5 31	18 45	0 24	1 22	9 10	1.9	21 14	2.5
30	5 11	19 5	0 27	1 34	9 17	1.7	21 8	2.6
35	4 60	19 17	0 29	1 43	9 21	1.6	21 5	2.7
40	4 46	19 31	0 32	1 57	9 26	1.5	21 2	2.8
45	4 30	19 47	0 36	2 20	9 31	1.4	20 57	3.0
50	4 10	20 7	0 42	3 21	9 38	1.3	20 52	3.1
55	3 43	20 33	0 53	:::	9 46	1.1	20 46	3.3
60	3 5	21 10	1 18	:::	9 56	.9	20 38	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	140 29.9 90	9 32.9 -97			297 39.2 3 53.3		220 46.1 -20 39.2	
2	169 25.9 90	9 13.6 -98			327 44.2 3 53.4		250 50.5 -20 39.3	
4	198 22.0 91	8 54.0 -99			357 49.2 3 53.4		280 54.9 -20 39.3	
6	227 18.2 91	8 34.2 -100			27 54.1 3 53.5		310 59.3 -20 39.4	
8	256 14.4 92	8 14.2 -101			57 59.1 3 53.6		341 3.7 -20 39.4	
10	285 10.8 92	7 54.0 -102			88 4.1 3 53.6		11 8.1 -20 39.5	
12	314 7.2 93	7 33.5 -103			118 9.1 3 53.7		41 12.5 -20 39.6	
14	343 3.7 93	7 13.0 -104			148 14.1 3 53.7		71 16.9 -20 39.6	
16	12 .3 93	6 52.2 -105			178 19.1 3 53.8		101 21.3 -20 39.7	
18	40 57.0 94	6 31.3 -105			208 24.1 3 53.8		131 25.7 -20 39.7	
20	69 53.7 94	6 10.2 -106			238 29.1 3 53.9		161 30.1 -20 39.8	
22	98 50.6 94	5 48.9 -107			268 34.1 3 53.9		191 34.5 -20 39.9	
Δ					25	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	- 8 19.1	-.9	16.3	T _m	15 10	2.2	59.1 16.1		
12	- 8 30.4	T _{m☉}	12 h 8.5 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	' / "	°	°
♂	9 36	.1	104	-3.6	♃	4 9	.0	186	-1.8
	6 45	.1	147	.7	♄	9 16	.0	109	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 49.5 -21 26.1		112 54.0	215 54.0 -21 21.8	259 2.9 -11 59.5		
2	207 49.1 -21 25.3		142 58.9	245 52.4 -21 22.6	289 5.2 -12 .4		
4	237 48.6 -21 24.4		173 3.9	275 50.8 -21 23.3	319 7.6 -12 1.3		
6	267 48.2 -21 23.5		203 8.8	305 49.2 -21 24.1	349 9.9 -12 2.2		
8	297 47.7 -21 22.7		233 13.7	335 47.6 -21 24.8	19 12.3 -12 3.1		
10	327 47.2 -21 21.8		263 18.7	5 46.0 -21 25.5	49 14.6 -12 4.0		
12	357 46.8 -21 20.9		293 23.6	35 44.4 -21 26.3	79 17.0 -12 4.9		
14	27 46.3 -21 20.0		323 28.5	65 42.8 -21 27.0	109 19.3 -12 5.7		
16	57 45.8 -21 19.2		353 33.4	95 41.2 -21 27.7	139 21.7 -12 6.6		
18	87 45.4 -21 18.3		23 38.4	125 39.6 -21 28.4	169 24.0 -12 7.5		
20	117 44.9 -21 17.4		53 43.3	155 38.0 -21 29.2	199 26.4 -12 8.4		
22	147 44.5 -21 16.5		83 48.2	185 36.4 -21 29.9	229 28.8 -12 9.3		
Δ	-2	4		-8	-4	12	-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 50	15 28	0 53	2 38	9 24	3.0	22 24	2.7
55	8 17	16 1	0 43	2 13	9 28	2.9	22 22	2.6
50	7 54	16 24	0 37	1 56	9 32	2.7	22 21	2.5
45	7 36	16 43	0 33	1 45	9 35	2.6	22 20	2.4
40	7 21	16 57	0 30	1 36	9 37	2.6	22 19	2.4
35	7 8	17 10	0 28	1 29	9 39	2.5	22 19	2.4
30	6 57	17 21	0 26	1 24	9 41	2.4	22 18	2.3
20	6 38	17 40	0 24	1 18	9 45	2.3	22 17	2.3
10	6 21	17 57	0 22	1 14	9 47	2.2	22 16	2.2
0	6 5	18 13	0 22	1 14	9 50	2.2	22 15	2.2
10	5 49	18 28	0 23	1 16	9 53	2.1	22 14	2.1
20	5 32	18 45	0 24	1 22	9 56	2.0	22 13	2.1
30	5 12	19 5	0 27	1 33	9 59	1.9	22 11	2.0
35	5 1	19 17	0 29	1 43	10 1	1.8	22 11	2.0
40	4 47	19 30	0 32	1 56	10 3	1.8	22 10	1.9
45	4 31	19 46	0 36	2 19	10 5	1.7	22 9	1.9
50	4 11	20 6	0 42	3 17	10 8	1.6	22 7	1.8
55	3 45	20 32	0 52	:::	10 12	1.5	22 6	1.8
60	3 8	21 9	1 16	:::	10 17	1.4	22 4	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	127 47.5 95	5 27.6 -108			298 39.2 3 54.0		221 38.9 -20 39.9	
2	156 44.4 95	5 6.1 -108			328 44.2 3 54.1		251 43.3 -20 40.0	
4	185 41.5 95	4 44.4 -109			358 49.2 3 54.1		281 47.7 -20 40.0	
6	214 38.5 96	4 22.7 -109			28 54.2 3 54.2		311 52.1 -20 40.1	
8	243 35.7 96	4 .9 -110			58 59.2 3 54.2		341 56.5 -20 40.2	
10	272 32.9 96	3 38.9 -110			89 4.2 3 54.3		12 .9 -20 40.2	
12	301 30.2 97	3 16.9 -110			119 9.2 3 54.4		42 5.3 -20 40.3	
14	330 27.5 97	2 54.8 -111			149 14.2 3 54.4		72 9.7 -20 40.3	
16	359 24.8 97	2 32.6 -111			179 19.2 3 54.5		102 14.1 -20 40.4	
18	28 22.2 97	2 10.4 -111			209 24.3 3 54.5		132 18.5 -20 40.4	
20	57 19.6 97	1 48.2 -112			239 29.3 3 54.6		162 22.9 -20 40.5	
22	86 17.1 97	1 25.8 -112			269 34.3 3 54.7		192 27.4 -20 40.6	
Δ					25	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	- 8 41.8	-.9	16.3	T _m	16 2	2.2	59.3 16.1		
12	- 8 52.8	T _{m☉}	12 h 8.9 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	' / "	°	°
♂	9 37	.1	103	-3.5	♃	4 5	.0	186	-1.8
	6 43	.1	146	.7	♄	9 12	.0	109	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	44.0	-21	15.6	113	53.2	215	34.8	-21	30.6	259	31.1	-12	10.1	
2	207	43.6	-21	14.7	143	58.1	245	33.2	-21	31.3	289	33.5	-12	11.0	
4	237	43.1	-21	13.8	174	3.0	275	31.6	-21	32.0	319	35.8	-12	11.9	
6	267	42.7	-21	12.9	204	7.9	305	30.0	-21	32.7	349	38.2	-12	12.8	
8	297	42.2	-21	12.0	234	12.9	335	28.3	-21	33.4	19	40.5	-12	13.7	
10	327	41.8	-21	11.1	264	17.8	5	26.7	-21	34.0	49	42.9	-12	14.5	
12	357	41.3	-21	10.2	294	22.7	35	25.1	-21	34.7	79	45.2	-12	15.4	
14	27	40.9	-21	9.3	324	27.7	65	23.5	-21	35.4	109	47.6	-12	16.3	
16	57	40.4	-21	8.4	354	32.6	95	21.9	-21	36.1	139	50.0	-12	17.2	
18	87	40.0	-21	7.5	24	37.5	125	20.2	-21	36.8	169	52.3	-12	18.0	
20	117	39.6	-21	6.5	54	42.4	155	18.6	-21	37.4	199	54.7	-12	18.9	
22	147	39.1	-21	5.6	84	47.4	185	17.0	-21	38.1	229	57.0	-12	19.8	
Δ		-2		5				-8		-3			12		-4

φ	SUNCE				TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24		
N	h min	min	h min	min						
60	8 48	15 31	0 53	2 37	10 36	.8	23 27	3.6		
55	8 16	16 3	0 43	2 13	10 37	1.1	23 24	3.4		
50	7 53	16 26	0 37	1 56	10 38	1.2	23 21	3.2		
45	7 35	16 44	0 33	1 44	10 38	1.4	23 19	3.0		
40	7 20	16 59	0 30	1 36	10 39	1.5	23 17	2.9		
35	7 8	17 11	0 28	1 29	10 39	1.6	23 15	2.7		
30	6 57	17 22	0 26	1 24	10 40	1.7	23 14	2.6		
20	6 38	17 41	0 24	1 17	10 41	1.9	23 11	2.5		
10	6 21	17 57	0 22	1 14	10 41	2.0	23 9	2.3		
0	6 6	18 13	0 22	1 14	10 42	2.2	23 7	2.2		
10	5 50	18 29	0 23	1 16	10 43	2.3	23 4	2.0		
20	5 33	18 46	0 24	1 22	10 43	2.4	23 2	1.9		
30	5 13	19 5	0 27	1 33	10 44	2.6	22 59	1.7		
35	5 1	19 17	0 29	1 42	10 45	2.7	22 58	1.6		
40	4 48	19 30	0 32	1 56	10 45	2.8	22 56	1.5		
45	4 32	19 46	0 36	2 18	10 46	3.0	22 54	1.4		
50	4 13	20 5	0 42	3 13	10 47	3.1	22 51	1.2		
55	3 47	20 31	0 52	:::	10 48	3.3	22 48	1.0		
60	3 10	21 7	1 15	:::	10 49	3.6	22 44	.8		

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	115	14.5	98	1	3.5	-112	299	39.3	3	54.7	222	31.8	-20	40.6	
2	144	12.0	98	0	41.1	-112	329	44.3	3	54.8	252	36.2	-20	40.7	
4	173	9.6	98	0	18.8	-76	359	49.4	3	54.9	282	40.6	-20	40.7	
6	202	7.1	98	0	3.6	112	29	54.4	3	54.9	312	45.0	-20	40.8	
8	231	4.6	98	0	26.0	112	59	59.4	3	55.0	342	49.4	-20	40.9	
10	260	2.2	98	0	48.3	112	90	4.4	3	55.1	12	53.8	-20	40.9	
12	288	59.7	98	1	10.7	112	120	9.5	3	55.1	42	58.2	-20	41.0	
14	317	57.3	98	1	33.0	111	150	14.5	3	55.2	73	2.6	-20	41.0	
16	346	54.8	98	1	55.2	111	180	19.5	3	55.3	103	7.0	-20	41.1	
18	15	52.3	98	2	17.5	111	210	24.5	3	55.3	133	11.4	-20	41.1	
20	44	49.8	97	2	39.6	110	240	29.6	3	55.4	163	15.8	-20	41.2	
22	73	47.3	97	3	1.7	110	270	34.6	3	55.5	193	20.3	-20	41.3	
Δ								25		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	- 9	3.9	- .9	16.3	T _m	16 54	2.2	59.3	16.2
12	- 9	14.6	T _{m☉}	12 h 9.2 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	'	°	
♀	9 38	.1	102	-3.5	♃	4 1	.0	186	-1.8
♂	6 41	.1	146	.7	♄	9 9	.0	109	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	38.7	-21	4.7	114	52.3	215	15.4	-21	38.7	259	59.4	-12	20.6	
2	207	38.2	-21	3.8	144	57.2	245	13.7	-21	39.4	290	1.7	-12	21.5	
4	237	37.8	-21	2.8	175	2.2	275	12.1	-21	40.0	320	4.1	-12	22.4	
6	267	37.4	-21	1.9	205	7.1	305	10.5	-21	40.7	350	6.5	-12	23.2	
8	297	36.9	-21	1.0	235	12.0	335	8.8	-21	41.3	20	8.8	-12	24.1	
10	327	36.5	-21	.0	265	16.9	5	7.2	-21	42.0	50	11.2	-12	25.0	
12	357	36.1	-20	59.1	295	21.9	35	5.6	-21	42.6	80	13.6	-12	25.9	
14	27	35.6	-20	58.1	325	26.8	65	3.9	-21	43.2	110	15.9	-12	26.7	
16	57	35.2	-20	57.2	355	31.7	95	2.3	-21	43.8	140	18.3	-12	27.6	
18	87	34.8	-20	56.2	25	36.6	125	.7	-21	44.5	170	20.6	-12	28.5	
20	117	34.3	-20	55.3	55	41.6	154	59.0	-21	45.1	200	23.0	-12	29.3	
22	147	33.9	-20	54.3	85	46.5	184	57.4	-21	45.7	230	25.4	-12	30.2	
Δ		-2		5				-8		-3			12		-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 47	15 33	0 53	2 37	10 56	.9	...	.0
55	8 15	16 4	0 43	2 12	11 2	1.1	...	.0
50	7 52	16 27	0 37	1 56	11 7	1.3	...	.0
45	7 34	16 45	0 33	1 44	11 12	1.4	...	.0
40	7 20	16 60	0 30	1 36	11 15	1.6	...	.0
35	7 7	17 12	0 27	1 29	11 18	1.7	...	.0
30	6 57	17 23	0 26	1 24	11 21	1.8	...	.0
20	6 38	17 41	0 24	1 17	11 26	1.9	...	.0
10	6 21	17 58	0 22	1 14	11 30	2.1	...	.0
0	6 6	18 13	0 22	1 14	11 34	2.2	23 59	2.2		
10	5 50	18 29	0 23	1 16	11 38	2.3	23 53	2.1		
20	5 33	18 46	0 24	1 22	11 42	2.5	23 47	1.9		
30	5 14	19 5	0 27	1 33	11 47	2.6	23 40	1.8		
35	5 2	19 16	0 29	1 42	11 50	2.7	23 36	1.7		
40	4 49	19 29	0 32	1 55	11 53	2.8	23 32	1.6		
45	4 33	19 45	0 35	2 17	11 57	2.9	23 27	1.5		
50	4 14	20 4	0 41	3 9	12 2	3.1	23 21	1.4		
55	3 49	20 30	0 51	:::	12 8	3.3	23 13	1.2		
60	3 12	21 5	1 14	:::	12 15	3.5	23 3	1.0		

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	102	44.8	97	3	23.7	110	300	39.6	3	55.6	223	24.7	-20	41.3	
2	131	42.2	97	3	45.6	109	330	44.7	3	55.6	253	29.1	-20	41.4	
4	160	39.6	97	4	7.5	109	0	49.7	3	55.7	283	33.5	-20	41.4	
6	189	36.9	97	4	29.2	108	30	54.8	3	55.8	313	37.9	-20	41.5	
8	218	34.2	96	4	50.8	107	60	59.8	3	55.8	343	42.3	-20	41.5	
10	247	31.5	96	5	12.3	107	91	4.8	3	55.9	13	46.7	-20	41.6	
12	276	28.7	96	5	33.7	106	121	9.9	3	56.0	43	51.1	-20	41.7	
14	305	25.8	95	5	54.9	105	151	14.9	3	56.1	73	55.6	-20	41.7	
16	334	22.9	95	6	16.0	105	181	20.0	3	56.1	103	60.0	-20	41.8	
18	3	19.9	95	6	36.9	104	211	25.0	3	56.2	134	4.4	-20	41.8	
20	32	16.9	94	6	57.7	103	241	30.1	3	56.3	164	8.8	-20	41.9	
22	61	13.7	94	7	18.3	102	271	35.1	3	56.4	194	13.2	-20	41.9	
Δ								25		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	- 9	25.3	- .9	16.3	T _m	17 46	2.2	59.3	16.2
12	- 9	35.7	T _{m☉}	12 h 9.6 min	Starost</				

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	33.5	-20	53.4	115	51.4	214	55.8	-21	46.3	260	27.7	-12	31.0	
2	207	33.1	-20	52.4	145	56.4	244	54.1	-21	46.9	290	30.1	-12	31.9	
4	237	32.6	-20	51.4	176	1.3	274	52.5	-21	47.5	320	32.5	-12	32.8	
6	267	32.2	-20	50.5	206	6.2	304	50.8	-21	48.1	350	34.8	-12	33.6	
8	297	31.8	-20	49.5	236	11.1	334	49.2	-21	48.7	20	37.2	-12	34.5	
10	327	31.4	-20	48.5	266	16.1	4	47.5	-21	49.2	50	39.6	-12	35.3	
12	357	31.0	-20	47.6	296	21.0	34	45.9	-21	49.8	80	41.9	-12	36.2	
14	27	30.6	-20	46.6	326	25.9	64	44.2	-21	50.4	110	44.3	-12	37.1	
16	57	30.1	-20	45.6	356	30.9	94	42.6	-21	51.0	140	46.7	-12	37.9	
18	87	29.7	-20	44.6	26	35.8	124	40.9	-21	51.5	170	49.0	-12	38.8	
20	117	29.3	-20	43.6	56	40.7	154	39.3	-21	52.1	200	51.4	-12	39.6	
22	147	28.9	-20	42.6	86	45.6	184	37.6	-21	52.7	230	53.8	-12	40.5	
Δ		-2		5				-8		-3			12		-4

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄	S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	90	10.6	94	7	38.7	101	301	40.2	3	56.4	224	17.6	-20	42.0	
2	119	7.3	93	7	58.9	100	331	45.2	3	56.5	254	22.1	-20	42.1	
4	148	3.9	93	8	19.0	99	1	50.3	3	56.6	284	26.5	-20	42.1	
6	177	.5	92	8	38.8	98	31	55.3	3	56.7	314	30.9	-20	42.2	
8	205	57.0	92	8	58.4	97	62	.4	3	56.8	344	35.3	-20	42.2	
10	234	53.3	91	9	17.8	96	92	5.4	3	56.8	14	39.7	-20	42.3	
12	263	49.6	91	9	37.0	95	122	10.5	3	56.9	44	44.1	-20	42.3	
14	292	45.8	90	9	55.9	93	152	15.5	3	57.0	74	48.6	-20	42.4	
16	321	41.9	90	10	14.6	92	182	20.6	3	57.1	104	53.0	-20	42.4	
18	350	37.9	89	10	33.1	91	212	25.7	3	57.2	134	57.4	-20	42.5	
20	19	33.8	89	10	51.3	90	242	30.7	3	57.2	165	1.8	-20	42.6	
22	48	29.6	88	11	9.2	88	272	35.8	3	57.3	195	6.2	-20	42.6	
Δ								25		0			22		0

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 45	15 35	0 52	2 36	11 17	1.0	0 55	3.5
55	8 14	16 6	0 43	2 12	11 29	1.3	0 45	3.2
50	7 52	16 29	0 37	1 56	11 39	1.4	0 37	3.1
45	7 34	16 46	0 33	1 44	11 46	1.6	0 31	2.9
40	7 19	17 1	0 30	1 35	11 53	1.7	0 26	2.8
35	7 7	17 13	0 27	1 29	11 58	1.8	0 21	2.7
30	6 56	17 24	0 26	1 24	12 3	1.9	0 17	2.6
20	6 38	17 42	0 24	1 17	12 12	2.0	0 10	2.5
10	6 22	17 58	0 22	1 14	12 19	2.1	0 4	2.3
0	6 6	18 14	0 22	1 14	12 26	2.2	...	...
10	5 51	18 29	0 23	1 16	12 33	2.3	...	...
20	5 34	18 46	0 24	1 22	12 41	2.5	...	...
30	5 15	19 5	0 27	1 33	12 50	2.6	...	...
35	5 3	19 16	0 29	1 42	12 55	2.7	...	...
40	4 50	19 29	0 31	1 55	13 1	2.8	...	...
45	4 35	19 44	0 35	2 16	13 8	2.9	...	...
50	4 16	20 4	0 41	3 5	13 16	3.0	23 53	1.5
55	3 50	20 28	0 51	:::	13 26	3.2	23 41	1.4
60	3 15	21 3	1 12	:::	13 40	3.4	23 26	1.1
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	'	h min	min	'	'		
00	- 9 46.0	-.8	16.3	T _m	18 39	2.2	59.2	16.1	
12	- 9 56.0	T _{m☉}	12 h 9.9 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	'	°	
♂	9 41	.1	99	-3.5	♃	3 53	.0	186	-1.9
♄	6 38	.1	145	.7	♄	9 1	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	28.5	-20	41.7	116	50.6	214	36.0	-21	53.2	260	56.2	-12	41.3	
2	207	28.1	-20	40.7	146	55.5	244	34.3	-21	53.8	290	58.5	-12	42.2	
4	237	27.7	-20	39.7	177	.4	274	32.7	-21	54.3	321	.9	-12	43.1	
6	267	27.3	-20	38.7	207	5.4	304	31.0	-21	54.8	351	3.3	-12	43.9	
8	297	26.9	-20	37.7	237	10.3	334	29.3	-21	55.4	21	5.6	-12	44.8	
10	327	26.5	-20	36.7	267	15.2	4	27.7	-21	55.9	51	8.0	-12	45.6	
12	357	26.1	-20	35.6	297	20.1	34	26.0	-21	56.4	81	10.4	-12	46.5	
14	27	25.7	-20	34.6	327	25.1	64	24.4	-21	57.0	111	12.8	-12	47.3	
16	57	25.3	-20	33.6	357	30.0	94	22.7	-21	57.5	141	15.1	-12	48.2	
18	87	24.9	-20	32.6	27	34.9	124	21.0	-21	58.0	171	17.5	-12	49.0	
20	117	24.5	-20	31.6	57	39.9	154	19.4	-21	58.5	201	19.9	-12	49.9	
22	147	24.1	-20	30.6	87	44.8	184	17.7	-21	59.0	231	22.3	-12	50.7	
Δ		-2		5				-8		-3			12		-4

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄	S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	77	25.3	88	11	26.8	87	302	40.8	3	57.4	225	10.7	-20	42.7	
2	106	20.9	87	11	44.2	85	332	45.9	3	57.5	255	15.1	-20	42.7	
4	135	16.4	87	12	1.3	84	2	51.0	3	57.6	285	19.5	-20	42.8	
6	164	11.8	86	12	18.1	82	32	56.0	3	57.7	315	23.9	-20	42.8	
8	193	7.0	86	12	34.5	81	63	1.1	3	57.7	345	28.3	-20	42.9	
10	222	2.2	85	12	50.7	79	93	6.2	3	57.8	15	32.8	-20	42.9	
12	250	57.3	85	13	6.6	78	123	11.3	3	57.9	45	37.2	-20	43.0	
14	279	52.2	84	13	22.1	76	153	16.3	3	58.0	75	41.6	-20	43.0	
16	308	47.0	84	13	37.3	74	183	21.4	3	58.1	105	46.0	-20	43.1	
18	337	41.8	83	13	52.2	73	213	26.5	3	58.2	135	50.5	-20	43.2	
20	6	36.4	83	14	6.7	71	243	31.5	3	58.3	165	54.9	-20	43.2	
22	35	31.0	82	14	20.9	69	273	36.6	3	58.4	195	59.3	-20	43.3	
Δ								25		0			22		0

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 44	15 37	0 52	2 35	11 42	1.3	2 19	3.4
55	8 13	16 8	0 43	2 12	11 60	1.5	2 3	3.1
50	7 51	16 30	0 37	1 55	12 13	1.6	1 51	3.0
45	7 33	16 48	0 33	1 44	12 24	1.7	1 41	2.9
40	7 19	17 2	0 30	1 35	12 33	1.8	1 33	2.8
35	7 7	17 14	0 27	1 29	12 41	1.9	1 26	2.7
30	6 56	17 25	0 26	1 24	12 47	2.0	1 20	2.6
20	6 38	17 43	0 24	1 17	12 59	2.1	1 9	2.5
10	6 22	17 59	0 22	1 14	13 10	2.2	1 0	2.4
0	6 7	18 14	0 22	1 14	13 20	2.3	0 52	2.3
10	5 51	18 29	0 23	1 16	13 30	2.4	0 43	2.1
20	5 35	18 46	0 24	1 22	13 40	2.5	0 34	2.0
30	5 16	19 5	0 27	1 32	13 52	2.6	0 23	1.9
35	5 4	19 16	0 29	1 41	13 60	2.6	0 17	1.8
40	4 51	19 29	0 31	1 54	14 8	2.7	0 11	1.7
45	4 36	19 44	0 35	2 15	14 17	2.8	0 3	1.6
50	4 17	20 3	0 41	3 2	14 29	2.9	...	...
55	3 52	20 27	0 51	:::	14 43	3.1	...	...
60	3 17	21 2	1 11	:::	15 2	3.3	23 54	1.4
S								

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

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 23.7	-20 29.5	117 49.7	214 16.0	-21 59.5	261 24.6	-12 51.6
2	207 23.3	-20 28.5	147 54.6	244 14.4	-22 .0	291 27.0	-12 52.4
4	237 22.9	-20 27.5	177 59.6	274 12.7	-22 .5	321 29.4	-12 53.2
6	267 22.5	-20 26.5	208 4.5	304 11.0	-22 1.0	351 31.8	-12 54.1
8	297 22.1	-20 25.4	238 9.4	334 9.4	-22 1.5	21 34.1	-12 54.9
10	327 21.7	-20 24.4	268 14.4	4 7.7	-22 1.9	51 36.5	-12 55.8
12	357 21.3	-20 23.3	298 19.3	34 6.0	-22 2.4	81 38.9	-12 56.6
14	27 20.9	-20 22.3	328 24.2	64 4.3	-22 2.9	111 41.3	-12 57.5
16	57 20.6	-20 21.3	358 29.1	94 2.7	-22 3.4	141 43.7	-12 58.3
18	87 20.2	-20 20.2	28 34.1	124 1.0	-22 3.8	171 46.0	-12 59.1
20	117 19.8	-20 19.2	58 39.0	153 59.3	-22 4.3	201 48.4	-12 60.0
22	147 19.4	-20 18.1	88 43.9	183 57.6	-22 4.7	231 50.8	-13 .8
Δ	-2	5		-8	-2	12	-4

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	64 25.4	82 14	34.7 67	303 41.7	3 58.4	226 3.7	-20 43.3	
2	93 19.7	81 14	48.2 65	333 46.8	3 58.5	256 8.2	-20 43.4	
4	122 14.0	81 15	1.2 64	3 51.9	3 58.6	286 12.6	-20 43.4	
6	151 8.1	80 15	14.0 62	33 56.9	3 58.7	316 17.0	-20 43.5	
8	180 2.2	80 15	26.3 60	64 2.0	3 58.8	346 21.4	-20 43.5	
10	208 56.1	79 15	38.3 58	94 7.1	3 58.9	16 25.9	-20 43.6	
12	237 50.0	79 15	49.8 56	124 12.2	3 59.0	46 30.3	-20 43.6	
14	266 43.8	79 16	1.0 54	154 17.3	3 59.1	76 34.7	-20 43.7	
16	295 37.5	78 16	11.8 52	184 22.4	3 59.2	106 39.2	-20 43.7	
18	324 31.2	78 16	22.2 50	214 27.5	3 59.3	136 43.6	-20 43.8	
20	353 24.8	78 16	32.1 48	244 32.6	3 59.4	166 48.0	-20 43.9	
22	22 18.3	77 16	41.7 46	274 37.6	3 59.5	196 52.4	-20 43.9	
Δ				25	0	22	0	

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 42	15 40	0 52	2 35	12 13	1.6	3 40	3.1
55	8 12	16 10	0 42	2 11	12 35	1.8	3 18	2.9
50	7 50	16 32	0 37	1 55	12 52	1.9	3 2	2.8
45	7 33	16 49	0 32	1 44	13 6	2.0	2 49	2.7
40	7 18	17 3	0 30	1 35	13 17	2.0	2 39	2.7
35	7 7	17 15	0 27	1 29	13 26	2.1	2 30	2.6
30	6 56	17 25	0 26	1 24	13 35	2.1	2 22	2.5
20	6 38	17 43	0 23	1 17	13 49	2.2	2 8	2.4
10	6 22	17 59	0 22	1 14	14 2	2.2	1 57	2.4
0	6 7	18 14	0 22	1 13	14 14	2.3	1 46	2.3
10	5 52	18 29	0 23	1 16	14 26	2.4	1 34	2.2
20	5 35	18 45	0 24	1 21	14 39	2.4	1 23	2.1
30	5 17	19 4	0 27	1 32	14 54	2.5	1 9	2.0
35	5 5	19 15	0 29	1 41	15 3	2.5	1 2	2.0
40	4 53	19 28	0 31	1 54	15 13	2.6	0 53	1.9
45	4 37	19 43	0 35	2 14	15 24	2.6	0 42	1.8
50	4 19	20 2	0 41	2 59	15 39	2.7	0 30	1.7
55	3 54	20 26	0 50	:::	15 57	2.8	0 14	1.6
60	3 20	20 60	1 10	:::	16 21	2.9	...	1.0
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 25.3	-.8	16.3	T _m	20 27	2.3	58.7 16.0
12	-10 34.6	T _{m☉}	12 h 10.6 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	'	°	
♂	9 43	.1	96	-3.5	♄	3 45	.0	186	-1.9
♂	6 34	.1	144	.7	♂	8 54	.0	108	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 19.0	-20 17.0	118 48.8	213 55.9	-22 5.2	261 53.2	-13 1.7
2	207 18.7	-20 16.0	148 53.8	243 54.3	-22 5.6	291 55.6	-13 2.5
4	237 18.3	-20 14.9	178 58.7	273 52.6	-22 6.1	321 58.0	-13 3.3
6	267 17.9	-20 13.9	209 3.6	303 50.9	-22 6.5	352 .3	-13 4.2
8	297 17.5	-20 12.8	239 8.6	333 49.2	-22 6.9	22 2.7	-13 5.0
10	327 17.2	-20 11.7	269 13.5	3 47.5	-22 7.3	52 5.1	-13 5.8
12	357 16.8	-20 10.7	299 18.4	33 45.9	-22 7.8	82 7.5	-13 6.7
14	27 16.4	-20 9.6	329 23.3	63 44.2	-22 8.2	112 9.9	-13 7.5
16	57 16.0	-20 8.5	359 28.3	93 42.5	-22 8.6	142 12.3	-13 8.4
18	87 15.7	-20 7.4	29 33.2	123 40.8	-22 9.0	172 14.7	-13 9.2
20	117 15.3	-20 6.3	59 38.1	153 39.1	-22 9.4	202 17.0	-13 10.0
22	147 15.0	-20 5.3	89 43.1	183 37.4	-22 9.8	232 19.4	-13 10.8
Δ	-2	5		-8	-2	12	-4

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	51 11.8	77 16	50.8 44	304 42.7	3 59.5	226 56.9	-20 44.0	
2	80 5.2	77 16	59.6 42	334 47.8	3 59.6	257 1.3	-20 44.0	
4	108 58.5	77 17	7.9 39	4 52.9	3 59.7	287 5.7	-20 44.1	
6	137 51.8	76 17	15.7 37	34 58.0	3 59.8	317 10.2	-20 44.1	
8	166 45.1	76 17	23.2 35	65 3.1	3 59.9	347 14.6	-20 44.2	
10	195 38.3	76 17	30.2 33	95 8.2	4 .0	17 19.0	-20 44.2	
12	224 31.6	76 17	36.8 31	125 13.3	4 .1	47 23.5	-20 44.3	
14	253 24.8	76 17	42.9 29	155 18.4	4 .2	77 27.9	-20 44.3	
16	282 17.9	76 17	48.6 26	185 23.5	4 .3	107 32.3	-20 44.4	
18	311 11.1	76 17	53.9 24	215 28.6	4 .4	137 36.8	-20 44.4	
20	340 4.3	76 17	58.7 22	245 33.7	4 .5	167 41.2	-20 44.5	
22	8 57.5	76 18	3.1 20	275 38.8	4 .6	197 45.6	-20 44.5	
Δ				26	0	22	0	

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 40	15 42	0 51	2 34	12 51	2.0	4 54	2.7
55	8 10	16 12	0 42	2 11	13 18	2.1	4 29	2.6
50	7 49	16 33	0 36	1 55	13 37	2.1	4 10	2.6
45	7 32	16 50	0 32	1 43	13 52	2.2	3 55	2.5
40	7 18	17 4	0 29	1 35	14 5	2.2	3 43	2.5
35	7 6	17 16	0 27	1 28	14 16	2.2	3 32	2.5
30	6 56	17 26	0 26	1 24	14 25	2.2	3 23	2.4
20	6 38	17 44	0 23	1 17	14 42	2.3	3 7	2.4
10	6 22	17 60	0 22	1 14	14 56	2.3	2 53	2.4
0	6 7	18 15	0 22	1 13	15 10	2.3	2 41	2.3
10	5 52	18 29	0 23	1 16	15 23	2.3	2 28	2.3
20	5 36	18 45	0 24	1 21	15 37	2.3	2 14	2.2
30	5 17	19 4	0 26	1 32	15 54	2.4	1 58	2.2
35	5 6	19 15	0 28	1 41	16 4	2.4	1 49	2.1
40	4 54	19 27	0 31	1 53	16 15	2.4	1 39	2.1
45	4 39	19 42	0 35	2 14	16 28	2.4	1 27	2.1
50	4 20	20 1	0 41	2 56	16 44	2.4	1 12	2.0
55	3 56	20 24	0 50	:::	17 4	2.5	0 53	1.9
60	3 22	20 58	1 9	:::	17 31	2.5	0 28	1.8
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♄	r
h	min s	s	'	h min	min	'	'
00	-10 43.9	-.7	16.3	T _m	21 23	2.3	58.4 15.9
12	-10 52.8	T _{m☉}	12 h 10.9 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	'	°	
♂	9 45	.1	95	-3.5	♄	3 41	.0	186	-1.9
♂	6 32	.1	143	.6	♂	8 51	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	14.6	-20	4.2	119	48.0	213	35.7	-22	10.2	262	21.8	-13	11.7	
2	207	14.2	-20	3.1	149	52.9	243	34.0	-22	10.6	292	24.2	-13	12.5	
4	237	13.9	-20	2.0	179	57.8	273	32.3	-22	11.0	322	26.6	-13	13.3	
6	267	13.5	-20	.9	210	2.8	303	30.6	-22	11.4	352	29.0	-13	14.2	
8	297	13.1	-19	59.8	240	7.7	333	29.0	-22	11.7	22	31.4	-13	15.0	
10	327	12.8	-19	58.7	270	12.6	3	27.3	-22	12.1	52	33.8	-13	15.8	
12	357	12.4	-19	57.6	300	17.6	33	25.6	-22	12.5	82	36.2	-13	16.6	
14	27	12.1	-19	56.5	330	22.5	63	23.9	-22	12.8	112	38.6	-13	17.5	
16	57	11.7	-19	55.4	0	27.4	93	22.2	-22	13.2	142	40.9	-13	18.3	
18	87	11.4	-19	54.3	30	32.3	123	20.5	-22	13.6	172	43.3	-13	19.1	
20	117	11.0	-19	53.2	60	37.3	153	18.8	-22	13.9	202	45.7	-13	19.9	
22	147	10.7	-19	52.0	90	42.2	183	17.1	-22	14.2	232	48.1	-13	20.8	
Δ		-2		6				-8		-2			12		-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 38	15 45	0 51	2 34	13 40	2.4	6 0	2.3
55	8 9	16 14	0 42	2 10	14 8	2.4	5 32	2.3
50	7 48	16 35	0 36	1 55	14 28	2.4	5 12	2.3
45	7 31	16 52	0 32	1 43	14 45	2.4	4 56	2.3
40	7 17	17 5	0 29	1 35	14 58	2.4	4 43	2.3
35	7 6	17 17	0 27	1 28	15 9	2.3	4 31	2.3
30	6 55	17 27	0 26	1 23	15 19	2.3	4 22	2.3
20	6 38	17 45	0 23	1 17	15 36	2.3	4 5	2.3
10	6 22	18 0	0 22	1 14	15 51	2.3	3 50	2.3
0	6 8	18 15	0 22	1 13	16 5	2.3	3 36	2.3
10	5 53	18 29	0 22	1 15	16 19	2.3	3 22	2.3
20	5 37	18 45	0 24	1 21	16 34	2.2	3 7	2.3
30	5 18	19 4	0 26	1 32	16 51	2.2	2 51	2.3
35	5 7	19 14	0 28	1 40	17 1	2.2	2 41	2.3
40	4 55	19 27	0 31	1 53	17 12	2.2	2 29	2.3
45	4 40	19 42	0 35	2 13	17 26	2.1	2 16	2.3
50	4 22	19 60	0 40	2 53	17 42	2.1	1 60	2.3
55	3 58	20 23	0 49	:::	18 3	2.1	1 39	2.3
60	3 25	20 56	1 8	:::	18 32	2.0	1 11	2.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	37	50.7	76	18	7.1	17	305	43.9	4	.7	227	50.1	-20	44.6		
2	66	43.9	76	18	10.6	15	335	49.1	4	.8	257	54.5	-20	44.6		
4	95	37.2	76	18	13.6	13	5	54.2	4	.9	287	58.9	-20	44.7		
6	124	30.4	77	18	16.2	11	35	59.3	4	1.0	318	3.4	-20	44.7		
8	153	23.8	77	18	18.4	9	66	4.4	4	1.1	348	7.8	-20	44.8		
10	182	17.1	77	18	20.1	6	96	9.5	4	1.2	18	12.3	-20	44.8		
12	211	10.6	77	18	21.4	4	126	14.6	4	1.3	48	16.7	-20	44.9		
14	240	4.1	78	18	22.2	2	156	19.7	4	1.5	78	21.1	-20	45.0		
16	268	57.6	78	18	22.6	0	186	24.8	4	1.6	108	25.6	-20	45.0		
18	297	51.3	79	18	22.5	-2	216	30.0	4	1.7	138	30.0	-20	45.1		
20	326	45.0	79	18	22.0	-5	246	35.1	4	1.8	168	34.5	-20	45.1		
22	355	38.8	80	18	21.1	-7	276	40.2	4	1.9	198	38.9	-20	45.2		
Δ								26		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	1.6	-.7	16.3	T _m	22 18	2.3	58.0	15.8
12	-11	10.2	T _{m☉}	12 h 11.2 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	'	°	
♁	9 46	.1	94	-3.5	♃	3 36	.0	186	-1.9
♂	6 30	.1	143	.6	♄	8 47	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	10.3	-19	50.9	120	47.1	213	15.4	-22	14.6	262	50.5	-13	21.6	
2	207	10.0	-19	49.8	150	52.1	243	13.7	-22	14.9	292	52.9	-13	22.4	
4	237	9.6	-19	48.7	180	57.0	273	12.0	-22	15.3	322	55.3	-13	23.2	
6	267	9.3	-19	47.5	211	1.9	303	10.3	-22	15.6	352	57.7	-13	24.1	
8	297	9.0	-19	46.4	241	6.8	333	8.6	-22	15.9	23	.1	-13	24.9	
10	327	8.6	-19	45.3	271	11.8	3	6.9	-22	16.2	53	2.5	-13	25.7	
12	357	8.3	-19	44.2	301	16.7	33	5.2	-22	16.5	83	4.9	-13	26.5	
14	27	7.9	-19	43.0	331	21.6	63	3.5	-22	16.8	113	7.3	-13	27.3	
16	57	7.6	-19	41.9	1	26.6	93	1.8	-22	17.2	143	9.7	-13	28.1	
18	87	7.3	-19	40.7	31	31.5	123	.0	-22	17.5	173	12.1	-13	29.0	
20	117	6.9	-19	39.6	61	36.4	152	58.3	-22	17.7	203	14.5	-13	29.8	
22	147	6.6	-19	38.4	91	41.3	182	56.6	-22	18.0	233	16.9	-13	30.6	
Δ		-2		6				-9		-2			12		-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 36	15 47	0 51	2 33	14 39	2.8	6 54	1.8
55	8 8	16 16	0 42	2 10	15 6	2.7	6 27	1.9
50	7 47	16 37	0 36	1 54	15 26	2.6	6 7	2.0
45	7 30	16 53	0 32	1 43	15 42	2.5	5 51	2.0
40	7 17	17 6	0 29	1 35	15 54	2.5	5 38	2.1
35	7 5	17 18	0 27	1 28	16 5	2.4	5 26	2.1
30	6 55	17 28	0 26	1 23	16 15	2.4	5 17	2.1
20	6 38	17 45	0 23	1 17	16 32	2.3	4 60	2.2
10	6 22	18 1	0 22	1 14	16 46	2.3	4 45	2.2
0	6 8	18 15	0 22	1 13	16 59	2.2	4 31	2.2
10	5 53	18 30	0 22	1 15	17 13	2.1	4 17	2.3
20	5 37	18 45	0 24	1 21	17 27	2.1	4 3	2.3
30	5 19	19 3	0 26	1 31	17 44	2.0	3 45	2.4
35	5 8	19 14	0 28	1 40	17 54	2.0	3 36	2.4
40	4 56	19 26	0 31	1 52	18 5	1.9	3 24	2.4
45	4 42	19 41	0 35	2 12	18 17	1.9	3 11	2.5
50	4 24	19 58	0 40	2 50	18 33	1.8	2 55	2.5
55	4 0	20 21	0 49	:::	18 53	1.7	2 34	2.6
60	3 28	20 54	1 7	:::	19 20	1.6	2 5	2.6
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	24	32.8	80	18	19.7	-9	306	45.3	4	2.0	228	43.3	-20	45.2		
2	53	26.8	81	18	17.9	-11	336	50.4	4	2.1	258	47.8	-20	45.3		
4	82	21.0	81	18	15.7	-13	6	55.6	4	2.2	288	52.2	-20	45.3		
6	111	15.2	82	18	13.0	-15	37	.7	4	2.3	318	56.7	-20	45.4		
8	140	9.6	83	18	9.9	-18	67	5.8	4	2.4	349	1.1	-20	45.4		
10	169	4.2	83	18	6.4	-20	97	10.9	4	2.5	19	5.5	-20	45.5		
12	197	58.8	84	18	2.5	-22	127	16.1	4	2.6	49	10.0	-20	45.5		
14	226	53.7	85	17	58.1	-24	157	21.2	4	2.7	79	14.4	-20	45.6		
16	255	48.6	86	17	53.3	-26	187	26.3	4	2.9	109	18.9	-20	45.6		
18	284	43.8	86	17	48.2	-28	217	31.5	4	3.0	139	23.3	-20	45.7		
20	313	39.1	87	17	42.6	-30	247	36.6	4	3.1	169	27.8	-20	45.7		
22	342	34.5	88	17	36.7	-32	277	41.7	4	3.2	199	32.2	-20	45.8		
Δ								26		1			22		0	

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

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	6.3	-19	37.3	121	46.3	212	54.9	-22	18.3	263	19.3	-13	31.4	
2	207	5.9	-19	36.1	151	51.2	242	53.2	-22	18.6	293	21.7	-13	32.2	
4	237	5.6	-19	35.0	181	56.1	272	51.5	-22	18.9	323	24.1	-13	33.0	
6	267	5.3	-19	33.8	212	1.1	302	49.8	-22	19.2	353	26.5	-13	33.8	
8	297	5.0	-19	32.7	242	6.0	332	48.1	-22	19.4	23	28.9	-13	34.7	
10	327	4.6	-19	31.5	272	10.9	2	46.4	-22	19.7	53	31.3	-13	35.5	
12	357	4.3	-19	30.4	302	15.8	32	44.7	-22	19.9	83	33.7	-13	36.3	
14	27	4.0	-19	29.2	332	20.8	62	42.9	-22	20.2	113	36.1	-13	37.1	
16	57	3.7	-19	28.0	2	25.7	92	41.2	-22	20.5	143	38.5	-13	37.9	
18	87	3.3	-19	26.8	32	30.6	122	39.5	-22	20.7	173	40.9	-13	38.7	
20	117	3.0	-19	25.7	62	35.5	152	37.8	-22	20.9	203	43.3	-13	39.5	
22	147	2.7	-19	24.5	92	40.5	182	36.1	-22	21.2	233	45.8	-13	40.3	
Δ		-2		6				-9		-1			12		-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 50	0 50	2 32	15 46	3.0	7 37	1.4
55	8 6	16 18	0 42	2 10	16 10	2.8	7 12	1.6
50	7 46	16 38	0 36	1 54	16 28	2.7	6 54	1.7
45	7 30	16 54	0 32	1 43	16 42	2.6	6 39	1.8
40	7 16	17 8	0 29	1 34	16 53	2.5	6 27	1.8
35	7 5	17 19	0 27	1 28	17 3	2.4	6 17	1.9
30	6 55	17 29	0 26	1 23	17 12	2.4	6 7	1.9
20	6 38	17 46	0 23	1 17	17 27	2.3	5 52	2.0
10	6 22	18 1	0 22	1 13	17 40	2.2	5 38	2.1
0	6 8	18 15	0 22	1 13	17 52	2.1	5 25	2.2
10	5 54	18 30	0 22	1 15	18 5	2.0	5 12	2.2
20	5 38	18 45	0 24	1 21	18 18	1.9	4 58	2.3
30	5 20	19 3	0 26	1 31	18 32	1.8	4 42	2.4
35	5 10	19 13	0 28	1 40	18 41	1.8	4 33	2.4
40	4 57	19 26	0 31	1 52	18 51	1.7	4 22	2.5
45	4 43	19 40	0 35	2 11	19 2	1.6	4 10	2.6
50	4 25	19 57	0 40	2 48	19 16	1.5	3 54	2.6
55	4 2	20 20	0 48	:::	19 34	1.4	3 35	2.8
60	3 30	20 51	1 6	:::	19 57	1.2	3 9	2.9
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	11	30.2	89	17	30.3	-34	307	46.9	4	3.3	229	36.7	-20	45.8		
2	40	26.0	90	17	23.5	-36	337	52.0	4	3.4	259	41.1	-20	45.9		
4	69	22.0	91	17	16.4	-38	7	57.1	4	3.5	289	45.6	-20	45.9		
6	98	18.2	92	17	8.9	-39	38	2.3	4	3.7	319	50.0	-20	46.0		
8	127	14.6	93	17	1.0	-41	68	7.4	4	3.8	349	54.4	-20	46.0		
10	156	11.2	94	16	52.8	-43	98	12.6	4	3.9	19	58.9	-20	46.1		
12	185	8.0	95	16	44.2	-45	128	17.7	4	4.0	50	3.3	-20	46.1		
14	214	5.0	96	16	35.2	-47	158	22.9	4	4.1	80	7.8	-20	46.2		
16	243	2.3	97	16	25.9	-48	188	28.0	4	4.2	110	12.2	-20	46.2		
18	271	59.7	98	16	16.2	-50	218	33.1	4	4.4	140	16.7	-20	46.3		
20	300	57.3	99	16	6.2	-52	248	38.3	4	4.5	170	21.1	-20	46.3		
22	329	55.2	100	15	55.9	-53	278	43.4	4	4.6	200	25.6	-20	46.4		
Δ								26		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	-11 34.9	-.6	16.3	T _m	1.0	57.1	15.6		
12	-11 42.7	T _{m☉}	12 h 11.7 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	'	°	
♁	9 49	.1	91	-3.5	♃	3 28	.0	186	-1.9
♂	6 26	.1	142	.6	♄	8 40	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	2.4	-19	23.3	122	45.4	212	34.4	-22	21.4	263	48.2	-13	41.1	
2	207	2.1	-19	22.1	152	50.3	242	32.6	-22	21.6	293	50.6	-13	41.9	
4	237	1.8	-19	20.9	182	55.3	272	30.9	-22	21.9	323	53.0	-13	42.7	
6	267	1.5	-19	19.8	213	.2	302	29.2	-22	22.1	353	55.4	-13	43.5	
8	297	1.1	-19	18.6	243	5.1	332	27.5	-22	22.3	23	57.8	-13	44.3	
10	327	.8	-19	17.4	273	10.0	2	25.8	-22	22.5	54	.2	-13	45.1	
12	357	.5	-19	16.2	303	15.0	32	24.1	-22	22.7	84	2.6	-13	45.9	
14	27	.2	-19	15.0	333	19.9	62	22.3	-22	22.9	114	5.0	-13	46.7	
16	56	59.9	-19	13.8	3	24.8	92	20.6	-22	23.1	144	7.4	-13	47.5	
18	86	59.6	-19	12.6	33	29.8	122	18.9	-22	23.3	174	9.9	-13	48.3	
20	116	59.3	-19	11.4	63	34.7	152	17.2	-22	23.5	204	12.3	-13	49.1	
22	146	59.0	-19	10.2	93	39.6	182	15.4	-22	23.7	234	14.7	-13	49.9	
Δ		-2		6				-9		-1			12		-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 33	15 52	0 50	2 32	16 57	3.1	8 10	1.1
55	8 5	16 20	0 41	2 9	17 17	2.9	7 50	1.3
50	7 45	16 40	0 36	1 54	17 32	2.7	7 34	1.4
45	7 29	16 56	0 32	1 43	17 43	2.6	7 21	1.5
40	7 16	17 9	0 29	1 34	17 53	2.5	7 11	1.6
35	7 4	17 20	0 27	1 28	18 2	2.4	7 2	1.7
30	6 54	17 30	0 25	1 23	18 9	2.3	6 54	1.8
20	6 37	17 47	0 23	1 17	18 21	2.2	6 40	1.9
10	6 22	18 2	0 22	1 13	18 33	2.1	6 28	2.0
0	6 8	18 16	0 22	1 13	18 43	2.0	6 17	2.1
10	5 54	18 30	0 22	1 15	18 53	1.9	6 5	2.1
20	5 39	18 45	0 24	1 20	19 4	1.8	5 53	2.2
30	5 21	19 3	0 26	1 31	19 17	1.7	5 39	2.4
35	5 11	19 13	0 28	1 39	19 24	1.6	5 31	2.4
40	4 59	19 25	0 31	1 51	19 32	1.5	5 22	2.5
45	4 44	19 39	0 34	2 10	19 42	1.4	5 11	2.6
50	4 27	19 56	0 40	2 45	19 53	1.3	4 58	2.7
55	4 4	20 18	0 48	:::	20 7	1.2	4 41	2.8
60	3 33	20 49	1 5	:::	20 26	1.0	4 19	3.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	358	53.3	102	15	45.2	-55	308	48.6	4	4.7	230	30.0	-20	46.4		
2	27	51.6	103	15	34.2	-56	338	53.7	4	4.8	260	34.5	-20	46.5		
4	56	50.2	104	15	22.9	-58	8	58.9	4	4.9	290	38.9	-20	46.5		
6	85	48.9	105	15	11.3	-60	39	4.1	4	5.1	320	43.4	-20	46.5		
8	114	47.9	106	14	59.4	-61	69	9.2	4	5.2	350	47.9	-20	46.6		
10	143	47.2	107	14	47.2	-62	99	14.4	4	5.3	20	52.3	-20	46.6		
12	172	46.6	108	14	34.7	-64	129	19.5	4	5.4	50	56.8	-20	46.7		
14	201	46.3	110	14	22.0	-65	159	24.7	4	5.6	81	1.2	-20	46.7		
16	230	46.3	111	14	8.9	-67	189	29.8	4	5.7	111	5.7	-20	46.8		
18	259	46.4	112	13	55.6	-68	219	35.0	4	5.8	141	10.1	-20	46.8		
20	288	46.8	113	13	42.1	-69	249	40.2	4	5.9	171	14.6	-20	46.9		
22	317	47.4	114	13	28.2	-70	279	45.3	4	6.0	201	19.0	-20	46.9		
Δ								26		1			22		0	

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

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	58.7	-19	9.0	123	44.5	212	13.7	-22	23.8	264	17.1	-13	50.7	
2	206	58.4	-19	7.8	153	49.5	242	12.0	-22	24.0	294	19.5	-13	51.5	
4	236	58.1	-19	6.5	183	54.4	272	10.3	-22	24.2	324	21.9	-13	52.3	
6	266	57.8	-19	5.3	213	59.3	302	8.6	-22	24.3	354	24.4	-13	53.1	
8	296	57.5	-19	4.1	244	4.3	332	6.8	-22	24.5	24	26.8	-13	53.9	
10	326	57.2	-19	2.9	274	9.2	2	5.1	-22	24.7	54	29.2	-13	54.7	
12	356	57.0	-19	1.7	304	14.1	32	3.4	-22	24.8	84	31.6	-13	55.5	
14	26	56.7	-19	.4	334	19.0	62	1.7	-22	25.0	114	34.0	-13	56.3	
16	56	56.4	-18	59.2	4	24.0	91	59.9	-22	25.1	144	36.4	-13	57.1	
18	86	56.1	-18	58.0	34	28.9	121	58.2	-22	25.2	174	38.9	-13	57.9	
20	116	55.8	-18	56.7	64	33.8	151	56.5	-22	25.4	204	41.3	-13	58.7	
22	146	55.5	-18	55.5	94	38.8	181	54.7	-22	25.5	234	43.7	-13	59.5	
Δ		-1		6				-9		-1			12		-4

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	346	48.3	115	13	14.2	-72	309	50.5	4	6.2	231	23.5	-20	47.0		
2	15	49.4	117	12	59.9	-73	339	55.6	4	6.3	261	28.0	-20	47.0		
4	44	50.7	118	12	45.3	-74	10	.8	4	6.4	291	32.4	-20	47.1		
6	73	52.2	119	12	30.6	-75	40	6.0	4	6.6	321	36.9	-20	47.1		
8	102	54.0	120	12	15.6	-76	70	11.2	4	6.7	351	41.3	-20	47.2		
10	131	56.0	121	12	.4	-77	100	16.3	4	6.8	21	45.8	-20	47.2		
12	160	58.3	122	11	45.0	-78	130	21.5	4	6.9	51	50.3	-20	47.3		
14	190	.7	123	11	29.4	-79	160	26.7	4	7.1	81	54.7	-20	47.3		
16	219	3.4	124	11	13.6	-80	190	31.8	4	7.2	111	59.2	-20	47.4		
18	248	6.3	126	10	57.6	-81	220	37.0	4	7.3	142	3.6	-20	47.4		
20	277	9.4	127	10	41.5	-82	250	42.2	4	7.4	172	8.1	-20	47.5		
22	306	12.7	128	10	25.1	-83	280	47.4	4	7.6	202	12.6	-20	47.5		
Δ								26		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 31	15 55	0 50	2 31	18 11	3.1	8 36	.9
55	8 3	16 22	0 41	2 9	18 25	2.8	8 20	1.1
50	7 43	16 41	0 36	1 54	18 36	2.7	8 8	1.2
45	7 28	16 57	0 32	1 42	18 45	2.5	7 58	1.4
40	7 15	17 10	0 29	1 34	18 53	2.4	7 50	1.5
35	7 4	17 21	0 27	1 28	18 59	2.4	7 42	1.5
30	6 54	17 31	0 25	1 23	19 5	2.3	7 36	1.6
20	6 37	17 47	0 23	1 16	19 15	2.1	7 25	1.7
10	6 23	18 2	0 22	1 13	19 23	2.0	7 15	1.9
0	6 9	18 16	0 22	1 13	19 31	1.9	7 6	2.0
10	5 55	18 30	0 22	1 15	19 39	1.8	6 57	2.1
20	5 39	18 45	0 24	1 20	19 47	1.7	6 47	2.2
30	5 22	19 2	0 26	1 31	19 57	1.5	6 36	2.3
35	5 12	19 12	0 28	1 39	20 2	1.5	6 29	2.4
40	4 60	19 24	0 31	1 51	20 9	1.4	6 22	2.5
45	4 46	19 38	0 34	2 9	20 16	1.3	6 13	2.6
50	4 29	19 55	0 39	2 43	20 25	1.2	6 3	2.7
55	4 6	20 17	0 48	:::	20 35	1.0	5 49	2.9
60	3 36	20 47	1 4	:::	20 49	.8	5 32	3.1

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	-12	5.1	.6	16.3	T _m	0 55	2.0	56.0	15.3
12	-12	12.1	T _{m☉}	12 h 12.2 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	'	°	
♂	9 52	.1	88	-3.4	♂	3 20	.0	186	-1.9
♂	6 22	.1	141	.6	♂	8 33	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	55.2	-18	54.3	124	43.7	211	53.0	-22	25.6	264	46.1	-14	1.2	
2	206	55.0	-18	53.0	154	48.6	241	51.3	-22	25.7	294	48.6	-14	2.0	
4	236	54.7	-18	51.8	184	53.5	271	49.6	-22	25.8	324	51.0	-14	1.8	
6	266	54.4	-18	50.5	214	58.5	301	47.8	-22	25.9	354	53.4	-14	2.6	
8	296	54.1	-18	49.3	245	3.4	331	46.1	-22	26.0	24	55.8	-14	3.4	
10	326	53.9	-18	48.0	275	8.3	1	44.4	-22	26.1	54	58.2	-14	4.2	
12	356	53.6	-18	46.8	305	13.3	31	42.6	-22	26.2	85	.7	-14	5.0	
14	26	53.3	-18	45.5	335	18.2	61	40.9	-22	26.3	115	3.1	-14	5.7	
16	56	53.0	-18	44.3	5	23.1	91	39.2	-22	26.4	145	5.5	-14	6.5	
18	86	52.8	-18	43.0	35	28.0	121	37.4	-22	26.5	175	8.0	-14	7.3	
20	116	52.5	-18	41.8	65	33.0	151	35.7	-22	26.6	205	10.4	-14	8.1	
22	146	52.2	-18	40.5	95	37.9	181	34.0	-22	26.6	235	12.8	-14	8.9	
Δ		-1		6				-9		0			12		-4

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	335	16.2	129	10	8.6	-83	310	52.5	4	7.7	232	17.0	-20	47.5		
2	4	19.9	130	9	52.0	-84	340	57.7	4	7.8	262	21.5	-20	47.6		
4	33	23.9	131	9	35.1	-85	11	2.9	4	8.0	292	25.9	-20	47.6		
6	62	28.0	132	9	18.2	-86	41	8.1	4	8.1	322	30.4	-20	47.7		
8	91	32.4	133	9	1.1	-86	71	13.3	4	8.2	352	34.9	-20	47.7		
10	120	36.9	134	8	43.8	-87	101	18.4	4	8.4	22	39.3	-20	47.8		
12	149	41.6	135	8	26.4	-87	131	23.6	4	8.5	52	43.8	-20	47.8		
14	178	46.5	135	8	9.0	-88	161	28.8	4	8.6	82	48.3	-20	47.9		
16	207	51.6	136	7	51.3	-89	191	34.0	4	8.8	112	52.7	-20	47.9		
18	236	56.9	137	7	33.6	-89	221	39.2	4	8.9	142	57.2	-20	48.0		
20	266	2.3	138	7	15.8	-90	251	44.4	4	9.0	173	1.7	-20	48.0		
22	295	8.0	139	6	57.9	-90	281	49.6	4	9.2	203	6.1	-20	48.1		
Δ								26		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 28	15 57	0 49	2 30	19 24	3.0	8 58	.8
55	8 2	16 24	0 41	2 8	19 33	2.8	8 46	1.0
50	7 42	16 43	0 36	1 53	19 41	2.6	8 38	1.1
45	7 27	16 58	0 32	1 42	19 47	2.5	8 30	1.2
40	7 14	17 11	0 29	1 34	19 51	2.4	8 24	1.3
35	7 3	17 22	0 27	1 28	19 56	2.3	8 19	1.4
30	6 54	17 31	0 25	1 23	19 59	2.2	8 15	1.5
20	6 37	17 48	0 23	1 16	20 6	2.1	8 7	1.6
10	6 23	18 2	0 22	1 13	20 11	2.0	7 60	1.8
0	6 9	18 16	0 22	1 13	20 17	1.8	7 53	1.9
10	5 55	18 30	0 22	1 15	20 22	1.7	7 47	2.0
20	5 40	18 45	0 24	1 20	20 28	1.6	7 39	2.1
30	5 23	19 2	0 26	1 30	20 34	1.5	7 31	2.2
35	5 13	19 12	0 28	1 38	20 38	1.4	7 27	2.3
40	5 1	19 23	0 31	1 50	20 42	1.3	7 21	2.4
45	4 47	19 37	0 34	2 8	20 47	1.2	7 15	2.5
50	4 30	19 54	0 39	2 41	20 52	1.1	7 7	2.7
55	4 8	20 15	0 47	:::	20 59	.9	6 58	2.8
60	3 38	20 45	1 3	:::	21 8	.7	6 46	3.0

SUNCE				MESEC</			
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UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 52.0	-18 39.2	125 42.8	211 32.2	-22 26.7	265 15.2	-14 9.7
2	206 51.7	-18 38.0	155 47.7	241 30.5	-22 26.8	295 17.7	-14 10.4
4	236 51.4	-18 36.7	185 52.7	271 28.8	-22 26.8	325 20.1	-14 11.2
6	266 51.2	-18 35.4	215 57.6	301 27.0	-22 26.9	355 22.5	-14 12.0
8	296 50.9	-18 34.1	246 2.5	331 25.3	-22 26.9	25 25.0	-14 12.8
10	326 50.7	-18 32.9	276 7.5	1 23.6	-22 27.0	55 27.4	-14 13.5
12	356 50.4	-18 31.6	306 12.4	31 21.8	-22 27.0	85 29.8	-14 14.3
14	26 50.1	-18 30.3	336 17.3	61 20.1	-22 27.1	115 32.3	-14 15.1
16	56 49.9	-18 29.0	6 22.2	91 18.4	-22 27.1	145 34.7	-14 15.9
18	86 49.6	-18 27.7	36 27.2	121 16.6	-22 27.1	175 37.1	-14 16.6
20	116 49.4	-18 26.4	66 32.1	151 14.9	-22 27.1	205 39.6	-14 17.4
22	146 49.1	-18 25.1	96 37.0	181 13.2	-22 27.1	235 42.0	-14 18.2
Δ	-1	6		-9	0	12	-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 26	15 60	0 49	2 30	20 36	2.7	9 16	.7
55	8 0	16 26	0 41	2 8	20 40	2.5	9 9	.9
50	7 41	16 45	0 36	1 53	20 44	2.4	9 4	1.0
45	7 26	16 60	0 32	1 42	20 47	2.3	8 60	1.2
40	7 13	17 12	0 29	1 34	20 49	2.2	8 56	1.3
35	7 3	17 23	0 27	1 27	20 51	2.2	8 53	1.4
30	6 53	17 32	0 25	1 23	20 53	2.1	8 51	1.4
20	6 37	17 49	0 23	1 16	20 56	2.0	8 46	1.6
10	6 23	18 3	0 22	1 13	20 58	1.9	8 42	1.7
0	6 9	18 16	0 22	1 13	21 1	1.8	8 38	1.8
10	5 55	18 30	0 22	1 15	21 3	1.7	8 34	1.9
20	5 41	18 44	0 24	1 20	21 6	1.6	8 30	2.1
30	5 24	19 1	0 26	1 30	21 9	1.5	8 25	2.2
35	5 14	19 11	0 28	1 38	21 11	1.4	8 22	2.3
40	5 2	19 23	0 30	1 49	21 13	1.4	8 19	2.4
45	4 49	19 36	0 34	2 7	21 15	1.3	8 16	2.5
50	4 32	19 52	0 39	2 39	21 18	1.2	8 11	2.6
55	4 11	20 13	0 47	:::	21 21	1.1	8 6	2.8
60	3 41	20 42	1 2	:::	21 25	.9	7 59	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	324 13.7	140	6 39.8	-91	311 54.8	4 9.3	233 10.6	-20 48.1
2	353 19.7	141	6 21.7	-91	341 60.0	4 9.5	263 15.1	-20 48.1
4	22 25.8	141	6 3.5	-91	12 5.2	4 9.6	293 19.5	-20 48.2
6	51 32.0	142	5 45.3	-92	42 10.3	4 9.7	323 24.0	-20 48.2
8	80 38.4	143	5 26.9	-92	72 15.5	4 9.9	353 28.5	-20 48.3
10	109 45.0	143	5 8.5	-92	102 20.7	4 10.0	23 33.0	-20 48.3
12	138 51.7	144	4 50.0	-93	132 25.9	4 10.1	53 37.4	-20 48.4
14	167 58.5	145	4 31.5	-93	162 31.1	4 10.3	83 41.9	-20 48.4
16	197 5.4	145	4 12.9	-93	192 36.3	4 10.4	113 46.4	-20 48.5
18	226 12.5	146	3 54.3	-93	222 41.5	4 10.6	143 50.8	-20 48.5
20	255 19.7	147	3 35.6	-93	252 46.7	4 10.7	173 55.3	-20 48.6
22	284 27.0	147	3 16.9	-94	282 52.0	4 10.8	203 59.8	-20 48.6
Δ					26	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 32.1	- .5	16.3	T _m	2 28	1.8	55.0 15.0
12	-12 38.3	T _{m☉}	12 h 12.6 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	'	°	
♂	9 54	.1	86	-3.4	♄	3 12	.0	186	-1.9
♂	6 18	.1	140	.5	♂	8 26	.0	107	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 48.9	-18 23.9	126 42.0	211 11.4	-22 27.2	265 44.4	-14 19.0
2	206 48.6	-18 22.6	156 46.9	241 9.7	-22 27.2	295 46.9	-14 19.7
4	236 48.4	-18 21.3	186 51.8	271 8.0	-22 27.2	325 49.3	-14 20.5
6	266 48.1	-18 20.0	216 56.7	301 6.2	-22 27.2	355 51.8	-14 21.3
8	296 47.9	-18 18.7	247 1.7	331 4.5	-22 27.2	25 54.2	-14 22.0
10	326 47.7	-18 17.3	277 6.6	1 2.7	-22 27.1	55 56.6	-14 22.8
12	356 47.4	-18 16.0	307 11.5	31 1.0	-22 27.1	85 59.1	-14 23.6
14	26 47.2	-18 14.7	337 16.5	60 59.3	-22 27.1	116 1.5	-14 24.3
16	56 46.9	-18 13.4	7 21.4	90 57.5	-22 27.1	146 4.0	-14 25.1
18	86 46.7	-18 12.1	37 26.3	120 55.8	-22 27.0	176 6.4	-14 25.9
20	116 46.5	-18 10.8	67 31.2	150 54.1	-22 27.0	206 8.9	-14 26.6
22	146 46.2	-18 9.5	97 36.2	180 52.3	-22 27.0	236 11.3	-14 27.4
Δ	-1	7		-9	0	12	-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 24	16 2	0 49	2 29	21 41	.7	9 32	2.0
55	7 59	16 28	0 41	2 8	21 41	.8	9 30	2.0
50	7 40	16 46	0 35	1 53	21 42	1.0	9 29	2.0
45	7 25	17 1	0 32	1 42	21 42	1.1	9 28	1.9
40	7 13	17 14	0 29	1 34	21 42	1.2	9 27	1.9
35	7 2	17 24	0 27	1 27	21 43	1.3	9 26	1.9
30	6 53	17 33	0 25	1 23	21 43	1.4	9 25	1.9
20	6 37	17 49	0 23	1 16	21 43	1.5	9 24	1.8
10	6 23	18 3	0 22	1 13	21 43	1.7	9 23	1.8
0	6 9	18 16	0 22	1 12	21 44	1.8	9 22	1.8
10	5 56	18 30	0 22	1 15	21 44	1.9	9 21	1.8
20	5 41	18 44	0 24	1 20	21 45	2.0	9 19	1.7
30	5 25	19 1	0 26	1 30	21 45	2.1	9 18	1.7
35	5 15	19 11	0 28	1 38	21 45	2.2	9 17	1.7
40	5 3	19 22	0 30	1 49	21 46	2.3	9 16	1.7
45	4 50	19 35	0 34	2 6	21 46	2.4	9 15	1.6
50	4 34	19 51	0 39	2 37	21 46	2.5	9 14	1.6
55	4 13	20 12	0 47	:::	21 47	2.7	9 12	1.6
60	3 44	20 40	1 1	:::	21 48	2.9	9 10	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	313 34.4	148	2 58.2	-94	312 57.2	4 11.0	234 4.3	-20 48.6
2	342 41.9	148	2 39.4	-94	343 2.4	4 11.1	264 8.7	-20 48.7
4	11 49.6	149	2 20.7	-94	13 7.6	4 11.3	294 13.2	-20 48.7
6	40 57.3	149	2 1.9	-94	43 12.8	4 11.4	324 17.7	-20 48.8
8	70 5.1	149	1 43.1	-94	73 18.0	4 11.6	354 22.2	-20 48.8
10	99 12.9	150	1 24.3	-94	103 23.2	4 11.7	24 26.6	-20 48.9
12	128 20.9	150	1 5.5	-94	133 28.4	4 11.9	54 31.1	-20 48.9
14	157 28.9	150	0 46.6	-94	163 33.6	4 12.0	84 35.6	-20 49.0
16	186 37.0	151	0 27.8	-94	193 38.8	4 12.1	114 40.1	-20 49.0
18	215 45.2	151	0 9.1	3	223 44.1	4 12.3	144 44.6	-20 49.0
20	244 53.4	151	0 9.7	94	253 49.3	4 12.4	174 49.0	-20 49.1
22	274 1.6	152	0 28.5	94	283 54.5	4 12.6	204 53.5	-20 49.1
Δ					26	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 44.5	- .5	16.3	T _m	3 11	1.8	54.6 14.9
12	-12 50.2	T _{m☉}	12 h 12.8 min	Starost	17.9 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	9 56	.1	84	-3.4	♄	3 8	.0	186	-1.9
♂	6 17	.1	139	.5	♂	8 22	.0	107	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	46.0	-18	8.1	127	41.1	210	50.6	-22	26.9	266	13.7	-14	28.2	
2	206	45.8	-18	6.8	157	46.0	240	48.8	-22	26.9	296	16.2	-14	28.9	
4	236	45.5	-18	5.5	187	51.0	270	47.1	-22	26.8	326	18.6	-14	29.7	
6	266	45.3	-18	4.2	217	55.9	300	45.4	-22	26.8	356	21.1	-14	30.4	
8	296	45.1	-18	2.8	248	.8	330	43.6	-22	26.7	26	23.5	-14	31.2	
10	326	44.9	-18	1.5	278	5.7	0	41.9	-22	26.6	56	26.0	-14	32.0	
12	356	44.6	-18	.2	308	10.7	30	40.1	-22	26.6	86	28.4	-14	32.7	
14	26	44.4	-17	58.8	338	15.6	60	38.4	-22	26.5	116	30.9	-14	33.5	
16	56	44.2	-17	57.5	8	20.5	90	36.7	-22	26.4	146	33.3	-14	34.2	
18	86	44.0	-17	56.1	38	25.5	120	34.9	-22	26.3	176	35.8	-14	35.0	
20	116	43.8	-17	54.8	68	30.4	150	33.2	-22	26.2	206	38.2	-14	35.7	
22	146	43.5	-17	53.4	98	35.3	180	31.5	-22	26.1	236	40.7	-14	36.5	
Δ		-1		7				-9		0			12		-4

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	303	9.9	152	0	47.2	93	313	59.7	4	12.7	234	58.0	-20	49.2	
2	332	18.3	152	1	5.9	93	344	4.9	4	12.9	265	2.5	-20	49.2	
4	1	26.6	152	1	24.6	93	14	10.2	4	13.0	295	7.0	-20	49.3	
6	30	35.0	152	1	43.2	93	44	15.4	4	13.2	325	11.4	-20	49.3	
8	59	43.5	152	2	1.8	93	74	20.6	4	13.3	355	15.9	-20	49.3	
10	88	51.9	152	2	20.3	92	104	25.8	4	13.5	25	20.4	-20	49.4	
12	118	.3	152	2	38.8	92	134	31.0	4	13.6	55	24.9	-20	49.4	
14	147	8.8	152	2	57.2	92	164	36.3	4	13.8	85	29.4	-20	49.5	
16	176	17.3	152	3	15.6	92	194	41.5	4	13.9	115	33.9	-20	49.5	
18	205	25.7	152	3	33.9	91	224	46.7	4	14.1	145	38.3	-20	49.6	
20	234	34.1	152	3	52.2	91	254	52.0	4	14.2	175	42.8	-20	49.6	
22	263	42.6	152	4	10.4	91	284	57.2	4	14.4	205	47.3	-20	49.6	
Δ								26		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 22	16 5	0 48	2 29	21 57	.7	10 21	2.9
55	7 57	16 30	0 41	2 7	22 2	.9	10 18	2.7
50	7 39	16 48	0 35	1 52	22 6	1.0	10 16	2.6
45	7 24	17 3	0 32	1 42	22 9	1.2	10 14	2.4
40	7 12	17 15	0 29	1 33	22 12	1.3	10 12	2.3
35	7 1	17 25	0 27	1 27	22 14	1.3	10 11	2.2
30	6 52	17 34	0 25	1 22	22 16	1.4	10 10	2.1
20	6 36	17 50	0 23	1 16	22 20	1.6	10 8	2.0
10	6 23	18 4	0 22	1 13	22 23	1.7	10 6	1.9
0	6 9	18 17	0 22	1 12	22 26	1.8	10 4	1.8
10	5 56	18 30	0 22	1 14	22 29	1.9	10 3	1.7
20	5 42	18 44	0 23	1 20	22 33	2.0	10 1	1.5
30	5 25	19 0	0 26	1 29	22 36	2.1	9 59	1.4
35	5 16	19 10	0 28	1 37	22 39	2.2	9 57	1.3
40	5 5	19 21	0 30	1 48	22 41	2.3	9 56	1.2
45	4 51	19 34	0 34	2 5	22 44	2.4	9 55	1.1
50	4 35	19 50	0 39	2 35	22 48	2.5	9 53	1.0
55	4 15	20 10	0 46	:::	22 52	2.7	9 50	.9
60	3 46	20 38	0 60	:::	22 57	2.9	9 47	.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	56.0	-.4	16.3	T _m	3 54	1.8	54.3	14.8
12	-13	1.4	T _{m☉}	12 h 13.0 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	'	°	
♁	9 57	.1	83	-3.4	♃	3 3	.0	186	-1.9
♂	6 15	.1	139	.5	♄	8 19	.0	107	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	43.3	-17	52.1	128	40.2	210	29.7	-22	26.0	266	43.1	-14	37.3	
2	206	43.1	-17	50.7	158	45.2	240	28.0	-22	25.9	296	45.6	-14	38.0	
4	236	42.9	-17	49.4	188	50.1	270	26.2	-22	25.8	326	48.1	-14	38.8	
6	266	42.7	-17	48.0	218	55.0	300	24.5	-22	25.7	356	50.5	-14	39.5	
8	296	42.5	-17	46.7	249	.0	330	22.8	-22	25.6	26	53.0	-14	40.3	
10	326	42.3	-17	45.3	279	4.9	0	21.0	-22	25.5	56	55.4	-14	41.0	
12	356	42.1	-17	44.0	309	9.8	30	19.3	-22	25.3	86	57.9	-14	41.8	
14	26	41.8	-17	42.6	339	14.7	60	17.5	-22	25.2	117	.3	-14	42.5	
16	56	41.6	-17	41.2	9	19.7	90	15.8	-22	25.1	147	2.8	-14	43.3	
18	86	41.4	-17	39.9	39	24.6	120	14.1	-22	24.9	177	5.3	-14	44.0	
20	116	41.2	-17	38.5	69	29.5	150	12.3	-22	24.8	207	7.7	-14	44.8	
22	146	41.0	-17	37.1	99	34.4	180	10.6	-22	24.6	237	10.2	-14	45.5	
Δ		-1		7				-9		1			12		-4

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	292	51.0	152	4	28.5	90	315	2.4	4	14.5	235	51.8	-20	49.7	
2	321	59.3	152	4	46.5	90	345	7.7	4	14.7	265	56.3	-20	49.7	
4	351	7.7	151	5	4.4	89	15	12.9	4	14.8	296	.8	-20	49.8	
6	20	16.0	151	5	22.3	89	45	18.1	4	15.0	326	5.3	-20	49.8	
8	49	24.2	151	5	40.0	88	75	23.4	4	15.2	356	9.7	-20	49.9	
10	78	32.4	151	5	57.7	88	105	28.6	4	15.3	26	14.2	-20	49.9	
12	107	40.6	150	6	15.3	87	135	33.8	4	15.5	56	18.7	-20	49.9	
14	136	48.7	150	6	32.7	87	165	39.1	4	15.6	86	23.2	-20	50.0	
16	165	56.7	150	6	50.1	86	195	44.3	4	15.8	116	27.7	-20	50.0	
18	195	4.6	149	7	7.3	86	225	49.6	4	15.9	146	32.2	-20	50.1	
20	224	12.5	149	7	24.5	85	255	54.8	4	16.1	176	36.7	-20	50.1	
22	253	20.3	149	7	41.5	84	286	.1	4	16.2	206	41.2	-20	50.1	
Δ								26		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 20	16 7	0 48	2 28	22 13	.8	11 31	2.9
55	7 55	16 32	0 40	2 7	22 23	1.0	11 23	2.7
50	7 37	16 50	0 35	1 52	22 31	1.1	11 17	2.5
45	7 23	17 4	0 32	1 41	22 37	1.2	11 12	2.4
40	7 11	17 16	0 29	1 33	22 42	1.3	11 8	2.3
35	7 1	17 26	0 27	1 27	22 46	1.4	11 4	2.2
30	6 52	17 35	0 25	1 22	22 50	1.5	11 1	2.2
20	6 36	17 50	0 23	1 16	22 57	1.6	10 56	2.0
10	6 23	18 4	0 22	1 13	23 3	1.7	10 51	1.9
0	6 10	18 17	0 22	1 12	23 9	1.8	10 47	1.8
10	5 57	18 30	0 22	1 14	23 15	1.9	10 42	1.7
20	5 43	18 44	0 23	1 19	23 21	1.8	10 38	1.6
30	5 26	18 60	0 26	1 29	23 28	1.8	10 32	1.4
35	5 17	19 9	0 28	1 37	23 32	1.8	10 29	1.4
40	5 6	19 20	0 30	1 48	23 37	1.8	10 26	1.3
45	4 53	19 33	0 34	2 4	23 42	1.8	10 22	1.2
50	4 37	19 48	0 38	2 33	23 49	1.9	10 17	1.1
55	4 17	20 8	0 46	:::	23 57	1.9	10 11	.9
60	3 49	20 35	0 59	:::	...	.0	10 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	'	'

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	40.8	-17	35.7	129	39.4	210	8.8	-22	24.5	267	12.6	-14	46.3	
2	206	40.6	-17	34.4	159	44.3	240	7.1	-22	24.3	297	15.1	-14	47.0	
4	236	40.4	-17	33.0	189	49.2	270	5.4	-22	24.1	327	17.6	-14	47.7	
6	266	40.2	-17	31.6	219	54.2	300	3.6	-22	24.0	357	20.0	-14	48.5	
8	296	40.1	-17	30.2	249	59.1	330	1.9	-22	23.8	27	22.5	-14	49.2	
10	326	39.9	-17	28.8	280	4.0	0	.2	-22	23.6	57	25.0	-14	50.0	
12	356	39.7	-17	27.4	310	8.9	29	58.4	-22	23.4	87	27.4	-14	50.7	
14	26	39.5	-17	26.0	340	13.9	59	56.7	-22	23.3	117	29.9	-14	51.4	
16	56	39.3	-17	24.7	10	18.8	89	54.9	-22	23.1	147	32.4	-14	52.2	
18	86	39.1	-17	23.3	40	23.7	119	53.2	-22	22.9	177	34.8	-14	52.9	
20	116	38.9	-17	21.9	70	28.7	149	51.5	-22	22.7	207	37.3	-14	53.7	
22	146	38.7	-17	20.5	100	33.6	179	49.7	-22	22.5	237	39.8	-14	54.4	
Δ		-1		7				-9		1			12		-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 17	16 10	0 48	2 28	22 32	.9	12 41	2.9
55	7 54	16 34	0 40	2 7	22 46	1.1	12 28	2.7
50	7 36	16 51	0 35	1 52	22 57	1.3	12 18	2.5
45	7 22	17 6	0 31	1 41	23 6	1.4	12 10	2.4
40	7 10	17 17	0 29	1 33	23 14	1.4	12 4	2.3
35	7 0	17 27	0 27	1 27	23 20	1.9	11 58	2.2
30	6 51	17 36	0 25	1 22	23 26	1.9	11 53	2.2
20	6 36	17 51	0 23	1 16	23 36	1.9	11 44	2.1
10	6 23	18 4	0 22	1 13	23 45	1.9	11 37	1.9
0	6 10	18 17	0 22	1 12	23 53	1.9	11 30	1.8
10	5 57	18 30	0 22	1 14	...	.0	11 23	1.8
20	5 43	18 43	0 23	1 19	...	.0	11 16	1.6
30	5 27	18 59	0 26	1 29	...	.0	11 7	1.5
35	5 18	19 8	0 28	1 37	...	.0	11 2	1.5
40	5 7	19 19	0 30	1 47	...	.0	10 57	1.4
45	4 54	19 32	0 33	2 3	...	.0	10 50	1.3
50	4 39	19 47	0 38	2 31	...	.0	10 43	1.2
55	4 19	20 6	0 45	...	...	.0	10 33	1.0
60	3 52	20 33	0 58	...	0 8	2.9	10 21	.8

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	282	28.0	148	7 58.4	84	316	5.3	4 16.4	236	45.7	-20	50.2		
2	311	35.6	148	8 15.2	83	346	10.5	4 16.6	266	50.2	-20	50.2		
4	340	43.1	147	8 31.8	82	16	15.8	4 16.7	296	54.6	-20	50.3		
6	9	50.5	147	8 48.3	82	46	21.0	4 16.9	326	59.1	-20	50.3		
8	38	57.8	146	9 4.6	81	76	26.3	4 17.0	357	3.6	-20	50.4		
10	68	5.0	145	9 20.9	80	106	31.5	4 17.2	27	8.1	-20	50.4		
12	97	12.1	145	9 36.9	80	136	36.8	4 17.4	57	12.6	-20	50.4		
14	126	19.0	144	9 52.8	79	166	42.1	4 17.5	87	17.1	-20	50.5		
16	155	25.8	143	10 8.6	78	196	47.3	4 17.7	117	21.6	-20	50.5		
18	184	32.5	143	10 24.2	77	226	52.6	4 17.9	147	26.1	-20	50.6		
20	213	39.1	142	10 39.6	76	256	57.8	4 18.0	177	30.6	-20	50.6		
22	242	45.5	141	10 54.9	75	287	3.1	4 18.2	207	35.1	-20	50.6		
Δ						26		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	16.7	.4	16.3	T _m	5 19	1.8	54.2	14.8
12	-13	21.2	T _m ☉	12 h 13.4 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	'	°		
♀	9 60	.1	80	-3.4	♃	2 55	.0	186	-1.9
♂	6 11	.1	138	.5	♄	8 12	.0	107	.8

1. FEBRUAR

PONEDELJAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	38.5	-17	19.1	130	38.5	209	48.0	-22	22.2	267	42.3	-14	55.1	
2	206	38.4	-17	17.7	160	43.4	239	46.3	-22	22.0	297	44.7	-14	55.9	
4	236	38.2	-17	16.3	190	48.4	269	44.5	-22	21.8	327	47.2	-14	56.6	
6	266	38.0	-17	14.8	220	53.3	299	42.8	-22	21.6	357	49.7	-14	57.3	
8	296	37.8	-17	13.4	250	58.2	329	41.0	-22	21.3	27	52.1	-14	58.1	
10	326	37.7	-17	12.0	281	3.2	359	39.3	-22	21.1	57	54.6	-14	58.8	
12	356	37.5	-17	10.6	311	8.1	29	37.6	-22	20.9	87	57.1	-14	59.5	
14	26	37.3	-17	9.2	341	13.0	59	35.8	-22	20.6	117	59.6	-15	.3	
16	56	37.1	-17	7.8	11	17.9	89	34.1	-22	20.4	148	2.0	-15	1.0	
18	86	37.0	-17	6.4	41	22.9	119	32.4	-22	20.1	178	4.5	-15	1.7	
20	116	36.8	-17	4.9	71	27.8	149	30.6	-22	19.9	208	7.0	-15	2.5	
22	146	36.6	-17	3.5	101	32.7	179	28.9	-22	19.6	238	9.5	-15	3.2	
Δ		-1		7				-9		1			12		-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 15	16 13	0 48	2 27	22 54	1.2	13 50	2.8
55	7 52	16 36	0 40	2 6	23 13	1.3	13 32	2.6
50	7 34	16 53	0 35	1 52	23 27	2.0	13 19	2.5
45	7 21	17 7	0 31	1 41	23 39	2.0	13 8	2.4
40	7 9	17 18	0 29	1 33	23 49	2.0	12 59	2.3
35	6 59	17 28	0 27	1 27	...	.0	12 52	2.3
30	6 51	17 37	0 25	1 22	...	.0	12 45	2.2
20	6 36	17 52	0 23	1 16	...	.0	12 34	2.1
10	6 22	18 5	0 22	1 13	...	.0	12 24	2.0
0	6 10	18 17	0 22	1 12	...	.0	12 14	1.9
10	5 57	18 30	0 22	1 14	0 1	2.0	12 5	1.8
20	5 44	18 43	0 23	1 19	0 10	2.1	11 55	1.8
30	5 28	18 59	0 26	1 29	0 20	2.2	11 44	1.6
35	5 19	19 8	0 28	1 36	0 26	2.3	11 37	1.6
40	5 8	19 18	0 30	1 47	0 32	2.3	11 30	1.5
45	4 56	19 30	0 33	2 2	0 40	2.4	11 21	1.4
50	4 41	19 45	0 38	2 29	0 50	2.5	11 11	1.3
55	4 21	20 4	0 45	...	1 1	2.7	10 58	1.2
60	3 55	20 30	0 58	...	1 17	2.9	10 41	1.0

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	271	51.7	141	11 10.0	75	317	8.3	4 18.3	237	39.6	-20	50.7		
2	300	57.8	140	11 24.9	74	347	13.6	4 18.5	267	44.1	-20	50.7		
4	330	3.8	139	11 39.6	73	17	18.9	4 18.7	297	48.6	-20	50.8		
6	359	9.6	138	11 54.1	72	47	24.1	4 18.8	327	53.1	-20	50.8		
8	28	15.2	137	12 8.5	71	77	29.4	4 19.0	357	57.6	-20	50.8		
10	57	20.7	136	12 22.7	70	107	34.6	4 19.2	28	2.1	-20	50.9		
12	86	26.0	136	12 36.6	69	137	39.9	4 19.3	58	6.6	-20	50.9		
14	115	31.1	135	12 50.4	68	167	45.2	4 19.5	88	11.1	-20	51.0		
16	144	36.0	134	13 3.9	67	197	50.4	4 19.7	118	15.6	-20	51.0		
18	173	40.8	133	13 17.2	66	227	55.7	4 19.8	148	20.1	-20	51.0		
20	202	45.3	132	13 30.3	64	258	1.0	4 20.0	178	24.6	-20	51.1		
22	231	49.7	131	13 43.2	63	288	6.3	4 20.2	208	29.1	-20	51.1		
Δ						26		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	25.8	-.3	16.3	T _m	6 3	1.9	54.4	14.8
12	-13	30.0	T _m ☉	12 h 13.5 min	Starost	21.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'</							

UT	SUNCE				PROLEĆ. TAČKA S _Γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	36.5	-17	2.1	131	37.7	209	27.2	-22	19.3	268	12.0	-15	3.9	
2	206	36.3	-17	.6	161	42.6	239	25.4	-22	19.1	298	14.4	-15	4.7	
4	236	36.1	-16	59.2	191	47.5	269	23.7	-22	18.8	328	16.9	-15	5.4	
6	266	36.0	-16	57.8	221	52.4	299	22.0	-22	18.5	358	19.4	-15	6.1	
8	296	35.8	-16	56.4	251	57.4	329	20.2	-22	18.2	28	21.9	-15	6.8	
10	326	35.7	-16	54.9	282	2.3	359	18.5	-22	17.9	58	24.4	-15	7.6	
12	356	35.5	-16	53.5	312	7.2	29	16.8	-22	17.6	88	26.9	-15	8.3	
14	26	35.3	-16	52.0	342	12.2	59	15.0	-22	17.3	118	29.4	-15	9.0	
16	56	35.2	-16	50.6	12	17.1	89	13.3	-22	17.0	148	31.8	-15	9.7	
18	86	35.0	-16	49.1	42	22.0	119	11.6	-22	16.7	178	34.3	-15	10.4	
20	116	34.9	-16	47.7	72	26.9	149	9.8	-22	16.4	208	36.8	-15	11.2	
22	146	34.7	-16	46.2	102	31.9	179	8.1	-22	16.1	238	39.3	-15	11.9	
Δ		-1		7				-9		1			12		-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 13	16 15	0 47	2 27	23 22	2.0	14 58	2.7
55	7 50	16 38	0 40	2 6	23 45	2.1	14 35	2.6
50	7 33	16 55	0 35	1 51	...	.0	14 19	2.5
45	7 19	17 8	0 31	1 41	...	.0	14 6	2.4
40	7 8	17 20	0 29	1 33	...	.0	13 55	2.3
35	6 59	17 29	0 27	1 27	0 -3	1.7	13 46	2.3
30	6 50	17 38	0 25	1 22	0 4	1.7	13 38	2.2
20	6 35	17 52	0 23	1 16	0 17	1.8	13 24	2.1
10	6 22	18 5	0 22	1 12	0 28	1.9	13 12	2.1
0	6 10	18 17	0 22	1 12	0 38	2.0	13 1	2.0
10	5 58	18 29	0 22	1 14	0 48	2.0	12 49	2.0
20	5 44	18 43	0 23	1 19	0 60	2.1	12 37	1.9
30	5 29	18 58	0 26	1 28	1 12	2.2	12 23	1.8
35	5 20	19 7	0 27	1 36	1 20	2.3	12 15	1.8
40	5 10	19 17	0 30	1 46	1 28	2.3	12 6	1.7
45	4 57	19 29	0 33	2 2	1 38	2.4	11 56	1.6
50	4 42	19 44	0 38	2 28	1 50	2.5	11 43	1.6
55	4 23	20 3	0 45	3 43	2 6	2.6	11 27	1.4
60	3 58	20 28	0 57	4 44	2 26	2.8	11 6	1.3
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	260	53.9	130	13	55.9	62	318	11.5	4	20.3	238	33.6	-20	51.2	
2	289	57.9	129	14	8.3	61	348	16.8	4	20.5	268	38.1	-20	51.2	
4	319	1.6	128	14	20.5	60	18	22.1	4	20.7	298	42.6	-20	51.2	
6	348	5.2	127	14	32.4	58	48	27.3	4	20.9	328	47.1	-20	51.3	
8	17	8.6	126	14	44.1	57	78	32.6	4	21.0	358	51.6	-20	51.3	
10	46	11.8	125	14	55.5	56	108	37.9	4	21.2	28	56.2	-20	51.4	
12	75	14.7	124	15	6.7	55	138	43.2	4	21.4	59	.7	-20	51.4	
14	104	17.4	123	15	17.6	53	168	48.5	4	21.5	89	5.2	-20	51.4	
16	133	20.0	122	15	28.3	52	198	53.7	4	21.7	119	9.7	-20	51.5	
18	162	22.3	120	15	38.6	50	228	59.0	4	21.9	149	14.2	-20	51.5	
20	191	24.4	119	15	48.7	49	259	4.3	4	22.1	179	18.7	-20	51.5	
22	220	26.2	118	15	58.5	48	289	9.6	4	22.2	209	23.2	-20	51.6	
Δ							26			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 34.1	-.3	16.3	T _m	6 49	2.0	54.8 14.9		
12	-13 37.9	T _{m☉}	12 h 13.6 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	'	°	
♂	10 3	.1	78	-3.4	♄	2 47	.0	187	-1.9
♂	6 7	.1	137	.4	♅	8 5	.0	107	.8

3. FEBRUAR

SREDA

UT	SUNCE				PROLEĆ. TAČKA S _Γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	34.6	-16	44.8	132	36.8	209	6.4	-22	15.8	268	41.8	-15	12.6	
2	206	34.4	-16	43.3	162	41.7	239	4.6	-22	15.4	298	44.3	-15	13.3	
4	236	34.3	-16	41.9	192	46.6	269	2.9	-22	15.1	328	46.8	-15	14.0	
6	266	34.1	-16	40.4	222	51.6	299	1.2	-22	14.8	358	49.3	-15	14.8	
8	296	34.0	-16	39.0	252	56.5	328	59.4	-22	14.4	28	51.8	-15	15.5	
10	326	33.8	-16	37.5	283	1.4	358	57.7	-22	14.1	58	54.3	-15	16.2	
12	356	33.7	-16	36.0	313	6.4	28	56.0	-22	13.7	88	56.8	-15	16.9	
14	26	33.6	-16	34.6	343	11.3	58	54.3	-22	13.4	118	59.3	-15	17.6	
16	56	33.4	-16	33.1	13	16.2	88	52.5	-22	13.0	149	1.7	-15	18.3	
18	86	33.3	-16	31.6	43	21.1	118	50.8	-22	12.7	179	4.2	-15	19.0	
20	116	33.2	-16	30.2	73	26.1	148	49.1	-22	12.3	209	6.7	-15	19.8	
22	146	33.0	-16	28.7	103	31.0	178	47.3	-22	11.9	239	9.2	-15	20.5	
Δ		-1		7				-9		2			12		-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 10	16 18	0 47	2 26	...	.0	16 3	2.5
55	7 48	16 40	0 40	2 6	...	.0	15 37	2.4
50	7 32	16 57	0 35	1 51	0 2	1.7	15 18	2.4
45	7 18	17 10	0 31	1 41	0 16	1.8	15 3	2.3
40	7 7	17 21	0 29	1 33	0 27	1.8	14 51	2.3
35	6 58	17 30	0 27	1 27	0 37	1.9	14 40	2.3
30	6 49	17 38	0 25	1 22	0 46	1.9	14 31	2.2
20	6 35	17 53	0 23	1 15	1 0	2.0	14 16	2.2
10	6 22	18 5	0 22	1 12	1 13	2.0	14 2	2.2
0	6 10	18 17	0 22	1 12	1 25	2.1	13 49	2.1
10	5 58	18 29	0 22	1 14	1 38	2.1	13 36	2.1
20	5 45	18 42	0 23	1 19	1 51	2.2	13 22	2.0
30	5 30	18 57	0 26	1 28	2 6	2.2	13 7	2.0
35	5 21	19 6	0 27	1 35	2 14	2.3	12 58	2.0
40	5 11	19 16	0 30	1 46	2 24	2.3	12 47	1.9
45	4 59	19 28	0 33	2 1	2 36	2.4	12 35	1.9
50	4 44	19 42	0 37	2 26	2 50	2.4	12 20	1.8
55	4 26	20 1	0 44	3 32	3 8	2.5	12 2	1.8
60	4 0	20 25	0 56	4 44	3 33	2.6	11 36	1.7
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	249	27.9	117	16	8.1	46	319	14.9	4	22.4	239	27.7	-20	51.6	
2	278	29.3	116	16	17.3	45	349	20.1	4	22.6	269	32.2	-20	51.7	
4	307	30.5	115	16	26.2	43	19	25.4	4	22.8	299	36.7	-20	51.7	
6	336	31.5	114	16	34.9	42	49	30.7	4	22.9	329	41.2	-20	51.7	
8	5	32.2	113	16	43.2	40	79	36.0	4	23.1	359	45.8	-20	51.8	
10	34	32.7	111	16	51.2	38	109	41.3	4	23.3	29	50.3	-20	51.8	
12	63	33.0	110	16	58.9	37	139	46.6	4	23.5	59	54.8	-20	51.9	
14	92	33.1	109	17	6.2	35	169	51.9	4	23.6	89	59.3	-20	51.9	
16	121	32.9	108	17	13.3	34	199	57.2	4	23.8	120	3.8	-20	51.9	
18	150	32.6	107	17	20.0	32	230	2.5	4	24.0	150	8.3	-20	52.0	
20	179	32.0	106	17	26.3	30	260	7.8	4	24.2	180	12.8	-20	52.0	
22	208	31.1	105	17	32.4	28	290	13.1	4	24.3	210	17.4	-20	52.0	
Δ							26			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 41.7	-.3	16.3	T _m	7 37	2.1	55.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 32.9	-16 27.2	133 35.9	208 45.6	-22 11.5	269 11.7	-15 21.2
2	206 32.8	-16 25.7	163 40.9	238 43.9	-22 11.2	299 14.2	-15 21.9
4	236 32.6	-16 24.3	193 45.8	268 42.2	-22 10.8	329 16.7	-15 22.6
6	266 32.5	-16 22.8	223 50.7	298 40.4	-22 10.4	359 19.3	-15 23.3
8	296 32.4	-16 21.3	253 55.6	328 38.7	-22 10.0	29 21.8	-15 24.0
10	326 32.2	-16 19.8	284 .6	358 37.0	-22 9.6	59 24.3	-15 24.7
12	356 32.1	-16 18.3	314 5.5	28 35.3	-22 9.2	89 26.8	-15 25.4
14	26 32.0	-16 16.8	344 10.4	58 33.6	-22 8.8	119 29.3	-15 26.1
16	56 31.9	-16 15.3	14 15.4	88 31.8	-22 8.4	149 31.8	-15 26.8
18	86 31.8	-16 13.8	44 20.3	118 30.1	-22 7.9	179 34.3	-15 27.5
20	116 31.6	-16 12.4	74 25.2	148 28.4	-22 7.5	209 36.8	-15 28.2
22	146 31.5	-16 10.9	104 30.1	178 26.7	-22 7.1	239 39.3	-15 28.9
Δ	-1	7		-9	2	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	8 8	16 21	0 47	2 25	0 -3	1.9	17 3	2.2
55	7 46	16 42	0 39	2 5	0 24	2.0	16 35	2.2
50	7 30	16 58	0 35	1 51	0 43	2.0	16 15	2.2
45	7 17	17 11	0 31	1 40	0 58	2.0	15 59	2.2
40	7 6	17 22	0 28	1 32	1 11	2.1	15 46	2.2
35	6 57	17 31	0 26	1 26	1 22	2.1	15 35	2.2
30	6 49	17 39	0 25	1 22	1 31	2.1	15 25	2.2
20	6 35	17 53	0 23	1 15	1 47	2.1	15 8	2.2
10	6 22	18 6	0 22	1 12	2 2	2.1	14 54	2.2
0	6 10	18 17	0 22	1 12	2 15	2.2	14 40	2.2
10	5 58	18 29	0 22	1 14	2 28	2.2	14 26	2.2
20	5 46	18 42	0 23	1 18	2 43	2.2	14 11	2.2
30	5 31	18 57	0 26	1 28	2 59	2.2	13 55	2.2
35	5 22	19 5	0 27	1 35	3 9	2.2	13 45	2.2
40	5 12	19 15	0 30	1 45	3 20	2.3	13 34	2.2
45	5 0	19 27	0 33	1 60	3 33	2.3	13 20	2.2
50	4 46	19 41	0 37	2 24	3 49	2.3	13 4	2.2
55	4 28	19 59	0 44	3 24	4 9	2.3	12 44	2.2
60	4 3	20 23	0 55	:::	4 36	2.4	12 16	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	237 30.1	104	17 38.0	27	320 18.4	4 24.5	240 21.9	-20 52.1
2	266 28.8	103	17 43.3	25	350 23.7	4 24.7	270 26.4	-20 52.1
4	295 27.3	101	17 48.3	23	20 29.0	4 24.9	300 30.9	-20 52.1
6	324 25.6	100	17 52.9	21	50 34.3	4 25.1	330 35.4	-20 52.2
8	353 23.7	99	17 57.1	19	80 39.6	4 25.2	0 40.0	-20 52.2
10	22 21.5	98	18 1.0	17	110 44.9	4 25.4	30 44.5	-20 52.3
12	51 19.2	97	18 4.5	15	140 50.2	4 25.6	60 49.0	-20 52.3
14	80 16.6	96	18 7.6	14	170 55.5	4 25.8	90 53.5	-20 52.3
16	109 13.9	95	18 10.3	12	201 .8	4 26.0	120 58.0	-20 52.4
18	138 10.9	94	18 12.6	10	231 6.1	4 26.2	151 2.6	-20 52.4
20	167 7.7	93	18 14.5	8	261 11.4	4 26.3	181 7.1	-20 52.4
22	196 4.4	92	18 16.1	6	291 16.7	4 26.5	211 11.6	-20 52.5
Δ					27	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 48.4	-.2	16.3	T _m	8 27	2.2	56.0 15.3		
12	-13 51.4	T _{m☉}	12 h 13.9 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	'	°	'
♂	10 6	.1	75	-3.3	♃	2 38	.0	187	-1.9
	6 3	.1	136	.4	♄	7 57	.0	107	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 31.4	-16 9.4	134 35.1	208 24.9	-22 6.6	269 41.8	-15 29.6
2	206 31.3	-16 7.9	164 40.0	238 23.2	-22 6.2	299 44.3	-15 30.3
4	236 31.2	-16 6.4	194 44.9	268 21.5	-22 5.8	329 46.8	-15 31.0
6	266 31.1	-16 4.8	224 49.9	298 19.8	-22 5.3	359 49.4	-15 31.7
8	296 30.9	-16 3.3	254 54.8	328 18.1	-22 4.9	29 51.9	-15 32.4
10	326 30.8	-16 1.8	284 59.7	358 16.4	-22 4.4	59 54.4	-15 33.1
12	356 30.7	-16 .3	315 4.6	28 14.6	-22 3.9	89 56.9	-15 33.8
14	26 30.6	-15 58.8	345 9.6	58 12.9	-22 3.5	119 59.4	-15 34.5
16	56 30.5	-15 57.3	15 14.5	88 11.2	-22 3.0	150 1.9	-15 35.2
18	86 30.4	-15 55.8	45 19.4	118 9.5	-22 2.5	180 4.5	-15 35.9
20	116 30.3	-15 54.3	75 24.4	148 7.8	-22 2.1	210 7.0	-15 36.6
22	146 30.2	-15 52.7	105 29.3	178 6.1	-22 1.6	240 9.5	-15 37.3
Δ	-1	8		-9	2	13	-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 6	16 23	0 46	2 25	0 43	2.4	17 56	1.8
55	7 44	16 44	0 39	2 5	1 11	2.4	17 28	1.9
50	7 28	17 0	0 34	1 51	1 31	2.3	17 8	2.0
45	7 16	17 13	0 31	1 40	1 47	2.3	16 52	2.1
40	7 5	17 23	0 28	1 32	2 0	2.3	16 39	2.1
35	6 56	17 32	0 26	1 26	2 12	2.3	16 28	2.1
30	6 48	17 40	0 25	1 22	2 22	2.3	16 18	2.2
20	6 34	17 54	0 23	1 15	2 38	2.3	16 1	2.2
10	6 22	18 6	0 22	1 12	2 53	2.3	15 47	2.2
0	6 10	18 17	0 21	1 12	3 7	2.2	15 33	2.3
10	5 59	18 29	0 22	1 13	3 21	2.2	15 19	2.3
20	5 46	18 42	0 23	1 18	3 36	2.2	15 4	2.3
30	5 32	18 56	0 25	1 28	3 53	2.2	14 47	2.4
35	5 23	19 4	0 27	1 35	4 3	2.2	14 37	2.4
40	5 13	19 14	0 30	1 45	4 14	2.2	14 26	2.4
45	5 2	19 25	0 33	1 59	4 27	2.1	14 13	2.5
50	4 48	19 39	0 37	2 23	4 44	2.1	13 57	2.5
55	4 30	19 57	0 44	3 17	5 5	2.1	13 36	2.6
60	4 6	20 20	0 55	:::	5 33	2.0	13 8	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	225 .8	91	18 17.2	4	321 22.0	4 26.7	241 16.1	-20 52.5
2	253 57.1	90	18 17.9	2	351 27.3	4 26.9	271 20.7	-20 52.6
4	282 53.2	90	18 18.2	0	21 32.6	4 27.1	301 25.2	-20 52.6
6	311 49.1	89	18 18.2	-3	51 37.9	4 27.3	331 29.7	-20 52.6
8	340 44.8	88	18 17.7	-5	81 43.2	4 27.4	1 34.2	-20 52.7
10	9 40.4	87	18 16.7	-7	111 48.6	4 27.6	31 38.8	-20 52.7
12	38 35.8	86	18 15.4	-9	141 53.9	4 27.8	61 43.3	-20 52.7
14	67 31.0	85	18 13.6	-11	171 59.2	4 28.0	91 47.8	-20 52.8
16	96 26.1	85	18 11.4	-13	202 4.5	4 28.2	121 52.3	-20 52.8
18	125 21.1	84	18 8.8	-15	232 9.8	4 28.4	151 56.9	-20 52.8
20	154 15.9	83	18 5.8	-17	262 15.1	4 28.6	182 1.4	-20 52.9
22	183 10.5	83	18 2.3	-20	292 20.5	4 28.8	212 5.9	-20 52.9
Δ					27	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 54.4	-.2	16.2	T _m	9 20	2.3	56.8 15.5		
12	-13 57.0	T _{m☉}	12 h 14.0 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	'	°	'
♂	10 7	.1	74	-3.3	♃	2 34	.0	187	-2.0
	6 1	.1	135	.4	♄	7 54	.0	107	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 30.1	-15 51.2	135 34.2	208 4.4	-22 1.1	270 12.0	-15 38.0
2	206 30.0	-15 49.7	165 39.1	238 2.6	-22 .6	300 14.5	-15 38.7
4	236 29.9	-15 48.2	195 44.1	268 .9	-22 .1	330 17.1	-15 39.4
6	266 29.8	-15 46.6	225 49.0	297 59.2	-21 59.6	0 19.6	-15 40.1
8	296 29.7	-15 45.1	255 53.9	327 57.5	-21 59.1	30 22.1	-15 40.8
10	326 29.6	-15 43.6	285 58.9	357 55.8	-21 58.6	60 24.6	-15 41.4
12	356 29.5	-15 42.0	316 3.8	27 54.1	-21 58.1	90 27.2	-15 42.1
14	26 29.4	-15 40.5	346 8.7	57 52.4	-21 57.5	120 29.7	-15 42.8
16	56 29.4	-15 39.0	16 13.6	87 50.7	-21 57.0	150 32.2	-15 43.5
18	86 29.3	-15 37.4	46 18.6	117 49.0	-21 56.5	180 34.8	-15 44.2
20	116 29.2	-15 35.9	76 23.5	147 47.3	-21 55.9	210 37.3	-15 44.9
22	146 29.1	-15 34.3	106 28.4	177 45.6	-21 55.4	240 39.8	-15 45.6
Δ	0	8		-9	3	13	-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 3	16 26	0 46	2 25	1 40	2.9	18 39	1.5
55	7 42	16 46	0 39	2 5	2 8	2.8	18 15	1.7
50	7 27	17 2	0 34	1 51	2 28	2.7	17 56	1.8
45	7 14	17 14	0 31	1 40	2 43	2.6	17 41	1.9
40	7 4	17 24	0 28	1 32	2 56	2.6	17 29	2.0
35	6 55	17 33	0 26	1 26	3 7	2.5	17 19	2.0
30	6 47	17 41	0 25	1 21	3 17	2.5	17 10	2.1
20	6 34	17 54	0 23	1 15	3 33	2.4	16 54	2.2
10	6 22	18 6	0 22	1 12	3 48	2.3	16 40	2.2
0	6 11	18 18	0 21	1 11	4 1	2.3	16 27	2.3
10	5 59	18 29	0 22	1 13	4 14	2.2	16 14	2.4
20	5 47	18 41	0 23	1 18	4 29	2.2	16 0	2.5
30	5 32	18 55	0 25	1 27	4 45	2.1	15 44	2.5
35	5 24	19 3	0 27	1 34	4 55	2.1	15 35	2.6
40	5 14	19 13	0 29	1 44	5 6	2.0	15 24	2.6
45	5 3	19 24	0 33	1 58	5 19	2.0	15 12	2.7
50	4 49	19 38	0 37	2 21	5 35	1.9	14 57	2.8
55	4 32	19 55	0 43	3 12	5 54	1.8	14 37	2.9
60	4 9	20 18	0 54	:::	6 21	1.7	14 11	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♁	Δ	δ _♁	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	212 5.1	82	17 58.4	-22	322 25.8	4 28.9	242 10.5	-20 52.9
2	240 59.5	81	17 54.1	-24	352 31.1	4 29.1	272 15.0	-20 53.0
4	269 53.8	81	17 49.3	-26	22 36.4	4 29.3	302 19.5	-20 53.0
6	298 47.9	80	17 44.1	-28	52 41.8	4 29.5	332 24.0	-20 53.0
8	327 42.0	80	17 38.5	-30	82 47.1	4 29.7	2 28.6	-20 53.1
10	356 36.0	79	17 32.4	-33	112 52.4	4 29.9	32 33.1	-20 53.1
12	25 29.9	79	17 25.9	-35	142 57.7	4 30.1	62 37.6	-20 53.2
14	54 23.7	79	17 18.9	-37	173 3.1	4 30.3	92 42.2	-20 53.2
16	83 17.4	78	17 11.5	-39	203 8.4	4 30.5	122 46.7	-20 53.2
18	112 11.0	78	17 3.7	-41	233 13.7	4 30.7	152 51.2	-20 53.3
20	141 4.6	78	16 55.4	-43	263 19.0	4 30.9	182 55.8	-20 53.3
22	169 58.1	77	16 46.8	-46	293 24.4	4 31.0	213 .3	-20 53.3
Δ					27	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 59.6	-.2	16.2	T _m	10 14	2.3	57.6	15.7	
12	-14 1.7	T _{m☉}	12 h 14.0 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	'	°	
♂	10 8	.1	72	-3.3	♃	2 30	.0	187	-2.0
	5 59	.1	135	.4	♄	7 50	.0	107	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 29.0	-15 32.8	136 33.3	207 43.9	-21 54.9	270 42.4	-15 46.2
2	206 28.9	-15 31.2	166 38.3	237 42.1	-21 54.3	300 44.9	-15 46.9
4	236 28.9	-15 29.7	196 43.2	267 40.4	-21 53.8	330 47.4	-15 47.6
6	266 28.8	-15 28.2	226 48.1	297 38.7	-21 53.2	0 50.0	-15 48.3
8	296 28.7	-15 26.6	256 53.1	327 37.0	-21 52.6	30 52.5	-15 49.0
10	326 28.6	-15 25.0	286 58.0	357 35.3	-21 52.1	60 55.0	-15 49.6
12	356 28.5	-15 23.5	317 2.9	27 33.6	-21 51.5	90 57.6	-15 50.3
14	26 28.5	-15 21.9	347 7.8	57 31.9	-21 50.9	121 .1	-15 51.0
16	56 28.4	-15 20.4	17 12.8	87 30.2	-21 50.4	151 2.7	-15 51.7
18	86 28.3	-15 18.8	47 17.7	117 28.5	-21 49.8	181 5.2	-15 52.4
20	116 28.3	-15 17.2	77 22.6	147 26.9	-21 49.2	211 7.7	-15 53.0
22	146 28.2	-15 15.7	107 27.6	177 25.2	-21 48.6	241 10.3	-15 53.7
Δ	0	8		-8	3	13	-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 1	16 28	0 46	2 24	2 50	3.3	19 15	1.2
55	7 41	16 48	0 39	2 4	3 14	3.1	18 54	1.4
50	7 25	17 4	0 34	1 50	3 32	2.9	18 39	1.6
45	7 13	17 16	0 31	1 40	3 46	2.8	18 26	1.7
40	7 3	17 26	0 28	1 32	3 57	2.7	18 16	1.8
35	6 54	17 34	0 26	1 26	4 7	2.7	18 7	1.9
30	6 47	17 42	0 25	1 21	4 16	2.6	17 59	2.0
20	6 33	17 55	0 23	1 15	4 31	2.5	17 46	2.1
10	6 22	18 7	0 22	1 12	4 44	2.4	17 34	2.2
0	6 11	18 18	0 21	1 11	4 56	2.3	17 23	2.3
10	5 59	18 29	0 22	1 13	5 8	2.2	17 11	2.4
20	5 47	18 41	0 23	1 18	5 21	2.1	16 59	2.5
30	5 33	18 55	0 25	1 27	5 36	2.0	16 45	2.6
35	5 25	19 3	0 27	1 34	5 45	2.0	16 37	2.7
40	5 16	19 12	0 29	1 44	5 55	1.9	16 28	2.8
45	5 5	19 23	0 32	1 58	6 6	1.8	16 17	2.9
50	4 51	19 36	0 37	2 20	6 20	1.7	16 4	3.0
55	4 34	19 53	0 43	3 7	6 38	1.5	15 47	3.2
60	4 11	20 15	0 53	:::	7 1	1.3	15 25	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♁	Δ	δ _♁	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	198 51.5	77	16 37.6	-48	323 29.7	4 31.2	243 4.9	-20 53.4
2	227 44.9	77	16 28.1	-50	353 35.0	4 31.4	273 9.4	-20 53.4
4	256 38.3	77	16 18.1	-52	23 40.4	4 31.6	303 13.9	-20 53.4
6	285 31.6	76	16 7.7	-54	53 45.7	4 31.8	333 18.5	-20 53.5
8	314 24.9	76	15 56.9	-56	83 51.1	4 32.0	3 23.0	-20 53.5
10	343 18.2	76	15 45.7	-58	113 56.4	4 32.2	33 27.5	-20 53.5
12	12 11.4	76	15 34.0	-60	144 1.7	4 32.4	63 32.1	-20 53.6
14	41 4.6	76	15 22.0	-62	174 7.1	4 32.6	93 36.6	-20 53.6
16	69 57.9	76	15 9.5	-64	204 12.4	4 32.8	123 41.2	-20 53.6
18	98 51.1	76	14 56.7	-66	234 17.8	4 33.0	153 45.7	-20 53.7
20	127 44.3	76	14 43.4	-68	264 23.1	4 33.2	183 50.3	-20 53.7
22	156 37.5	76	14 29.7	-70	294 28.4	4 33.4	213 54.8	-20 53.7
Δ					27	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 3.9	-.1	16.2	T _m	11 9	2.3	58.4	15.9	
12	-14 5.7	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	'	°	
♂	10 10	.1	71	-3.3	♃	2 26	.0	187	-2.0
	5 57	.1	134	.3	♄	7 46	.0	107	.8

UT	SUNCE				PROLEĆ. TAČKA S _T	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	28.1	-15	14.1	137	32.5	207	23.5	-21	48.0	271	12.8	-15	54.4	
2	206	28.1	-15	12.5	167	37.4	237	21.8	-21	47.4	301	15.4	-15	55.1	
4	236	28.0	-15	11.0	197	42.3	267	20.1	-21	46.8	331	17.9	-15	55.7	
6	266	27.9	-15	9.4	227	47.3	297	18.4	-21	46.2	1	20.5	-15	56.4	
8	296	27.9	-15	7.8	257	52.2	327	16.7	-21	45.6	31	23.0	-15	57.1	
10	326	27.8	-15	6.3	287	57.1	357	15.0	-21	44.9	61	25.6	-15	57.7	
12	356	27.8	-15	4.7	318	2.1	27	13.3	-21	44.3	91	28.1	-15	58.4	
14	26	27.7	-15	3.1	348	7.0	57	11.6	-21	43.7	121	30.7	-15	59.1	
16	56	27.6	-15	1.5	18	11.9	87	9.9	-21	43.1	151	33.2	-15	59.8	
18	86	27.6	-14	59.9	48	16.8	117	8.3	-21	42.4	181	35.8	-16	.4	
20	116	27.5	-14	58.3	78	21.8	147	6.6	-21	41.8	211	38.3	-16	1.1	
22	146	27.5	-14	56.8	108	26.7	177	4.9	-21	41.1	241	40.9	-16	1.8	
Δ		0		8				-8		3			13		-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 58	16 31	0 46	2 24	4 8	3.5	19 44	1.0
55	7 39	16 51	0 39	2 4	4 28	3.3	19 29	1.2
50	7 24	17 5	0 34	1 50	4 42	3.1	19 17	1.4
45	7 12	17 17	0 31	1 40	4 53	3.0	19 7	1.6
40	7 2	17 27	0 28	1 32	5 3	2.9	18 59	1.7
35	6 54	17 35	0 26	1 26	5 11	2.8	18 53	1.8
30	6 46	17 43	0 25	1 21	5 18	2.7	18 47	1.9
20	6 33	17 55	0 23	1 15	5 31	2.5	18 36	2.0
10	6 22	18 7	0 22	1 12	5 41	2.4	18 27	2.2
0	6 11	18 18	0 21	1 11	5 52	2.3	18 18	2.3
10	5 60	18 28	0 22	1 13	6 2	2.2	18 9	2.4
20	5 48	18 40	0 23	1 18	6 12	2.1	17 60	2.5
30	5 34	18 54	0 25	1 27	6 25	1.9	17 49	2.7
35	5 26	19 2	0 27	1 34	6 32	1.8	17 43	2.8
40	5 17	19 11	0 29	1 43	6 40	1.7	17 35	2.9
45	5 6	19 21	0 32	1 57	6 49	1.6	17 27	3.0
50	4 53	19 34	0 37	2 19	7 1	1.5	17 17	3.2
55	4 36	19 51	0 43	3 3	7 15	1.3	17 4	3.4
60	4 14	20 12	0 53	:::	7 33	1.1	16 47	3.6
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	185	30.7	76	14	15.7	-72	324	33.8	4	33.6	243	59.3	-20	53.8	
2	214	24.0	76	14	1.3	-74	354	39.1	4	33.8	274	3.9	-20	53.8	
4	243	17.2	76	13	46.5	-76	24	44.5	4	34.0	304	8.4	-20	53.8	
6	272	10.5	77	13	31.3	-78	54	49.8	4	34.2	334	13.0	-20	53.9	
8	301	3.9	77	13	15.7	-79	84	55.2	4	34.4	4	17.5	-20	53.9	
10	329	57.2	77	12	59.8	-81	115	.5	4	34.6	34	22.1	-20	53.9	
12	358	50.6	77	12	43.6	-83	145	5.9	4	34.8	64	26.6	-20	54.0	
14	27	44.0	77	12	27.0	-85	175	11.2	4	35.0	94	31.2	-20	54.0	
16	56	37.5	78	12	10.1	-86	205	16.6	4	35.2	124	35.7	-20	54.0	
18	85	31.0	78	11	52.8	-88	235	21.9	4	35.4	154	40.3	-20	54.1	
20	114	24.6	78	11	35.2	-90	265	27.3	4	35.6	184	44.8	-20	54.1	
22	143	18.2	78	11	17.3	-91	295	32.6	4	35.8	214	49.4	-20	54.1	
Δ								27		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	7.5	.1	16.2	T _m	12 5	2.3	59.1	16.1
12	-14	8.9	T _{m☉}	12 h 14.2 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	'	°	
♂	10 11	.1	70	-3.3	♄	2 21	.0	187	-2.0
	5 55	.1	134	.3	♅	7 43	.0	106	.8

UT	SUNCE				PROLEĆ. TAČKA S _T	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	27.4	-14	55.2	138	31.6	207	3.2	-21	40.5	271	43.4	-16	2.4	
2	206	27.4	-14	53.6	168	36.6	237	1.5	-21	39.8	301	46.0	-16	3.1	
4	236	27.3	-14	52.0	198	41.5	266	59.8	-21	39.2	331	48.6	-16	3.7	
6	266	27.3	-14	50.4	228	46.4	296	58.2	-21	38.5	1	51.1	-16	4.4	
8	296	27.2	-14	48.8	258	51.3	326	56.5	-21	37.8	31	53.7	-16	5.1	
10	326	27.2	-14	47.2	288	56.3	356	54.8	-21	37.1	61	56.2	-16	5.7	
12	356	27.2	-14	45.6	319	1.2	26	53.1	-21	36.5	91	58.8	-16	6.4	
14	26	27.1	-14	44.0	349	6.1	56	51.4	-21	35.8	122	1.4	-16	7.1	
16	56	27.1	-14	42.4	19	11.1	86	49.8	-21	35.1	152	3.9	-16	7.7	
18	86	27.0	-14	40.8	49	16.0	116	48.1	-21	34.4	182	6.5	-16	8.4	
20	116	27.0	-14	39.2	79	20.9	146	46.4	-21	33.7	212	9.1	-16	9.0	
22	146	27.0	-14	37.6	109	25.8	176	44.7	-21	33.0	242	11.6	-16	9.7	
Δ		0		8				-8		3			13		-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 56	16 34	0 45	2 23	5 33	3.7	20 8	.9
55	7 37	16 53	0 39	2 4	5 46	3.4	19 58	1.1
50	7 22	17 7	0 34	1 50	5 57	3.2	19 51	1.3
45	7 11	17 18	0 31	1 40	6 5	3.0	19 45	1.5
40	7 1	17 28	0 28	1 32	6 12	2.9	19 40	1.6
35	6 53	17 36	0 26	1 26	6 18	2.8	19 35	1.7
30	6 45	17 43	0 25	1 21	6 23	2.7	19 32	1.8
20	6 33	17 56	0 23	1 15	6 32	2.6	19 25	2.0
10	6 21	18 7	0 22	1 12	6 39	2.4	19 19	2.1
0	6 11	18 18	0 21	1 11	6 47	2.3	19 13	2.3
10	5 60	18 28	0 22	1 13	6 54	2.1	19 7	2.4
20	5 48	18 40	0 23	1 18	7 2	2.0	19 1	2.5
30	5 35	18 53	0 25	1 26	7 11	1.8	18 54	2.7
35	5 27	19 1	0 27	1 33	7 16	1.7	18 50	2.8
40	5 18	19 10	0 29	1 43	7 22	1.6	18 45	2.9
45	5 8	19 20	0 32	1 56	7 28	1.5	18 39	3.1
50	4 55	19 33	0 36	2 17	7 37	1.4	18 33	3.2
55	4 39	19 48	0 42	2 59	7 46	1.2	18 24	3.4
60	4 17	20 10	0 52	:::	7 59	.9	18 13	3.7
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	172	11.9	79	10	59.1	-93	325	38.0	4	36.0	244	53.9	-20	54.2	
2	201	5.6	79	10	40.6	-94	355	43.4	4	36.2	274	58.5	-20	54.2	
4	229	59.4	79	10	21.8	-95	25	48.7	4	36.4	305	3.0	-20	54.2	
6	258	53.2	80	10	2.7	-97	55	54.1	4	36.6	335	7.6	-20	54.3	
8	287	47.1	80	9	43.4	-98	85	59.4	4	36.8	5	12.1	-20	54.3	
10	316	41.1	80	9	23.7	-99	116	4.8	4	37.0	35	16.7	-20	54.3	
12	345	35.1	80	9	3.9	-101	146	10.1	4	37.2	65	21.2	-20	54.3	
14	14	29.2	81	8	43.8	-102	176	15.5	4	37.4	95	25.8	-20	54.4	
16	43	23.4	81	8	23.4	-103	206	20.9	4	37.6	125	30.3	-20	54.4	
18	72	17.6	81	8	2.8	-104	236	26.2	4	37.8	155	34.9	-20	54.4	
20	101	11.9	82	7	42.0	-105	266	31.6	4	38.0	185	39.5	-20	54.5	
22	130	6.3	82	7	21.0	-106	296	37.0	4	38.2	215	44.0	-20	54.5	
Δ								27		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	10.3	.1				

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
0	176	26.9	-14	36.0	139	30.8	206	43.1	-21	32.3	272	14.2	-16	10.3	
2	206	26.9	-14	34.4	169	35.7	236	41.4	-21	31.6	302	16.8	-16	11.0	
4	236	26.9	-14	32.8	199	40.6	266	39.7	-21	30.9	332	19.4	-16	11.7	
6	266	26.8	-14	31.1	229	45.5	296	38.1	-21	30.2	2	21.9	-16	12.3	
8	296	26.8	-14	29.5	259	50.5	326	36.4	-21	29.4	32	24.5	-16	13.0	
10	326	26.8	-14	27.9	289	55.4	356	34.7	-21	28.7	62	27.1	-16	13.6	
12	356	26.8	-14	26.3	320	3	26	33.1	-21	28.0	92	29.7	-16	14.3	
14	26	26.7	-14	24.7	350	5.3	56	31.4	-21	27.2	122	32.2	-16	14.9	
16	56	26.7	-14	23.1	20	10.2	86	29.7	-21	26.5	152	34.8	-16	15.6	
18	86	26.7	-14	21.4	50	15.1	116	28.1	-21	25.8	182	37.4	-16	16.2	
20	116	26.7	-14	19.8	80	20.0	146	26.4	-21	25.0	212	40.0	-16	16.9	
22	146	26.7	-14	18.2	110	25.0	176	24.7	-21	24.2	242	42.5	-16	17.5	
Δ		0		8				-8		4		13			-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	h	min
60	7	53	16	36	0	45	2	23	7	1	3.7	20	29	1.8		
55	7	34	16	55	0	39	2	3	7	8	3.4	20	26	1.9		
50	7	20	17	9	0	34	1	50	7	13	3.2	20	23	1.9		
45	7	9	17	20	0	31	1	39	7	18	3.1	20	20	2.0		
40	6	60	17	29	0	28	1	32	7	22	2.9	20	18	2.0		
35	6	52	17	37	0	26	1	26	7	25	2.8	20	16	2.0		
30	6	45	17	44	0	25	1	21	7	28	2.7	20	15	2.1		
20	6	32	17	57	0	23	1	15	7	33	2.5	20	12	2.1		
10	6	21	18	7	0	22	1	12	7	37	2.4	20	9	2.2		
0	6	11	18	18	0	21	1	11	7	41	2.2	20	7	2.2		
10	6	0	18	28	0	22	1	13	7	45	2.1	20	5	2.3		
20	5	49	18	39	0	23	1	17	7	50	2.0	20	2	2.3		
30	5	36	18	52	0	25	1	26	7	55	1.8	19	59	2.4		
35	5	28	18	60	0	27	1	33	7	58	1.7	19	57	2.4		
40	5	19	19	8	0	29	1	42	8	1	1.6	19	55	2.5		
45	5	9	19	19	0	32	1	55	8	5	1.4	19	53	2.5		
50	4	57	19	31	0	36	2	16	8	9	1.3	19	50	2.6		
55	4	41	19	46	0	42	2	56	8	15	1.1	19	46	2.7		
60	4	20	20	7	0	52	:	:	8	22	.9	19	42	2.8		

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	159	.7	82	6	59.8	-107	326	42.3	4	38.5	245	48.6	-20	54.5		
2	187	55.2	83	6	38.5	-108	356	47.7	4	38.7	275	53.1	-20	54.6		
4	216	49.7	83	6	16.9	-109	26	53.1	4	38.9	305	57.7	-20	54.6		
6	245	44.3	83	5	55.2	-109	56	58.4	4	39.1	336	2.2	-20	54.6		
8	274	39.0	84	5	33.3	-110	87	3.8	4	39.3	6	6.8	-20	54.7		
10	303	33.7	84	5	11.3	-111	117	9.2	4	39.5	36	11.4	-20	54.7		
12	332	28.5	84	4	49.1	-111	147	14.6	4	39.7	66	15.9	-20	54.7		
14	1	23.4	85	4	26.8	-112	177	19.9	4	39.9	96	20.5	-20	54.7		
16	30	18.3	85	4	4.4	-113	207	25.3	4	40.1	126	25.1	-20	54.8		
18	59	13.2	85	3	41.9	-113	237	30.7	4	40.3	156	29.6	-20	54.8		
20	88	8.2	85	3	19.3	-113	267	36.1	4	40.5	186	34.2	-20	54.8		
22	117	3.3	86	2	56.6	-114	297	41.4	4	40.7	216	38.7	-20	54.9		
Δ							27		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	12.3	.0	16.2	T _m	13 54	2.3	60.0	16.4
12	-14	12.9	T _{m☉}	12 h 14.2 min	Starost	1.4 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♀	10 14	.1	67	-3.3	♃	2 13	.0	187	-2.0
♂	5 51	.1	133	.3	♄	7 36	.0	106	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	
0	176	26.6	-14	16.6	140	29.9	206	23.1	-21	23.5	272	45.1	-16	18.2	
2	206	26.6	-14	14.9	170	34.8	236	21.4	-21	22.7	302	47.7	-16	18.8	
4	236	26.6	-14	13.3	200	39.8	266	19.8	-21	22.0	332	50.3	-16	19.4	
6	266	26.6	-14	11.7	230	44.7	296	18.1	-21	21.2	2	52.9	-16	20.1	
8	296	26.6	-14	10.0	260	49.6	326	16.5	-21	20.4	32	55.5	-16	20.7	
10	326	26.6	-14	8.4	290	54.5	356	14.8	-21	19.6	62	58.1	-16	21.4	
12	356	26.6	-14	6.7	320	59.5	26	13.1	-21	18.8	93	.6	-16	22.0	
14	26	26.6	-14	5.1	351	4.4	56	11.5	-21	18.1	123	3.2	-16	22.7	
16	56	26.5	-14	3.5	21	9.3	86	9.8	-21	17.3	153	5.8	-16	23.3	
18	86	26.5	-14	1.8	51	14.3	116	8.2	-21	16.5	183	8.4	-16	23.9	
20	116	26.5	-14	.2	81	19.2	146	6.5	-21	15.7	213	11.0	-16	24.6	
22	146	26.5	-13	58.5	111	24.1	176	4.9	-21	14.9	243	13.6	-16	25.2	
Δ		0		8				-8		4		13			-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	h	min
60	7	50	16	39	0	45	2	22	8	29	1.4	21	12	3.6		
55	7	32	16	57	0	38	2	3	8	30	1.5	21	10	3.3		
50	7	19	17	10	0	34	1	49	8	31	1.7	21	9	3.2		
45	7	8	17	21	0	31	1	39	8	32	1.7	21	7	3.0		
40	6	59	17	30	0	28	1	31	8	32	1.8	21	6	2.9		
35	6	51	17	38	0	26	1	26	8	33	1.9	21	5	2.8		
30	6	44	17	45	0	25	1	21	8	33	1.9	21	5	2.7		
20	6	32	17	57	0	23	1	15	8	34	2.1	21	3	2.5		
10	6	21	18	8	0	22	1	12	8	35	2.1	21	2	2.4		
0	6	11	18	18	0	21	1	11	8	35	2.2	21	1	2.2		
10	6	1	18	28	0	22	1	13	8	36	2.3	20	60	2.1		
20	5	49	18	39	0	23	1	17	8	37	2.4	20	58	2.0		
30	5	37	18	51	0	25	1	26	8	38	2.5	20	57	1.8		
35	5	29	18	59	0	27	1	33	8	38	2.6	20	56	1.7		
40	5	21	19	7	0	29	1	42	8	39	2.7	20	55	1.6		
45	5	11	19	17	0	32	1	55	8	39	2.7	20	54	1.5		
50	4	58	19	29	0	36	2	15	8	40	2.8	20	52	1.3		
55	4	43	19	44	0	42	2	52	8	41	3.0	20	50	1.1		
60	4	22	20	4	0	51	:	:	8	43	3.1	20	48	.9		

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	145	58.4	86	2	33.9	-114	327	46.8	4	41.0	246	43.3	-20	54.9		
2	174	53.6	86	2	11.1	-114	357	52.2	4	41.2	276	47.9	-20	54.9		
4	203	48.8	86	1	48.2	-115	27	57.6	4	41.4	306	52.4	-			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 26.5 -13 56.9		141 29.0	206 3.3 -21 14.0	273 16.2 -16 25.9		
2	206 26.5 -13 55.2		171 34.0	236 1.6 -21 13.2	303 18.8 -16 26.5		
4	236 26.5 -13 53.6		201 38.9	265 60.0 -21 12.4	333 21.4 -16 27.1		
6	266 26.5 -13 51.9		231 43.8	295 58.3 -21 11.6	3 24.0 -16 27.8		
8	296 26.5 -13 50.3		261 48.8	325 56.7 -21 10.7	33 26.6 -16 28.4		
10	326 26.5 -13 48.6		291 53.7	355 55.0 -21 9.9	63 29.2 -16 29.0		
12	356 26.6 -13 47.0		321 58.6	25 53.4 -21 9.1	93 31.8 -16 29.7		
14	26 26.6 -13 45.3		352 3.5	55 51.8 -21 8.2	123 34.4 -16 30.3		
16	56 26.6 -13 43.6		22 8.5	85 50.1 -21 7.4	153 37.0 -16 30.9		
18	86 26.6 -13 42.0		52 13.4	115 48.5 -21 6.5	183 39.6 -16 31.6		
20	116 26.6 -13 40.3		82 18.3	145 46.9 -21 5.7	213 42.2 -16 32.2		
22	146 26.6 -13 38.6		112 23.3	175 45.2 -21 4.8	243 44.8 -16 32.8		
Δ	0	8		-8	4	13	-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 48	16 42	0 45	2 22	9 3	.9	22 38	3.6
55	7 30	16 59	0 38	2 3	9 7	1.1	22 30	3.3
50	7 17	17 12	0 34	1 49	9 11	1.3	22 24	3.1
45	7 6	17 23	0 30	1 39	9 14	1.5	22 20	3.0
40	6 57	17 32	0 28	1 31	9 16	1.6	22 15	2.9
35	6 50	17 39	0 26	1 25	9 18	1.7	22 12	2.8
30	6 43	17 46	0 25	1 21	9 20	1.8	22 9	2.7
20	6 31	17 58	0 23	1 15	9 23	2.0	22 3	2.5
10	6 21	18 8	0 22	1 11	9 26	2.1	21 59	2.4
0	6 11	18 18	0 21	1 11	9 29	2.2	21 54	2.2
10	6 1	18 28	0 22	1 13	9 32	2.4	21 50	2.1
20	5 50	18 38	0 23	1 17	9 35	2.5	21 45	2.0
30	5 37	18 51	0 25	1 26	9 38	2.7	21 40	1.8
35	5 30	18 58	0 27	1 32	9 40	2.8	21 37	1.7
40	5 22	19 6	0 29	1 41	9 42	2.9	21 33	1.6
45	5 12	19 16	0 32	1 54	9 45	3.0	21 29	1.5
50	5 0	19 27	0 36	2 13	9 48	3.2	21 24	1.4
55	4 45	19 42	0 42	2 49	9 52	3.4	21 18	1.2
60	4 25	20 2	0 51	:::	9 58	3.6	21 10	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	133 2.6 87	2 .9	114	328 51.4	4 43.5	247 38.1	-20 55.3	
2	161 58.1 88	2 23.6	113	358 56.8	4 43.7	277 42.7	-20 55.3	
4	190 53.6 88	2 46.3	113	29 2.2	4 43.9	307 47.3	-20 55.3	
6	219 49.1 88	3 8.8	112	59 7.6	4 44.2	337 51.9	-20 55.3	
8	248 44.6 88	3 31.3	112	89 13.0	4 44.4	7 56.4	-20 55.4	
10	277 40.1 88	3 53.6	111	119 18.4	4 44.6	38 1.0	-20 55.4	
12	306 35.7 88	4 15.9	111	149 23.8	4 44.8	68 5.6	-20 55.4	
14	335 31.2 88	4 38.0	110	179 29.2	4 45.0	98 10.2	-20 55.5	
16	4 26.7 87	5 .0	109	209 34.5	4 45.2	128 14.7	-20 55.5	
18	33 22.2 87	5 21.9	108	239 39.9	4 45.5	158 19.3	-20 55.5	
20	62 17.6 87	5 43.6	108	269 45.3	4 45.7	188 23.9	-20 55.5	
22	91 13.1 87	6 5.1	107	299 50.7	4 45.9	218 28.5	-20 55.6	
Δ				27	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 13.9	.0	16.2	T _m	15 42	2.2	60.1 16.4		
12	-14 13.7	T _{m☉}	12 h 14.2 min	Starost	3.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	10 16	.1	65	-3.3	♃	2 4	.0	187	-2.0
♂	5 46	.1	132	.2	♄	7 28	.0	106	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 26.6 -13 37.0		142 28.2	205 43.6 -21 4.0	273 47.4 -16 33.5		
2	206 26.6 -13 35.3		172 33.1	235 42.0 -21 3.1	303 50.1 -16 34.1		
4	236 26.7 -13 33.6		202 38.0	265 40.3 -21 2.2	333 52.7 -16 34.7		
6	266 26.7 -13 32.0		232 43.0	295 38.7 -21 1.3	3 55.3 -16 35.3		
8	296 26.7 -13 30.3		262 47.9	325 37.1 -21 .5	33 57.9 -16 36.0		
10	326 26.7 -13 28.6		292 52.8	355 35.5 -20 59.6	64 .5 -16 36.6		
12	356 26.7 -13 26.9		322 57.8	25 33.8 -20 58.7	94 3.1 -16 37.2		
14	26 26.8 -13 25.3		353 2.7	55 32.2 -20 57.8	124 5.7 -16 37.8		
16	56 26.8 -13 23.6		23 7.6	85 30.6 -20 56.9	154 8.4 -16 38.5		
18	86 26.8 -13 21.9		53 12.5	115 29.0 -20 56.0	184 11.0 -16 39.1		
20	116 26.9 -13 20.2		83 17.5	145 27.4 -20 55.1	214 13.6 -16 39.7		
22	146 26.9 -13 18.5		113 22.4	175 25.7 -20 54.2	244 16.2 -16 40.3		
Δ	0	8		-8	4	13	-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 45	16 44	0 44	2 22	9 24	1.0	.. . .	.0
55	7 28	17 1	0 38	2 3	9 34	1.2	23 50	3.2
50	7 15	17 14	0 34	1 49	9 42	1.4	23 40	3.0
45	7 5	17 24	0 30	1 39	9 49	1.5	23 31	2.9
40	6 56	17 33	0 28	1 31	9 54	1.7	23 24	2.8
35	6 49	17 40	0 26	1 25	9 59	1.8	23 18	2.7
30	6 42	17 47	0 25	1 21	10 3	1.8	23 13	2.6
20	6 31	17 58	0 23	1 14	10 10	2.0	23 4	2.5
10	6 20	18 8	0 22	1 11	10 16	2.1	22 56	2.4
0	6 11	18 18	0 21	1 11	10 22	2.2	22 48	2.3
10	6 1	18 27	0 22	1 12	10 29	2.4	22 40	2.1
20	5 50	18 38	0 23	1 17	10 35	2.5	22 32	2.0
30	5 38	18 50	0 25	1 25	10 43	2.6	22 23	1.9
35	5 31	18 57	0 27	1 32	10 47	2.7	22 18	1.8
40	5 23	19 5	0 29	1 41	10 52	2.8	22 12	1.7
45	5 13	19 14	0 32	1 53	10 58	3.0	22 5	1.6
50	5 2	19 25	0 36	2 12	11 5	3.1	21 57	1.5
55	4 47	19 40	0 41	2 47	11 13	3.3	21 46	1.3
60	4 28	19 59	0 50	:::	11 25	3.5	21 33	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	120 8.5 87	6 26.4	106	329 56.1	4 46.1	248 33.0	-20 55.6	
2	149 4.0 87	6 47.6	105	0 1.5	4 46.3	278 37.6	-20 55.6	
4	177 59.3 87	7 8.6	104	30 6.9	4 46.6	308 42.2	-20 55.7	
6	206 54.7 87	7 29.4	103	60 12.3	4 46.8	338 46.8	-20 55.7	
8	235 50.1 87	7 50.0	102	90 17.7	4 47.0	8 51.4	-20 55.7	
10	264 45.4 86	8 10.4	101	120 23.1	4 47.2	38 56.0	-20 55.7	
12	293 40.6 86	8 30.5	100	150 28.5	4 47.4	69 .5	-20 55.8	
14	322 35.9 86	8 50.4	98	180 33.9	4 47.7	99 5.1	-20 55.8	
16	351 31.1 86	9 10.1	97	210 39.3	4 47.9	129 9.7	-20 55.8	
18	20 26.3 86	9 29.5	96	240 44.8	4 48.1	159 14.3	-20 55.8	
20	49 21.4 85	9 48.7	95	270 50.2	4 48.3	189 18.9	-20 55.9	
22	78 16.5 85	10 7.6	93	300 55.6	4 48.5	219 23.5	-20 55.9	
Δ				27	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 13.5	.0	16.2	T _m	16 35	2.2	59.8 16.3		
12	-14 12.9	T _{m☉}	12 h 14.2 min	Starost	4.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♂	10 18	.1	63	-3.3	♃	1 60	.0	187	-2.0
♂	5 44	.1	131	.2	♄	7 25	.0	106	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	26.9	-13	16.9	143	27.3	205	24.1	-20	53.3	274	18.8	-16	40.9	
2	206	26.9	-13	15.2	173	32.2	235	22.5	-20	52.3	304	21.5	-16	41.6	
4	236	27.0	-13	13.5	203	37.2	265	20.9	-20	51.4	334	24.1	-16	42.2	
6	266	27.0	-13	11.8	233	42.1	295	19.3	-20	50.5	4	26.7	-16	42.8	
8	296	27.0	-13	10.1	263	47.0	325	17.7	-20	49.5	34	29.4	-16	43.4	
10	326	27.1	-13	8.4	293	52.0	355	16.1	-20	48.6	64	32.0	-16	44.0	
12	356	27.1	-13	6.7	323	56.9	25	14.5	-20	47.7	94	34.6	-16	44.6	
14	26	27.2	-13	5.0	354	1.8	55	12.8	-20	46.7	124	37.2	-16	45.3	
16	56	27.2	-13	3.3	24	6.7	85	11.2	-20	45.8	154	39.9	-16	45.9	
18	86	27.3	-13	1.6	54	11.7	115	9.6	-20	44.8	184	42.5	-16	46.5	
20	116	27.3	-12	59.9	84	16.6	145	8.0	-20	43.9	214	45.1	-16	47.1	
22	146	27.3	-12	58.2	114	21.5	175	6.4	-20	42.9	244	47.8	-16	47.7	
Δ		0		8				-8		5			13		-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 42	16 47	0 44	2 21	9 48	1.2	0 5	3.4
55	7 26	17 3	0 38	2 3	10 4	1.4	...	.0
50	7 13	17 16	0 34	1 49	10 16	1.6	...	.0
45	7 3	17 26	0 30	1 39	10 26	1.7	...	.0
40	6 55	17 34	0 28	1 31	10 34	1.8	...	.0
35	6 48	17 41	0 26	1 25	10 41	1.9	...	.0
30	6 41	17 47	0 25	1 21	10 47	1.9	...	.0
20	6 30	17 59	0 23	1 14	10 58	2.1	...	.0
10	6 20	18 8	0 22	1 11	11 7	2.2	23 52	2.4
0	6 11	18 18	0 21	1 11	11 16	2.3	23 42	2.3
10	6 1	18 27	0 22	1 12	11 25	2.4	23 32	2.2
20	5 51	18 37	0 23	1 17	11 35	2.5	23 21	2.1
30	5 39	18 49	0 25	1 25	11 46	2.6	23 9	2.0
35	5 32	18 56	0 27	1 32	11 53	2.7	23 1	1.9
40	5 24	19 3	0 29	1 40	11 60	2.7	22 53	1.9
45	5 15	19 13	0 32	1 53	12 9	2.8	22 44	1.8
50	5 4	19 24	0 35	2 11	12 19	3.0	22 32	1.7
55	4 49	19 38	0 41	2 44	12 32	3.1	22 18	1.5
60	4 31	19 56	0 50	:::	12 49	3.3	21 59	1.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	107	11.5	85	10	26.3	92	331	1.0	4	48.8	249	28.0	-20	55.9		
2	136	6.5	85	10	44.6	90	1	6.4	4	49.0	279	32.6	-20	56.0		
4	165	1.5	85	11	2.7	89	31	11.8	4	49.2	309	37.2	-20	56.0		
6	193	56.4	84	11	20.5	87	61	17.2	4	49.4	339	41.8	-20	56.0		
8	222	51.2	84	11	38.0	86	91	22.6	4	49.7	9	46.4	-20	56.0		
10	251	46.0	84	11	55.1	84	121	28.0	4	49.9	39	51.0	-20	56.1		
12	280	40.8	84	12	12.0	83	151	33.4	4	50.1	69	55.6	-20	56.1		
14	309	35.5	83	12	28.5	81	181	38.8	4	50.3	100	.2	-20	56.1		
16	338	30.2	83	12	44.7	79	211	44.3	4	50.6	130	4.8	-20	56.1		
18	7	24.8	83	13	.6	78	241	49.7	4	50.8	160	9.4	-20	56.2		
20	36	19.4	83	13	16.2	76	271	55.1	4	51.0	190	13.9	-20	56.2		
22	65	13.9	82	13	31.4	74	302	.5	4	51.2	220	18.5	-20	56.2		
Δ								27		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	-14	12.4	.1	16.2	T _m	17 29	2.3	59.4	16.2
12	-14	11.4	T _{m☉}	12 h 14.2 min	Starost	5.4 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 19	.1	62	-3.3	♄	1 56	.0	188	-2.0
	5 42	.1	131	.2	♂	7 21	.0	106	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	27.4	-12	56.5	144	26.5	205	4.8	-20	41.9	274	50.4	-16	48.3	
2	206	27.4	-12	54.8	174	31.4	235	3.2	-20	41.0	304	53.1	-16	48.9	
4	236	27.5	-12	53.1	204	36.3	265	1.6	-20	40.0	334	55.7	-16	49.5	
6	266	27.5	-12	51.4	234	41.2	295	.0	-20	39.0	4	58.3	-16	50.1	
8	296	27.6	-12	49.7	264	46.2	324	58.4	-20	38.0	35	1.0	-16	50.8	
10	326	27.6	-12	48.0	294	51.1	354	56.9	-20	37.0	65	3.6	-16	51.4	
12	356	27.7	-12	46.3	324	56.0	24	55.3	-20	36.0	95	6.3	-16	52.0	
14	26	27.8	-12	44.6	355	1.0	54	53.7	-20	35.0	125	8.9	-16	52.6	
16	56	27.8	-12	42.8	25	5.9	84	52.1	-20	34.0	155	11.6	-16	53.2	
18	86	27.9	-12	41.1	55	10.8	114	50.5	-20	33.0	185	14.2	-16	53.8	
20	116	27.9	-12	39.4	85	15.7	144	48.9	-20	32.0	215	16.9	-16	54.4	
22	146	28.0	-12	37.7	115	20.7	174	47.3	-20	31.0	245	19.5	-16	55.0	
Δ		0		9				-8		5			13		-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 40	16 50	0 44	2 21	10 17	1.5	1 27	3.2
55	7 24	17 5	0 38	2 2	10 38	1.7	1 8	3.0
50	7 12	17 17	0 33	1 49	10 54	1.8	0 53	2.9
45	7 2	17 27	0 30	1 39	11 6	1.9	0 41	2.8
40	6 54	17 35	0 28	1 31	11 17	1.9	0 32	2.7
35	6 47	17 42	0 26	1 25	11 26	2.0	0 23	2.6
30	6 40	17 48	0 24	1 20	11 34	2.1	0 16	2.6
20	6 30	17 59	0 23	1 14	11 47	2.1	0 3	2.4
10	6 20	18 9	0 23	1 11	11 59	2.2	...	.0
0	6 11	18 18	0 21	1 10	12 11	2.3	...	.0
10	6 1	18 27	0 22	1 12	12 22	2.3	...	.0
20	5 51	18 37	0 23	1 17	12 34	2.4	...	.0
30	5 40	18 48	0 25	1 25	12 48	2.5	23 56	2.1
35	5 33	18 55	0 27	1 31	12 56	2.6	23 48	2.1
40	5 25	19 2	0 29	1 40	13 6	2.6	23 38	2.0
45	5 16	19 11	0 31	1 52	13 17	2.7	23 26	2.0
50	5 5	19 22	0 35	2 10	13 30	2.8	23 12	1.9
55	4 52	19 35	0 41	2 42	13 47	2.9	22 55	1.8
60	4 33	19 53	0 49	:::	14 9	3.0	22 31	1.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	94	8.4	82	13	46.2	72	332	5.9	4	51.5	250	23.1	-20	56.2		
2	123	2.9	82	14	.7	71	2	11.3	4	51.7	280	27.7	-20	56.3		
4	151	57.3	82	14	14.8	69	32	16.8	4	51.9	310	32.3	-20	56.3		
6	180	51.7	82	14	28.6	67	62	22.2	4	52.1	340	36.9	-20	56.3		
8	209	46.0	81	14	42.0	65	92	27.6	4	52.4	10	41.5	-20	56.3		
10	238	40.3	81	14	55.0	63	122	33.0	4	52.6	40	46.1	-20	56.4		
12	267	34.6	81	15	7.7	61	152	38.4	4	52.8	70	50.7	-20	56.4		
14	296	28.8	81	15	19.9	59	182	43.9	4	53.0	100	55.3	-20	56.4		
16	325	23.0	81	15	31.8	57	212	49.3	4	53.3	130	59.9	-20	56.4		
18	354	17.1	81	15	43.2	55	242	54.7	4	53.5	161	4.5	-20	56.5		
20	23	11.3	81	15	54.3	53	273	.1	4	53.7	191	9.1	-20	56.5		
22	52	5.4	81	16	5.0	51	303	5.6	4	54.0	221	13.7	-20	56.5		
Δ								27		1			23		0	

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

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	28.1	-12	36.0	145	25.6	204	45.7	-20	30.0	275	22.2	-16	55.6	
2	206	28.1	-12	34.2	175	30.5	234	44.2	-20	29.0	305	24.8	-16	56.2	
4	236	28.2	-12	32.5	205	35.5	264	42.6	-20	27.9	335	27.5	-16	56.8	
6	266	28.2	-12	30.8	235	40.4	294	41.0	-20	26.9	5	30.1	-16	57.4	
8	296	28.3	-12	29.1	265	45.3	324	39.4	-20	25.9	35	32.8	-16	58.0	
10	326	28.4	-12	27.3	295	50.2	354	37.8	-20	24.8	65	35.4	-16	58.6	
12	356	28.5	-12	25.6	325	55.2	24	36.3	-20	23.8	95	38.1	-16	59.2	
14	26	28.5	-12	23.9	356	.1	54	34.7	-20	22.7	125	40.8	-16	59.8	
16	56	28.6	-12	22.2	26	5.0	84	33.1	-20	21.7	155	43.4	-17	.4	
18	86	28.7	-12	20.4	56	10.0	114	31.6	-20	20.6	185	46.1	-17	1.0	
20	116	28.7	-12	18.7	86	14.9	144	30.0	-20	19.6	215	48.8	-17	1.6	
22	146	28.8	-12	17.0	116	19.8	174	28.4	-20	18.5	245	51.4	-17	2.2	
Δ		0		9				-8		5			13		-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 37	16 52	0 44	2 21	10 53	1.9	2 44	2.8
55	7 22	17 7	0 38	2 2	11 18	2.0	2 20	2.7
50	7 10	17 19	0 33	1 49	11 36	2.0	2 2	2.6
45	7 0	17 28	0 30	1 39	11 51	2.1	1 48	2.6
40	6 52	17 36	0 28	1 31	12 3	2.1	1 36	2.5
35	6 46	17 43	0 26	1 25	12 14	2.1	1 26	2.5
30	6 40	17 49	0 24	1 20	12 23	2.2	1 17	2.4
20	6 29	17 59	0 22	1 14	12 39	2.2	1 2	2.4
10	6 20	18 9	0 21	1 11	12 52	2.2	0 49	2.3
0	6 11	18 18	0 21	1 10	13 5	2.3	0 37	2.3
10	6 2	18 26	0 22	1 12	13 18	2.3	0 25	2.2
20	5 52	18 36	0 23	1 16	13 32	2.3	0 11	2.2
30	5 41	18 47	0 25	1 25	13 48	2.4	...	.0
35	5 34	18 54	0 26	1 31	13 58	2.4	...	.0
40	5 27	19 1	0 29	1 39	14 8	2.4	...	.0
45	5 18	19 10	0 31	1 51	14 21	2.5	...	.0
50	5 7	19 20	0 35	2 9	14 36	2.5	23 58	2.1
55	4 54	19 33	0 41	2 39	14 56	2.5	23 38	2.1
60	4 36	19 50	0 49	:::	15 22	2.6	23 11	2.1
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	80	59.5	80	16 15.3	49	333	11.0	4 54.2	251	18.3	-20	56.5		
2	109	53.6	80	16 25.1	47	3	16.4	4 54.4	281	22.9	-20	56.6		
4	138	47.7	80	16 34.6	45	33	21.8	4 54.6	311	27.5	-20	56.6		
6	167	41.8	80	16 43.6	43	63	27.3	4 54.9	341	32.1	-20	56.6		
8	196	35.8	80	16 52.2	41	93	32.7	4 55.1	11	36.7	-20	56.6		
10	225	29.9	80	17 .4	39	123	38.1	4 55.3	41	41.3	-20	56.7		
12	254	24.0	80	17 8.2	37	153	43.6	4 55.6	71	45.9	-20	56.7		
14	283	18.0	80	17 15.6	35	183	49.0	4 55.8	101	50.5	-20	56.7		
16	312	12.1	81	17 22.5	33	213	54.4	4 56.0	131	55.1	-20	56.7		
18	341	6.2	81	17 29.1	30	243	59.9	4 56.3	161	59.7	-20	56.8		
20	10	.4	81	17 35.1	28	274	5.3	4 56.5	192	4.4	-20	56.8		
22	38	54.5	81	17 40.8	26	304	10.7	4 56.7	222	9.0	-20	56.8		
Δ							27	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	-14	7.8	.1	16.2	T _m	19 18	2.3	58.4	15.9
12	-14	6.1	T _{m☉}	12 h 14.1 min	Starost	7.4 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 21	.1	59	-3.2	♄	1 47	.0	188	-2.0
	5 38	.1	130	.2	♅	7 14	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	28.9	-12	15.2	146	24.7	204	26.9	-20	17.5	275	54.1	-17	2.8	
2	206	29.0	-12	13.5	176	29.7	234	25.3	-20	16.4	305	56.8	-17	3.3	
4	236	29.1	-12	11.7	206	34.6	264	23.7	-20	15.3	335	59.4	-17	3.9	
6	266	29.1	-12	10.0	236	39.5	294	22.2	-20	14.2	6	2.1	-17	4.5	
8	296	29.2	-12	8.3	266	44.4	324	20.6	-20	13.1	36	4.8	-17	5.1	
10	326	29.3	-12	6.5	296	49.4	354	19.0	-20	12.0	66	7.4	-17	5.7	
12	356	29.4	-12	4.8	326	54.3	24	17.5	-20	11.0	96	10.1	-17	6.3	
14	26	29.5	-12	3.0	356	59.2	54	15.9	-20	9.9	126	12.8	-17	6.9	
16	56	29.6	-12	1.3	27	4.2	84	14.4	-20	8.8	156	15.5	-17	7.5	
18	86	29.7	-11	59.5	57	9.1	114	12.8	-20	7.7	186	18.1	-17	8.1	
20	116	29.7	-11	57.8	87	14.0	144	11.3	-20	6.5	216	20.8	-17	8.6	
22	146	29.8	-11	56.0	117	18.9	174	9.7	-20	5.4	246	23.5	-17	9.2	
Δ		0		9				-8		5			13		-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 34	16 55	0 44	2 21	11 37	2.3	3 52	2.4
55	7 19	17 10	0 38	2 2	12 5	2.3	3 25	2.4
50	7 8	17 21	0 33	1 48	12 25	2.3	3 5	2.3
45	6 59	17 30	0 30	1 38	12 41	2.3	2 49	2.3
40	6 51	17 37	0 28	1 31	12 54	2.3	2 36	2.3
35	6 45	17 44	0 26	1 25	13 5	2.3	2 26	2.3
30	6 39	17 50	0 24	1 20	13 15	2.3	2 16	2.3
20	6 28	17 60	0 22	1 14	13 32	2.2	1 59	2.3
10	6 19	18 9	0 21	1 11	13 46	2.2	1 45	2.3
0	6 11	18 17	0 21	1 10	13 60	2.2	1 32	2.3
10	6 2	18 26	0 22	1 12	14 14	2.2	1 18	2.2
20	5 52	18 35	0 23	1 16	14 28	2.2	1 4	2.2
30	5 41	18 46	0 25	1 24	14 45	2.2	0 47	2.2
35	5 35	18 52	0 26	1 31	14 55	2.2	0 37	2.2
40	5 28	18 60	0 28	1 39	15 7	2.2	0 26	2.2
45	5 19	19 8	0 31	1 51	15 20	2.2	0 14	2.2
50	5 9	19 18	0 35	2 8	15 36	2.2	...	.0
55	4 56	19 31	0 40	2 37	15 57	2.2	...	.0
60	4 39	19 48	0 48	:::	16 25	2.1	...	.0
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	67	48.7	81	17 46.0	24	334	16.2	4 57.0	252	13.6	-20	56.8		
2	96	43.0	81	17 50.8	22	4	21.6	4 57.2	282	18.2	-20	56.9		
4	125	37.2	82	17 55.2	20	34	27.0	4 57.4	312	22.8	-20	56.9		
6	154	31.5	82	17 59.1	18	64	32.5	4 57.7	342	27.4	-20	56.9		
8	183	25.9	82	18 2.7	15	94	37.9	4 57.9	12	32.0	-20	56.9		
10	212	20.3	82	18 5.7	13	124	43.3	4 58.1	42	36.6	-20	57.0		
12	241	14.8	83	18 8.4	11	154	48.8	4 58.4	72	41.2	-20	57.0		
14	270	9.3	83	18 10.6	9	184	54.2	4 58.6	102	45.8	-20	57.0		
16	299	4.0	83	18 12.4	7	214	59.7	4 58.8	132	50.5	-20	57.0		
18	327	58.7	84	18 13.8	5	245	5.1	4 59.1	162	55.1	-20	57.1		
20	356	53.4	84	18 14.7	3	275	10.5	4 59.3	192	59.7	-20	57.1		
22	25	48.3	85	18 15.2	0	305	16.0	4 59.5	223	4.3	-20	57.1		
Δ							27	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	-14	4.4	.2	16.2	T _m	20 13	2.2	57.9	15.8
12	-14	2.3	T _{m☉}	12 h 14.0 min	Starost	8.4 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	29.9	-11	54.3	147	23.9	204	8.2	-20	4.3	276	26.2	-17	9.8	
2	206	30.0	-11	52.5	177	28.8	234	6.6	-20	3.2	306	28.9	-17	10.4	
4	236	30.1	-11	50.8	207	33.7	264	5.1	-20	2.1	336	31.6	-17	11.0	
6	266	30.2	-11	49.0	237	38.7	294	3.5	-20	.9	6	34.2	-17	11.6	
8	296	30.3	-11	47.3	267	43.6	324	2.0	-19	59.8	36	36.9	-17	12.1	
10	326	30.4	-11	45.5	297	48.5	354	.5	-19	58.7	66	39.6	-17	12.7	
12	356	30.5	-11	43.7	327	53.4	23	58.9	-19	57.5	96	42.3	-17	13.3	
14	26	30.6	-11	42.0	357	58.4	53	57.4	-19	56.4	126	45.0	-17	13.9	
16	56	30.7	-11	40.2	28	3.3	83	55.9	-19	55.2	156	47.7	-17	14.5	
18	86	30.8	-11	38.4	58	8.2	113	54.3	-19	54.1	186	50.4	-17	15.0	
20	116	30.9	-11	36.7	88	13.2	143	52.8	-19	52.9	216	53.1	-17	15.6	
22	146	31.0	-11	34.9	118	18.1	173	51.3	-19	51.8	246	55.8	-17	16.2	
Δ		1		9				-8		6			13		-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 32	16 57	0 43	2 20	12 31	2.6	4 49	1.9
55	7 17	17 12	0 37	2 2	12 59	2.5	4 22	2.0
50	7 6	17 22	0 33	1 48	13 19	2.5	4 1	2.0
45	6 57	17 31	0 30	1 38	13 35	2.4	3 45	2.1
40	6 50	17 39	0 28	1 31	13 48	2.4	3 32	2.1
35	6 43	17 45	0 26	1 25	13 59	2.3	3 21	2.1
30	6 38	17 51	0 24	1 20	14 9	2.3	3 11	2.1
20	6 28	18 0	0 22	1 14	14 25	2.3	2 54	2.2
10	6 19	18 9	0 21	1 11	14 40	2.2	2 40	2.2
0	6 11	18 17	0 21	1 10	14 54	2.2	2 26	2.2
10	6 2	18 26	0 21	1 12	15 7	2.1	2 12	2.2
20	5 53	18 35	0 23	1 16	15 22	2.1	1 57	2.3
30	5 42	18 45	0 25	1 24	15 39	2.0	1 40	2.3
35	5 36	18 51	0 26	1 30	15 48	2.0	1 30	2.3
40	5 29	18 58	0 28	1 39	15 60	2.0	1 19	2.3
45	5 21	19 6	0 31	1 50	16 13	1.9	1 6	2.3
50	5 11	19 16	0 35	2 7	16 29	1.9	0 49	2.4
55	4 58	19 28	0 40	2 35	16 49	1.8	0 29	2.4
60	4 42	19 45	0 48	3 50	17 16	1.7	0 0	2.5

UT	MESEC				JUPITER				SATURN			
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	54	43.3	85	18 15.3	-2	335	21.4	4 59.8	253	8.9	-20	57.1
2	83	38.3	86	18 14.9	-4	5	26.9	4 60.0	283	13.5	-20	57.1
4	112	33.5	86	18 14.2	-6	35	32.3	5 .2	313	18.2	-20	57.2
6	141	28.8	87	18 13.0	-8	65	37.8	5 .5	343	22.8	-20	57.2
8	170	24.2	88	18 11.4	-10	95	43.2	5 .7	13	27.4	-20	57.2
10	199	19.7	88	18 9.4	-12	125	48.7	5 .9	43	32.0	-20	57.2
12	228	15.3	89	18 7.0	-14	155	54.1	5 1.2	73	36.6	-20	57.3
14	257	11.0	89	18 4.2	-16	185	59.6	5 1.4	103	41.3	-20	57.3
16	286	6.9	90	18 .9	-18	216	5.0	5 1.6	133	45.9	-20	57.3
18	315	2.9	91	17 57.3	-20	246	10.5	5 1.9	163	50.5	-20	57.3
20	343	59.1	92	17 53.3	-22	276	15.9	5 2.1	193	55.1	-20	57.3
22	12	55.4	92	17 48.9	-24	306	21.4	5 2.4	223	59.7	-20	57.4
Δ							27	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	.3	.2	16.2	T _m 21 6	2.2	57.3 15.6
12	-13 57.9		T _{m☉} 12 h 14.0 min	Starost 9.4 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 24	.1	57	-3.2	♄	1 38	.0	188	-2.0
	5 34	.1	129	.1	♅	7 6	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	31.1	-11	33.1	148	23.0	203	49.7	-19	50.6	276	58.5	-17	16.8	
2	206	31.2	-11	31.4	178	27.9	233	48.2	-19	49.4	307	1.2	-17	17.3	
4	236	31.4	-11	29.6	208	32.9	263	46.7	-19	48.2	337	3.9	-17	17.9	
6	266	31.5	-11	27.8	238	37.8	293	45.2	-19	47.1	7	6.6	-17	18.5	
8	296	31.6	-11	26.1	268	42.7	323	43.6	-19	45.9	37	9.3	-17	19.1	
10	326	31.7	-11	24.3	298	47.7	353	42.1	-19	44.7	67	12.0	-17	19.6	
12	356	31.8	-11	22.5	328	52.6	23	40.6	-19	43.5	97	14.7	-17	20.2	
14	26	31.9	-11	20.7	358	57.5	53	39.1	-19	42.3	127	17.4	-17	20.8	
16	56	32.0	-11	19.0	29	2.4	83	37.6	-19	41.1	157	20.1	-17	21.3	
18	86	32.2	-11	17.2	59	7.4	113	36.0	-19	39.9	187	22.8	-17	21.9	
20	116	32.3	-11	15.4	89	12.3	143	34.5	-19	38.7	217	25.5	-17	22.5	
22	146	32.4	-11	13.6	119	17.2	173	33.0	-19	37.5	247	28.3	-17	23.0	
Δ		1		9				-8		6			14		-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 29	17 0	0 43	2 20	13 34	2.9	5 35	1.5
55	7 15	17 14	0 37	2 2	13 59	2.7	5 9	1.6
50	7 4	17 24	0 33	1 48	14 18	2.6	4 50	1.7
45	6 56	17 33	0 30	1 38	14 33	2.5	4 35	1.8
40	6 49	17 40	0 28	1 31	14 45	2.4	4 23	1.9
35	6 42	17 46	0 26	1 25	14 55	2.4	4 12	1.9
30	6 37	17 51	0 24	1 20	15 4	2.3	4 3	2.0
20	6 27	18 1	0 22	1 14	15 20	2.2	3 46	2.0
10	6 19	18 9	0 21	1 11	15 33	2.2	3 32	2.1
0	6 11	18 17	0 21	1 10	15 46	2.1	3 19	2.1
10	6 2	18 25	0 21	1 12	15 59	2.0	3 6	2.2
20	5 53	18 34	0 23	1 16	16 12	2.0	2 51	2.3
30	5 43	18 44	0 25	1 24	16 28	1.9	2 35	2.3
35	5 37	18 50	0 26	1 30	16 37	1.8	2 26	2.4
40	5 30	18 57	0 28	1 38	16 47	1.8	2 15	2.4
45	5 22	19 5	0 31	1 50	16 59	1.7	2 2	2.5
50	5 12	19 14	0 35	2 6	17 14	1.6	1 46	2.5
55	5 0	19 26	0 40	2 33	17 32	1.5	1 26	2.6
60	4 44	19 42	0 48	3 39	17 57	1.3	0 59	2.8

UT	MESEC				JUPITER				SATURN			
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	41	51.9	93	17 44.0	-26	336	26.8	5 2.6	254	4.4	-20	57.4
2	70	48.5	94	17 38.8	-28	6	32.3	5 2.8	284	9.0	-20	57.4
4	99	45.3	95	17 33.2	-30	36	37.7	5 3.1	314	13.6	-20	57.4
6	128	42.2	95	17 27.3	-32	66	43.2	5 3.3	344	18.2	-20	57.5
8	157	39.3	96	17 20.9	-34	96	48.6	5 3.6	14	22.9	-20	57.5
10	186	36.5	97	17 14.2	-35	126	54.1	5 3.8	44	27.5	-20	57.5
12	215	34.0	98	17 7.1	-37	156	59.5	5 4.0	74	32.1	-20	57.5
14	244	31.6	99	16 59.7	-39	187	5.0	5 4.3	104	36.8	-20	57.5
16	273	29.4	100	16 51.9	-41	217	10.4	5 4.5	134	41.4	-20	57.6
18	302	27.3	101	16 43.7	-42	247	15.9	5 4.8	164	46.0	-20	57.6
20	331	25.5	102	16 35.2	-44	277	21.3	5 5.0	194	50.6	-20	57.6
22	0	23.8	103	16 26.4	-46	307	26.8	5 5.2	224	55.3	-20	57.6
Δ							27	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 55.4		.2	16.2	T _m 21 58	2.1	56.8 15.5
12	-13 52.7		T _{m☉} 12 h 13.9 min	Starost 10.4 d	Faza ☉		

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min								

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	32.5	-11	11.8	149	22.2	203	31.5	-19	36.3	277	31.0	-17	23.6	
2	206	32.6	-11	10.0	179	27.1	233	30.0	-19	35.1	307	33.7	-17	24.2	
4	236	32.8	-11	8.3	209	32.0	263	28.5	-19	33.8	337	36.4	-17	24.7	
6	266	32.9	-11	6.5	239	36.9	293	27.0	-19	32.6	7	39.1	-17	25.3	
8	296	33.0	-11	4.7	269	41.9	323	25.5	-19	31.4	37	41.8	-17	25.9	
10	326	33.1	-11	2.9	299	46.8	353	24.0	-19	30.2	67	44.6	-17	26.4	
12	356	33.3	-11	1.1	329	51.7	3	22.5	-19	28.9	97	47.3	-17	27.0	
14	26	33.4	-10	59.3	359	56.7	53	21.0	-19	27.7	127	50.0	-17	27.5	
16	56	33.5	-10	57.5	30	1.6	83	19.5	-19	26.4	157	52.7	-17	28.1	
18	86	33.7	-10	55.7	60	6.5	113	18.0	-19	25.2	187	55.5	-17	28.7	
20	116	33.8	-10	53.9	90	11.4	143	16.5	-19	23.9	217	58.2	-17	29.2	
22	146	33.9	-10	52.1	120	16.4	173	15.0	-19	22.7	248	.9	-17	29.8	
Δ		1		9				-7		6			14		-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 26	17 3	0 43	2 20	14 43	3.0	6 11	1.2
55	7 13	17 16	0 37	2 1	15 4	2.8	5 49	1.4
50	7 2	17 26	0 33	1 48	15 20	2.7	5 32	1.5
45	6 54	17 34	0 30	1 38	15 33	2.5	5 19	1.6
40	6 47	17 41	0 28	1 31	15 43	2.5	5 8	1.7
35	6 41	17 47	0 26	1 25	15 52	2.4	4 58	1.7
30	6 36	17 52	0 24	1 20	16 0	2.3	4 50	1.8
20	6 27	18 1	0 22	1 14	16 14	2.2	4 35	1.9
10	6 18	18 9	0 21	1 11	16 25	2.1	4 22	2.0
0	6 10	18 17	0 21	1 10	16 37	2.0	4 11	2.1
10	6 2	18 25	0 21	1 12	16 48	1.9	3 59	2.1
20	5 54	18 33	0 23	1 16	16 59	1.8	3 46	2.2
30	5 44	18 43	0 25	1 24	17 13	1.7	3 31	2.3
35	5 38	18 49	0 26	1 30	17 21	1.7	3 22	2.4
40	5 31	18 56	0 28	1 38	17 29	1.6	3 13	2.5
45	5 24	19 3	0 31	1 49	17 40	1.5	3 1	2.5
50	5 14	19 12	0 35	2 5	17 52	1.4	2 47	2.6
55	5 2	19 24	0 40	2 31	18 8	1.2	2 29	2.8
60	4 47	19 39	0 47	3 31	18 28	1.0	2 6	3.0

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'					
0	29	22.4	104	16	17.2	-48	337	32.3	5	5.5	254	59.9	-20	57.6	
2	58	21.1	105	16	7.7	-49	7	37.7	5	5.7	285	4.5	-20	57.7	
4	87	20.0	105	15	57.9	-51	37	43.2	5	6.0	315	9.2	-20	57.7	
6	116	19.1	106	15	47.7	-52	67	48.6	5	6.2	345	13.8	-20	57.7	
8	145	18.4	107	15	37.2	-54	97	54.1	5	6.4	15	18.4	-20	57.7	
10	174	17.9	108	15	26.5	-55	127	59.6	5	6.7	45	23.1	-20	57.8	
12	203	17.6	109	15	15.4	-57	158	5.0	5	6.9	75	27.7	-20	57.8	
14	232	17.4	110	15	4.0	-58	188	10.5	5	7.2	105	32.4	-20	57.8	
16	261	17.5	111	14	52.3	-60	218	16.0	5	7.4	135	37.0	-20	57.8	
18	290	17.8	112	14	40.3	-61	248	21.4	5	7.7	165	41.6	-20	57.8	
20	319	18.3	113	14	28.1	-63	278	26.9	5	7.9	195	46.3	-20	57.9	
22	348	19.0	114	14	15.6	-64	308	32.4	5	8.1	225	50.9	-20	57.9	
Δ								27		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 49.9	.3	16.2	T _m	22 48	2.0	56.3	15.3
12	-13 46.8	T _{m☉}	12 h 13.8 min	Starost	11.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	10 26	.1	54	-3.2	♃	1 30	.0	188	-2.0
♂	5 29	.1	128	.1	♄	6 59	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	176	34.1	-10	50.3	150	21.3	203	13.5	-19	21.4	278	3.7	-17	30.3	
2	206	34.2	-10	48.5	180	26.2	233	12.0	-19	20.1	308	6.4	-17	30.9	
4	236	34.3	-10	46.7	210	31.1	263	10.5	-19	18.9	338	9.1	-17	31.4	
6	266	34.5	-10	44.9	240	36.1	293	9.1	-19	17.6	8	11.9	-17	32.0	
8	296	34.6	-10	43.1	270	41.0	323	7.6	-19	16.3	38	14.6	-17	32.6	
10	326	34.8	-10	41.3	300	45.9	353	6.1	-19	15.0	68	17.3	-17	33.1	
12	356	34.9	-10	39.5	330	50.9	23	4.6	-19	13.8	98	20.1	-17	33.7	
14	26	35.1	-10	37.7	0	55.8	53	3.1	-19	12.5	128	22.8	-17	34.2	
16	56	35.2	-10	35.9	31	.7	83	1.7	-19	11.2	158	25.6	-17	34.8	
18	86	35.3	-10	34.1	61	5.6	113	.2	-19	9.9	188	28.3	-17	35.3	
20	116	35.5	-10	32.3	91	10.6	142	58.7	-19	8.6	218	31.0	-17	35.9	
22	146	35.6	-10	30.5	121	15.5	172	57.2	-19	7.3	248	33.8	-17	36.4	
Δ		1		9				-7		6			14		-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 23	17 5	0 43	2 20	15 54	3.0	6 40	.9
55	7 10	17 18	0 37	2 1	16 11	2.8	6 22	1.1
50	7 1	17 28	0 33	1 48	16 24	2.7	6 8	1.3
45	6 53	17 35	0 30	1 38	16 34	2.5	5 57	1.4
40	6 46	17 42	0 28	1 30	16 42	2.4	5 48	1.5
35	6 40	17 48	0 26	1 25	16 49	2.4	5 40	1.6
30	6 35	17 53	0 24	1 20	16 56	2.3	5 33	1.7
20	6 26	18 2	0 22	1 14	17 6	2.1	5 21	1.8
10	6 18	18 10	0 21	1 11	17 16	2.0	5 10	1.9
0	6 10	18 17	0 21	1 10	17 25	1.9	5 0	2.0
10	6 3	18 25	0 21	1 11	17 34	1.8	4 50	2.1
20	5 54	18 33	0 23	1 16	17 43	1.7	4 39	2.2
30	5 45	18 42	0 25	1 24	17 54	1.6	4 27	2.3
35	5 39	18 48	0 26	1 30	18 0	1.5	4 20	2.4
40	5 33	18 54	0 28	1 37	18 7	1.4	4 12	2.5
45	5 25	19 1	0 31	1 48	18 15	1.3	4 2	2.5
50	5 16	19 10	0 34	2 4	18 25	1.2	3 50	2.7
55	5 5	19 21	0 39	2 30	18 37	1.1	3 36	2.8
60	4 50	19 36	0 47	3 24	18 53	.9	3 16	3.0

UT	MESEC				JUPITER			SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'					
0	17	19.9	115	14	2.8	-65	338	37.8	5	8.4	255	55.5	-20	57.9	
2	46	20.9	116	13	49.7	-67	8	43.3	5	8.6	286	.2	-20	57.9	
4	75	22.2	117	13	36.4	-68	38	48.8	5	8.9	316	4.8	-20	57.9	
6	104	23.7	118	13	22.9	-69	68	54.2	5	9.1	346	9.5	-20	58.0	
8	133	25.4	119	13	9.1	-70	98	59.7	5	9.4	16	14.1	-20	58.0	
10	162	27.3	120	12	55.0	-71	129	5.2	5	9.6	46	18.8	-20	58.0	
12	191	29.4	121	12	40.7	-73	159	10.6	5	9.8	76	23.4	-20	58.0	
14	220	31.6	122	12	26.2	-74	189	16.1	5	10.1	106	28.0	-20	58.0	
16	249	34.1	123	12	11.5	-75	219	21.6	5	10.3	136	32.7	-20	58.1	
18	278	36.8	124	11	56.6	-76	249	27.0	5	10.6	166	37.3	-20	58.1	
20	307	39.6	125	11	41.4	-77	279	32.5	5	10.8	196	42.0	-20	58.1	
22	336	42.7	126	11	26.0	-78	309	38.0	5	11.1	226	46.6	-20	58.1	
Δ								27		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 43.7	.3	16.2	T _m	23 36	1.9	55.8</

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 35.8 -10 28.7		151 20.4	202 55.8 -19 6.0	278 36.5 -17 37.0		
2	206 35.9 -10 26.9		181 25.4	232 54.3 -19 4.7	308 39.3 -17 37.5		
4	236 36.1 -10 25.1		211 30.3	262 52.8 -19 3.3	338 42.0 -17 38.1		
6	266 36.2 -10 23.2		241 35.2	292 51.4 -19 2.0	8 44.8 -17 38.6		
8	296 36.4 -10 21.4		271 40.1	322 49.9 -19 .7	38 47.5 -17 39.2		
10	326 36.6 -10 19.6		301 45.1	352 48.4 -18 59.4	68 50.3 -17 39.7		
12	356 36.7 -10 17.8		331 50.0	22 47.0 -18 58.0	98 53.1 -17 40.2		
14	26 36.9 -10 16.0		1 54.9	52 45.5 -18 56.7	128 55.8 -17 40.8		
16	56 37.0 -10 14.2		31 59.9	82 44.1 -18 55.4	158 58.6 -17 41.3		
18	86 37.2 -10 12.3		62 4.8	112 42.6 -18 54.0	189 1.3 -17 41.9		
20	116 37.3 -10 10.5		92 9.7	142 41.2 -18 52.7	219 4.1 -17 42.4		
22	146 37.5 -10 8.7		122 14.6	172 39.7 -18 51.3	249 6.9 -17 43.0		
Δ	1	9		-7	7	14	-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 20	17 8	0 43	2 20	17 7	3.0	7 2	.8
55	7 8	17 20	0 37	2 1	17 19	2.8	6 49	1.0
50	6 59	17 29	0 33	1 48	17 28	2.6	6 39	1.2
45	6 51	17 37	0 30	1 38	17 35	2.5	6 31	1.3
40	6 44	17 43	0 27	1 30	17 41	2.4	6 24	1.4
35	6 39	17 49	0 26	1 24	17 46	2.3	6 18	1.5
30	6 34	17 54	0 24	1 20	17 50	2.2	6 12	1.5
20	6 25	18 2	0 22	1 14	17 58	2.1	6 3	1.7
10	6 18	18 10	0 21	1 11	18 5	2.0	5 55	1.8
0	6 10	18 17	0 21	1 10	18 11	1.9	5 47	1.9
10	6 3	18 24	0 21	1 11	18 18	1.7	5 40	2.0
20	5 55	18 32	0 22	1 16	18 24	1.6	5 31	2.1
30	5 45	18 41	0 25	1 23	18 32	1.5	5 22	2.3
35	5 40	18 47	0 26	1 29	18 36	1.4	5 17	2.3
40	5 34	18 53	0 28	1 37	18 41	1.3	5 10	2.4
45	5 26	18 60	0 31	1 48	18 47	1.2	5 3	2.5
50	5 18	19 8	0 34	2 3	18 54	1.1	4 54	2.7
55	5 7	19 19	0 39	2 28	19 3	.9	4 43	2.8
60	4 52	19 33	0 46	3 19	19 14	.7	4 29	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	5 45.9 127	11 10.5 -79	339 43.5	5 11.3	256 51.3 -20 58.1			
2	34 49.3 128	10 54.8 -80	9 48.9	5 11.6	286 55.9 -20 58.1			
4	63 52.9 129	10 38.8 -81	39 54.4	5 11.8	317 .6 -20 58.2			
6	92 56.7 130	10 22.7 -81	69 59.9	5 12.1	347 5.2 -20 58.2			
8	122 .7 131	10 6.5 -82	100 5.4	5 12.3	17 9.9 -20 58.2			
10	151 4.8 132	9 50.0 -83	130 10.8	5 12.6	47 14.5 -20 58.2			
12	180 9.1 132	9 33.4 -84	160 16.3	5 12.8	77 19.2 -20 58.2			
14	209 13.6 133	9 16.7 -84	190 21.8	5 13.0	107 23.8 -20 58.3			
16	238 18.2 134	8 59.8 -85	220 27.3	5 13.3	137 28.5 -20 58.3			
18	267 23.1 135	8 42.7 -86	250 32.7	5 13.5	167 33.1 -20 58.3			
20	296 28.0 136	8 25.6 -87	280 38.2	5 13.8	197 37.8 -20 58.3			
22	325 33.2 136	8 8.2 -87	310 43.7	5 14.0	227 42.4 -20 58.3			
Δ			27	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 36.8	.3	16.2	T _m	1.0	55.4	15.1		
12	-13 33.1	T _{m☉} 12 h 13.6 min	Starost 13.4 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 29	.1	52	-3.2	♄	1 21	.0	188	-2.0
	5 25	.1	127	.1	♅	6 52	.0	106	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 37.7 -10 6.9		152 19.6	202 38.3 -18 50.0	279 9.6 -17 43.5		
2	206 37.8 -10 5.0		182 24.5	232 36.8 -18 48.6	309 12.4 -17 44.0		
4	236 38.0 -10 3.2		212 29.4	262 35.4 -18 47.2	339 15.2 -17 44.6		
6	266 38.2 -10 1.4		242 34.4	292 33.9 -18 45.9	9 17.9 -17 45.1		
8	296 38.3 -9 59.6		272 39.3	322 32.5 -18 44.5	39 20.7 -17 45.6		
10	326 38.5 -9 57.7		302 44.2	352 31.0 -18 43.1	69 23.5 -17 46.2		
12	356 38.7 -9 55.9		332 49.1	22 29.6 -18 41.8	99 26.3 -17 46.7		
14	26 38.8 -9 54.1		2 54.1	52 28.2 -18 40.4	129 29.0 -17 47.2		
16	56 39.0 -9 52.2		32 59.0	82 26.7 -18 39.0	159 31.8 -17 47.8		
18	86 39.2 -9 50.4		63 3.9	112 25.3 -18 37.6	189 34.6 -17 48.3		
20	116 39.4 -9 48.6		93 8.9	142 23.9 -18 36.2	219 37.4 -17 48.8		
22	146 39.5 -9 46.7		123 13.8	172 22.4 -18 34.8	249 40.2 -17 49.4		
Δ	1	9		-7	7	14	-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 18	17 10	0 43	2 19	18 19	3.0	7 21	.7
55	7 6	17 22	0 37	2 1	18 26	2.8	7 13	.9
50	6 57	17 31	0 33	1 48	18 31	2.6	7 6	1.1
45	6 49	17 38	0 30	1 38	18 35	2.5	7 1	1.2
40	6 43	17 44	0 27	1 30	18 38	2.4	6 57	1.3
35	6 38	17 50	0 26	1 24	18 41	2.3	6 53	1.4
30	6 33	17 54	0 24	1 20	18 44	2.2	6 49	1.5
20	6 25	18 3	0 22	1 14	18 48	2.1	6 43	1.6
10	6 17	18 10	0 21	1 11	18 52	1.9	6 38	1.7
0	6 10	18 17	0 21	1 10	18 56	1.8	6 33	1.8
10	6 3	18 24	0 21	1 11	18 60	1.7	6 28	1.9
20	5 55	18 31	0 22	1 15	19 3	1.6	6 22	2.1
30	5 46	18 40	0 25	1 23	19 8	1.4	6 16	2.2
35	5 41	18 45	0 26	1 29	19 10	1.3	6 13	2.3
40	5 35	18 51	0 28	1 37	19 13	1.3	6 9	2.4
45	5 28	18 58	0 31	1 47	19 17	1.2	6 4	2.5
50	5 19	19 6	0 34	2 3	19 20	1.0	5 58	2.6
55	5 9	19 17	0 39	2 26	19 25	.9	5 51	2.8
60	4 55	19 30	0 46	3 14	19 32	.7	5 42	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	354 38.5 137	7 50.8 -88	340 49.2	5 14.3	257 47.1 -20 58.4			
2	23 43.9 138	7 33.3 -88	10 54.7	5 14.5	287 51.7 -20 58.4			
4	52 49.5 139	7 15.6 -89	41 .1	5 14.8	317 56.4 -20 58.4			
6	81 55.3 139	6 57.8 -89	71 5.6	5 15.0	348 1.1 -20 58.4			
8	111 1.2 140	6 40.0 -90	101 11.1	5 15.3	18 5.7 -20 58.4			
10	140 7.2 141	6 22.0 -90	131 16.6	5 15.5	48 10.4 -20 58.4			
12	169 13.4 141	6 3.9 -91	161 22.1	5 15.8	78 15.0 -20 58.5			
14	198 19.7 142	5 45.8 -91	191 27.6	5 16.0	108 19.7 -20 58.5			
16	227 26.1 143	5 27.6 -91	221 33.0	5 16.3	138 24.4 -20 58.5			
18	256 32.6 143	5 9.3 -92	251 38.5	5 16.5	168 29.0 -20 58.5			
20	285 39.3 144	4 50.9 -92	281 44.0	5 16.8	198 33.7 -20 58.5			
22	314 46.1 144	4 32.5 -92	311 49.5	5 17.0	228 38.3 -20 58.5			
Δ			27	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 29.3	.3	16.2	T _m	0 22	1.8	55.0	15.0	
12	-13 25.3	T _{m☉} 12 h 13.4 min	Starost 14.4 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 30	.1	50	-3.2	♄	1 16	.0	188	-2.0
	5 23	.1	127	.0	♅	6 48	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	39.7	-9	44.9	153	18.7	202	21.0	-18	33.4	279	43.0	-17	49.9	
2	206	39.9	-9	43.1	183	23.6	232	19.6	-18	32.0	309	45.7	-17	50.4	
4	236	40.1	-9	41.2	213	28.6	262	18.1	-18	30.6	339	48.5	-17	51.0	
6	266	40.2	-9	39.4	243	33.5	292	16.7	-18	29.2	9	51.3	-17	51.5	
8	296	40.4	-9	37.5	273	38.4	322	15.3	-18	27.8	39	54.1	-17	52.0	
10	326	40.6	-9	35.7	303	43.3	352	13.9	-18	26.4	69	56.9	-17	52.6	
12	356	40.8	-9	33.9	333	48.3	22	12.5	-18	25.0	99	59.7	-17	53.1	
14	26	41.0	-9	32.0	3	53.2	52	11.0	-18	23.5	130	2.5	-17	53.6	
16	56	41.1	-9	30.2	33	58.1	82	9.6	-18	22.1	160	5.3	-17	54.1	
18	86	41.3	-9	28.3	64	3.1	112	8.2	-18	20.7	190	8.1	-17	54.7	
20	116	41.5	-9	26.5	94	8.0	142	6.8	-18	19.2	220	10.9	-17	55.2	
22	146	41.7	-9	24.6	124	12.9	172	5.4	-18	17.8	250	13.7	-17	55.7	
Δ		1		9				-7		7			14		-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 15	17 13	0 43	2 19	19 31	1.4	7 38	1.1
55	7 3	17 24	0 37	2 1	19 32	1.4	7 35	1.2
50	6 55	17 33	0 33	1 48	19 34	1.5	7 32	1.3
45	6 48	17 40	0 30	1 38	19 35	1.5	7 29	1.4
40	6 42	17 45	0 27	1 30	19 35	1.6	7 27	1.5
35	6 37	17 51	0 26	1 24	19 36	1.6	7 26	1.5
30	6 32	17 55	0 24	1 20	19 37	1.6	7 24	1.6
20	6 24	18 3	0 22	1 14	19 38	1.7	7 22	1.6
10	6 17	18 10	0 21	1 10	19 38	1.7	7 19	1.7
0	6 10	18 17	0 21	1 10	19 39	1.8	7 17	1.8
10	6 3	18 23	0 21	1 11	19 40	1.8	7 15	1.9
20	5 56	18 31	0 22	1 15	19 41	1.9	7 12	1.9
30	5 47	18 39	0 24	1 23	19 42	1.9	7 9	2.0
35	5 42	18 44	0 26	1 29	19 43	2.0	7 8	2.1
40	5 36	18 50	0 28	1 36	19 43	2.0	7 6	2.1
45	5 29	18 56	0 31	1 47	19 44	2.0	7 4	2.2
50	5 21	19 4	0 34	2 2	19 45	2.1	7 1	2.3
55	5 11	19 14	0 39	2 25	19 46	2.2	6 58	2.4
60	4 58	19 27	0 46	3 10	19 48	2.2	6 54	2.5
S								

UT	MESEC				JUPITER		SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄					
h	°	'	°	'	°	'	°	'					
0	343	53.0	145	4 14.0	-93	341	55.0	5 17.3	258	43.0	-20	58.6	
2	13	.0	146	3 55.5	-93	12	.5	5 17.5	288	47.7	-20	58.6	
4	42	7.1	146	3 36.9	-93	42	6.0	5 17.8	318	52.3	-20	58.6	
6	71	14.3	147	3 18.3	-93	72	11.4	5 18.0	348	57.0	-20	58.6	
8	100	21.6	147	2 59.6	-93	102	16.9	5 18.3	19	1.7	-20	58.6	
10	129	29.0	147	2 40.9	-94	132	22.4	5 18.5	49	6.3	-20	58.6	
12	158	36.5	148	2 22.2	-94	162	27.9	5 18.8	79	11.0	-20	58.7	
14	187	44.0	148	2 3.5	-94	192	33.4	5 19.0	109	15.7	-20	58.7	
16	216	51.7	149	1 44.8	-94	222	38.9	5 19.3	139	20.3	-20	58.7	
18	245	59.4	149	1 26.0	-94	252	44.4	5 19.5	169	25.0	-20	58.7	
20	275	7.2	149	1 7.2	-94	282	49.9	5 19.8	199	29.7	-20	58.7	
22	304	15.0	150	0 48.5	-94	312	55.4	5 20.0	229	34.4	-20	58.7	
Δ							27	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 21.2	.4	16.2	T _m	1 6	1.8	54.6 14.9		
12	-13 16.8	T _{m☉}	12 h 13.3 min	Starost	15.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 31	.1	49	-3.2	♃	1 12	.0	189	-2.0
	5 21	.1	126	.0	♄	6 44	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	176	41.9	-9	22.8	154	17.8	202	4.0	-18	16.4	280	16.5	-17	56.2	
2	206	42.1	-9	20.9	184	22.8	232	2.6	-18	14.9	310	19.3	-17	56.7	
4	236	42.3	-9	19.1	214	27.7	262	1.2	-18	13.5	340	22.1	-17	57.3	
6	266	42.5	-9	17.2	244	32.6	291	59.8	-18	12.0	10	24.9	-17	57.8	
8	296	42.6	-9	15.4	274	37.6	321	58.4	-18	10.5	40	27.7	-17	58.3	
10	326	42.8	-9	13.5	304	42.5	351	57.0	-18	9.1	70	30.5	-17	58.8	
12	356	43.0	-9	11.7	334	47.4	21	55.6	-18	7.6	100	33.3	-17	59.3	
14	26	43.2	-9	9.8	4	52.3	51	54.2	-18	6.2	130	36.2	-17	59.9	
16	56	43.4	-9	8.0	34	57.3	81	52.8	-18	4.7	160	39.0	-18	.4	
18	86	43.6	-9	6.1	65	2.2	111	51.4	-18	3.2	190	41.8	-18	.9	
20	116	43.8	-9	4.2	95	7.1	141	50.0	-18	1.7	220	44.6	-18	1.4	
22	146	44.0	-9	2.4	125	12.1	171	48.6	-18	.2	250	47.4	-18	1.9	
Δ		1		9				-7		7			14		-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 12	17 16	0 42	2 19	20 4	.7	8 5	2.9
55	7 1	17 26	0 37	2 1	20 7	.9	8 4	2.7
50	6 53	17 34	0 33	1 48	20 9	1.0	8 4	2.6
45	6 46	17 41	0 30	1 38	20 11	1.1	8 3	2.4
40	6 40	17 47	0 27	1 30	20 13	1.2	8 2	2.3
35	6 35	17 51	0 26	1 24	20 14	1.3	8 2	2.2
30	6 31	17 56	0 24	1 20	20 16	1.4	8 2	2.2
20	6 23	18 3	0 22	1 14	20 18	1.5	8 1	2.0
10	6 16	18 10	0 21	1 10	20 20	1.7	8 0	1.9
0	6 10	18 16	0 21	1 10	20 22	1.8	7 60	1.8
10	6 3	18 23	0 21	1 11	20 24	1.9	7 59	1.7
20	5 56	18 30	0 22	1 15	20 26	2.0	7 59	1.5
30	5 48	18 38	0 24	1 23	20 28	2.1	7 58	1.4
35	5 43	18 43	0 26	1 28	20 30	2.2	7 58	1.3
40	5 37	18 48	0 28	1 36	20 31	2.3	7 57	1.2
45	5 31	18 55	0 30	1 46	20 33	2.4	7 57	1.1
50	5 23	19 2	0 34	2 1	20 35	2.6	7 56	1.0
55	5 13	19 12	0 39	2 24	20 38	2.7	7 55	.9
60	5 0	19 24	0 46	3 6	20 42	2.9	7 54	.7
S								

UT	MESEC				JUPITER		SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄					
h	°	'	°	'	°	'	°	'					
0	333	23.0	150	0 29.7	-94	343	.9	5 20.3	259	39.0	-20	58.8	
2	2 30.9	150	0 11.0	-16	13	6.3	5 20.5	289	43.7	-20	58.8		
4	31	38.9	150	0 7.8	94	43	11.8	5 20.8	319	48.4	-20	58.8	
6	60	47.0	151	0 26.5	93	73	17.3	5 21.0	349	53.0	-20	58.8	
8	89	55.1	151	0 45.2	93	103	22.8	5 21.3	19	57.7	-20	58.8	
10	119	3.2	151	1 3.9	93	133	28.3	5 21.5	50	2.4	-20	58.8	
12	148	11.4	151	1 22.5	93	163	33.8	5 21.8	80	7.1	-20	58.9	
14	177	19.6	151	1 41.1	93	193	39.3	5 22.1	110	11.7	-20	58.9	
16	206	27.8	151	1 59.7	93	223	44.8	5 22.3	140	16.4	-20	58.9	
18	235	36.1	151	2 18.2	92	253	50.3	5 22.6	170	21.1	-20	58.9	
20	264	44.4	151	2 36.6	92	283	55.8	5 22.8	200	25.8	-20	58.9	
22	293	52.6	151	2 55.0	92	314	1.3	5 23.1	230	30.5	-20	58.9	
Δ							27	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 12.5	.4	16.2	T _m	1 50	1.7	54.4 14.8		
12	-13 7.8	T _{m☉}	12 h 13.1 min	Starost	16.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 32	.1	48	-3.2	♃	1 8	.0	1	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS			
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂		
h	°	'	°	'	'	°	'		
0	176	44.2 - 9	.5	155	17.0	201	47.2 -17 58.8	280	50.3 -18 2.4
2	206	44.4 - 8 58.7	185	21.9	231	45.9 -17 57.3	310	53.1 -18 2.9	
4	236	44.6 - 8 56.8	215	26.8	261	44.5 -17 55.8	340	55.9 -18 3.5	
6	266	44.8 - 8 54.9	245	31.8	291	43.1 -17 54.3	10	58.7 -18 4.0	
8	296	45.0 - 8 53.1	275	36.7	321	41.7 -17 52.8	41	1.6 -18 4.5	
10	326	45.2 - 8 51.2	305	41.6	351	40.3 -17 51.3	71	4.4 -18 5.0	
12	356	45.4 - 8 49.3	335	46.6	21	39.0 -17 49.8	101	7.2 -18 5.5	
14	26	45.6 - 8 47.5	5	51.5	51	37.6 -17 48.2	131	10.1 -18 6.0	
16	56	45.9 - 8 45.6	35	56.4	81	36.2 -17 46.7	161	12.9 -18 6.5	
18	86	46.1 - 8 43.7	66	1.3	111	34.8 -17 45.2	191	15.7 -18 7.0	
20	116	46.3 - 8 41.9	96	6.3	141	33.5 -17 43.7	221	18.6 -18 7.5	
22	146	46.5 - 8 40.0	126	11.2	171	32.1 -17 42.2	251	21.4 -18 8.0	
Δ	1	9			-7	8		14	-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 9	17 18	0 42	2 19	20 20	.7	9 15	2.9
55	6 59	17 28	0 37	2 1	20 28	.9	9 10	2.7
50	6 51	17 36	0 33	1 48	20 34	1.1	9 5	2.5
45	6 44	17 42	0 30	1 38	20 39	1.2	9 1	2.4
40	6 39	17 48	0 27	1 30	20 43	1.3	8 58	2.3
35	6 34	17 52	0 26	1 24	20 46	1.4	8 56	2.2
30	6 30	17 56	0 24	1 20	20 50	1.5	8 53	2.1
20	6 22	18 4	0 22	1 14	20 55	1.6	8 49	2.0
10	6 16	18 10	0 21	1 10	21 0	1.7	8 46	1.9
0	6 10	18 16	0 21	1 9	21 5	1.8	8 43	1.8
10	6 3	18 23	0 21	1 11	21 9	1.9	8 39	1.7
20	5 56	18 29	0 22	1 15	21 14	2.0	8 36	1.6
30	5 48	18 37	0 24	1 23	21 20	2.1	8 32	1.4
35	5 44	18 42	0 26	1 28	21 23	2.2	8 29	1.4
40	5 38	18 47	0 28	1 36	21 27	2.3	8 27	1.3
45	5 32	18 53	0 30	1 46	21 31	2.4	8 24	1.2
50	5 25	19 0	0 34	2 0	21 37	2.5	8 20	1.0
55	5 15	19 10	0 38	2 22	21 43	2.7	8 16	.9
60	5 3	19 21	0 45	3 2	21 52	2.9	8 10	.7

UT	MESEC				JUPITER		SATURN							
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	'	°	'	'						
0	323	.9	151	3	13.4	91	344	6.8	5	23.3	260	35.1	-20	59.0
2	352	9.2	151	3	31.7	91	14	12.3	5	23.6	290	39.8	-20	59.0
4	21	17.5	151	3	49.9	91	44	17.8	5	23.8	320	44.5	-20	59.0
6	50	25.7	151	4	8.0	90	74	23.3	5	24.1	350	49.2	-20	59.0
8	79	34.0	151	4	26.1	90	104	28.8	5	24.3	20	53.9	-20	59.0
10	108	42.2	151	4	44.1	89	134	34.3	5	24.6	50	58.5	-20	59.0
12	137	50.4	151	5	2.0	89	164	39.8	5	24.8	81	3.2	-20	59.0
14	166	58.6	151	5	19.8	89	194	45.3	5	25.1	111	7.9	-20	59.1
16	196	6.7	151	5	37.5	88	224	50.8	5	25.4	141	12.6	-20	59.1
18	225	14.9	150	5	55.1	88	254	56.3	5	25.6	171	17.3	-20	59.1
20	254	22.9	150	6	12.6	87	285	1.8	5	25.9	201	22.0	-20	59.1
22	283	31.0	150	6	30.0	86	315	7.3	5	26.1	231	26.7	-20	59.1
Δ							28	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	3.1	.4	16.2	T _m	2 32	1.8	54.2	14.8
12	-12	58.2	T _{m☉}	12 h 13.0 min	Starost	17.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	10 33	.1	46	-3.2	♃	1 3	.0	189	-2.0
♂	5 16	.1	126	.0	♄	6 37	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS			
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂		
h	°	'	°	'	'	°	'		
0	176	46.7 - 8 38.1	156	16.1	201	30.7 -17 40.6	281	24.3 -18 8.5	
2	206	46.9 - 8 36.2	186	21.1	231	29.4 -17 39.1	311	27.1 -18 9.0	
4	236	47.1 - 8 34.4	216	26.0	261	28.0 -17 37.6	341	30.0 -18 9.5	
6	266	47.3 - 8 32.5	246	30.9	291	26.7 -17 36.0	11	32.8 -18 10.0	
8	296	47.5 - 8 30.6	276	35.8	321	25.3 -17 34.5	41	35.7 -18 10.6	
10	326	47.8 - 8 28.8	306	40.8	351	23.9 -17 32.9	71	38.5 -18 11.1	
12	356	48.0 - 8 26.9	336	45.7	21	22.6 -17 31.4	101	41.4 -18 11.6	
14	26	48.2 - 8 25.0	6	50.6	51	21.2 -17 29.8	131	44.2 -18 12.1	
16	56	48.4 - 8 23.1	36	55.6	81	19.9 -17 28.3	161	47.1 -18 12.6	
18	86	48.6 - 8 21.2	67	.5	111	18.5 -17 26.7	191	49.9 -18 13.1	
20	116	48.9 - 8 19.4	97	5.4	141	17.2 -17 25.2	221	52.8 -18 13.5	
22	146	49.1 - 8 17.5	127	10.3	171	15.8 -17 23.6	251	55.7 -18 14.0	
Δ	1	9			-7	8		14	-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 6	17 21	0 42	2 19	20 38	.9	10 25	2.9
55	6 56	17 30	0 37	2 1	20 50	1.0	10 14	2.7
50	6 49	17 38	0 33	1 48	20 60	1.2	10 6	2.5
45	6 43	17 44	0 30	1 38	21 7	1.3	9 59	2.4
40	6 37	17 49	0 27	1 30	21 14	1.4	9 54	2.3
35	6 33	17 53	0 25	1 24	21 20	1.5	9 49	2.2
30	6 29	17 57	0 24	1 20	21 24	1.5	9 45	2.2
20	6 22	18 4	0 22	1 13	21 31	1.6	9 38	2.0
10	6 15	18 10	0 21	1 10	21 43	1.7	9 31	1.9
0	6 9	18 16	0 21	1 9	21 48	1.8	9 25	1.8
10	6 3	18 22	0 21	1 11	21 55	1.9	9 20	1.7
20	5 57	18 29	0 22	1 15	22 3	2.0	9 13	1.6
30	5 49	18 36	0 24	1 22	22 12	2.2	9 6	1.5
35	5 45	18 40	0 26	1 28	22 17	2.2	9 2	1.4
40	5 39	18 45	0 28	1 35	22 23	2.3	8 57	1.3
45	5 33	18 51	0 30	1 45	22 29	2.4	8 52	1.2
50	5 26	18 58	0 34	1 60	22 37	2.5	8 45	1.1
55	5 17	19 7	0 38	2 21	22 48	2.7	8 37	1.0
60	5 5	19 19	0 45	2 59	23 1	2.9	8 27	.8

UT	MESEC				JUPITER		SATURN							
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	'	°	'	'						
0	312	38.9	150	6	47.3	86	345	12.8	5	26.4	261	31.3	-20	59.1
2	341	46.9	149	7	4.5	85	15	18.3	5	26.6	291	36.0	-20	59.1
4	10	54.7	149	7	21.6	85	45	23.8	5	26.9	321	40.7	-20	59.2
6	40	2.5	149	7	38.5	84	75	29.3	5	27.1	351	45.4	-20	59.2
8	69	10.3	148	7	55.3	83	105	34.8	5	27.4	21	50.1	-20	59.2
10	98	17.9	148	8	12.0	83	135	40.3	5	27.7	51	54.8	-20	59.2
12	127	25.5	148	8	28.5	82	165	45.8	5	27.9	81	59.5	-20	59.2
14	156	33.0	147	8	44.9	81	195	51.3	5	28.2	111	4.2	-20	59.2
16	185	40.5	147	9	1.2	81	225	56.8	5	28.4	141	8.9	-20	59.2
18	214	47.8	146	9	17.3	80	256	2.3	5	28.7	171	13.6	-20	59.3
20	243	55.0	146	9	33.2	79	286	7.8	5	28.9	201	18.3	-20	59.3
22	273	2.2	145	9	49.0	78	316	13.3	5	29.2	231	23.0	-20	59.3
Δ							28	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	53.2	.4	16.2	T _m	3 15	1.8	54.1	14.7
12	-12	48.0	T _{m☉}	12 h 12.8 min	Starost	18.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	10 34	.1	45	-3.2	♃	0 59	.0	189	-2.0
♂	5 14	.1	125	-.1	♄	6 33	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS											
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂										
h	°	'	°	'	°	'	°	'									
0	176	49.3	- 8	15.6	201	14.5	-17	22.0	281	58.5	-18	14.5					
2	206	49.5	- 8	13.7	231	13.2	-17	20.4	312	1.4	-18	15.0					
4	236	49.7	- 8	11.8	261	11.8	-17	18.9	342	4.2	-18	15.5					
6	266	50.0	- 8	9.9	291	10.5	-17	17.3	12	7.1	-18	16.0					
8	296	50.2	- 8	8.1	321	9.1	-17	15.7	42	10.0	-18	16.5					
10	326	50.4	- 8	6.2	351	7.8	-17	14.1	72	12.9	-18	17.0					
12	356	50.7	- 8	4.3	21	6.5	-17	12.5	102	15.7	-18	17.5					
14	26	50.9	- 8	2.4	7	49.8	51	5.2	-17	10.9	132	18.6	-18	18.0			
16	56	51.1	- 8	.5	37	54.7	81	3.8	-17	9.3	162	21.5	-18	18.5			
18	86	51.3	- 7	58.6	67	59.6	111	2.5	-17	7.7	192	24.4	-18	19.0			
20	116	51.6	- 7	56.7	98	4.5	141	1.2	-17	6.1	222	27.3	-18	19.5			
22	146	51.8	- 7	54.8	128	9.5	170	59.8	-17	4.5	252	30.1	-18	20.0			
Δ		1		9				-7		8				14			-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 3	17 23	0 42	2 19	20 58	1.0	11 34	2.8
55	6 54	17 32	0 37	2 1	21 15	1.2	11 18	2.6
50	6 47	17 39	0 33	1 48	21 28	1.3	11 7	2.5
45	6 41	17 45	0 30	1 38	21 38	1.4	10 57	2.4
40	6 36	17 50	0 27	1 30	21 47	1.5	10 49	2.3
35	6 32	17 54	0 25	1 24	21 55	1.6	10 43	2.2
30	6 28	17 58	0 24	1 20	22 1	1.6	10 37	2.2
20	6 21	18 4	0 22	1 13	22 13	1.7	10 26	2.1
10	6 15	18 10	0 21	1 10	22 23	1.8	10 17	2.0
0	6 9	18 16	0 21	1 9	22 32	1.9	10 9	1.9
10	6 3	18 22	0 21	1 11	22 42	2.0	10 1	1.8
20	5 57	18 28	0 22	1 15	22 52	2.1	9 52	1.7
30	5 50	18 35	0 24	1 22	23 3	2.2	9 42	1.6
35	5 45	18 39	0 26	1 28	23 10	1.9	9 36	1.5
40	5 41	18 44	0 28	1 35	23 18	1.9	9 29	1.4
45	5 35	18 50	0 30	1 45	23 27	1.9	9 22	1.4
50	5 28	18 56	0 34	1 59	23 38	1.9	9 12	1.3
55	5 19	19 5	0 38	2 20	23 51	1.9	9 1	1.1
60	5 8	19 16	0 45	2 56	...	.0	8 46	.9

UT	MESEC				JUPITER		SATURN										
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄									
h	°	'	°	'	°	'	°	'									
0	302	9.2	145	10	4.6	77	346	18.8	5	29.4	262	27.6	-20	59.3			
2	331	16.2	144	10	20.1	76	16	24.4	5	29.7	292	32.3	-20	59.3			
4	0	23.0	144	10	35.4	76	46	29.9	5	30.0	322	37.0	-20	59.3			
6	29	29.7	143	10	50.5	75	76	35.4	5	30.2	352	41.7	-20	59.3			
8	58	36.3	142	11	5.5	74	106	40.9	5	30.5	22	46.4	-20	59.3			
10	87	42.8	142	11	20.3	73	136	46.4	5	30.7	52	51.1	-20	59.4			
12	116	49.1	141	11	34.8	72	166	51.9	5	31.0	82	55.8	-20	59.4			
14	145	55.3	140	11	49.2	71	196	57.4	5	31.2	113	.5	-20	59.4			
16	175	1.4	140	12	3.4	70	227	2.9	5	31.5	143	5.2	-20	59.4			
18	204	7.4	139	12	17.4	69	257	8.4	5	31.8	173	9.9	-20	59.4			
20	233	13.2	138	12	31.2	68	287	13.9	5	32.0	203	14.6	-20	59.4			
22	262	18.9	138	12	44.8	67	317	19.5	5	32.3	233	19.3	-20	59.4			
Δ								28		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	-12	42.8	.5	16.2	T _m	3 58	1.9	54.1	14.8
12	-12	37.3	T _{m☉}	12 h 12.6 min	Starost	19.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 36	.1	44	-3.2	♄	0 55	.0	189	-2.0
♂	5 12	.1	125	-.1	♄	6 29	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS											
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂										
h	°	'	°	'	°	'	°	'									
0	176	52.0	- 7	52.9	200	58.5	-17	2.9	282	33.0	-18	20.4					
2	206	52.3	- 7	51.1	230	57.2	-17	1.3	312	35.9	-18	20.9					
4	236	52.5	- 7	49.2	260	55.9	-16	59.7	342	38.8	-18	21.4					
6	266	52.7	- 7	47.3	290	54.6	-16	58.0	12	41.7	-18	21.9					
8	296	53.0	- 7	45.4	320	53.3	-16	56.4	42	44.6	-18	22.4					
10	326	53.2	- 7	43.5	350	51.9	-16	54.8	72	47.5	-18	22.9					
12	356	53.5	- 7	41.6	338	44.0	20	50.6	-16	53.2	102	50.4	-18	23.4			
14	26	53.7	- 7	39.7	8	48.9	50	49.3	-16	51.5	132	53.3	-18	23.8			
16	56	53.9	- 7	37.8	38	53.8	80	48.0	-16	49.9	162	56.2	-18	24.3			
18	86	54.2	- 7	35.9	68	58.8	110	46.7	-16	48.2	192	59.1	-18	24.8			
20	116	54.4	- 7	34.0	99	3.7	140	45.4	-16	46.6	223	2.0	-18	25.3			
22	146	54.7	- 7	32.1	129	8.6	170	44.1	-16	45.0	253	4.9	-18	25.8			
Δ		1		9				-7		8				14			-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 0	17 26	0 42	2 19	21 23	1.3	12 42	2.7
55	6 51	17 34	0 37	2 1	21 34	1.4	12 21	2.6
50	6 45	17 41	0 33	1 48	22 0	1.6	12 6	2.4
45	6 39	17 46	0 30	1 38	22 13	1.6	11 54	2.4
40	6 34	17 51	0 27	1 30	22 24	1.7	11 44	2.3
35	6 30	17 55	0 25	1 24	22 33	1.7	11 36	2.2
30	6 27	17 59	0 24	1 20	22 41	1.8	11 29	2.2
20	6 20	18 5	0 22	1 13	22 54	1.9	11 16	2.1
10	6 15	18 10	0 21	1 10	23 6	1.9	11 4	2.0
0	6 9	18 16	0 21	1 9	23 18	2.0	10 54	1.9
10	6 4	18 21	0 21	1 11	23 29	2.0	10 43	1.9
20	5 57	18 27	0 22	1 15	23 41	2.0	10 32	1.8
30	5 50	18 34	0 24	1 22	23 56	2.0	10 20	1.7
35	5 46	18 38	0 26	1 28	23 56	2.3	10 12	1.7
40	5 42	18 42	0 28	1 35	...	.0	10 4	1.6
45	5 36	18 48	0 30	1 45	...	.0	9 54	1.5
50	5 30	18 54	0 33	1 58	...	.0	9 42	1.4
55	5 21	19 2	0 38	2 19	...	.0	9 28	1.3
60	5 11	19 13	0 44	2 54	0 10	2.8	9 8	1.1

UT	MESEC				JUPITER		SATURN										
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄									
h	°	'	°	'	°	'	°	'									
0	291	24.4	137	12	58.2	66	347	25.0	5	32.5	263	24.1	-20	59.4			
2	320	29.8	136	13	11.3	65	17	30.5	5	32.8	293	28.8	-20	59.5			
4	349	35.0	135	13	24.3	64	47	36.0	5	33.0	323	33.5	-20	59.5			
6	18	40.1	135	13	37.0	62	77	41.5	5	33.3	353	38.2	-20	59.5			
8	47	45.0	134	13	49.5	61	107	47.0	5	33.6	23	42.9	-20	59.5			
10	76	49.7	133	14	1.8	60	137	52.5	5	33.8	53	47.6	-20	59.5			
12	105	54.3	132	14	13.8	59	167	58.0	5	34.1	83	52.3	-20	59.5			
14	134	58.7	131	14	25.6	58	198	3.6	5	34.3	113	57.0	-20	59.5			
16	164	2.9	130	14	37.1	56	228	9.1	5	34.6	144	1.7	-20	59.5			
18	193	7.0	129	14	48.4	55	258	14.6	5	34.9	174	6.4	-20	59.6			
20	222	10.9	129	14	59.4	54	288	20.1	5	35.1	204	11.1	-20	59.6			
22	251	14.6	128	15	10.2	53	318	25.6	5	35.4	234	15.8	-20	59.6			
Δ								28		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	-12	31.9	.5	16.2	T _m	4 43	1.9	54.3	14.8
12	-12	26.1	T _{m☉}	12 h 12.4 min	Starost	20.4 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 37	.1							

1. MART

2016.

UTORAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 54.9	- 7 30.2	159 13.5	200 42.8	-16 43.3	283 7.8	-18 26.2
2	206 55.1	- 7 28.3	189 18.5	230 41.5	-16 41.6	313 10.7	-18 26.7
4	236 55.4	- 7 26.4	219 23.4	260 40.2	-16 40.0	343 13.6	-18 27.2
6	266 55.6	- 7 24.5	249 28.3	290 38.9	-16 38.3	13 16.5	-18 27.7
8	296 55.9	- 7 22.6	279 33.3	320 37.6	-16 36.7	43 19.4	-18 28.1
10	326 56.1	- 7 20.7	309 38.2	350 36.3	-16 35.0	73 22.4	-18 28.6
12	356 56.4	- 7 18.8	339 43.1	20 35.1	-16 33.3	103 25.3	-18 29.1
14	26 56.6	- 7 16.9	9 48.0	50 33.8	-16 31.6	133 28.2	-18 29.6
16	56 56.9	- 7 14.9	39 53.0	80 32.5	-16 30.0	163 31.1	-18 30.0
18	86 57.1	- 7 13.0	69 57.9	110 31.2	-16 28.3	193 34.0	-18 30.5
20	116 57.4	- 7 11.1	100 2.8	140 29.9	-16 26.6	223 37.0	-18 31.0
22	146 57.6	- 7 9.2	130 7.8	170 28.6	-16 24.9	253 39.9	-18 31.5
Δ	1	10		-6	8	15	-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	6 57	17 28	0 42	2 19	21 54	1.7	13 47	2.6
55	6 49	17 36	0 36	2 1	22 19	1.8	13 23	2.4
50	6 43	17 43	0 32	1 48	22 37	1.8	13 5	2.4
45	6 37	17 48	0 29	1 38	22 52	1.9	12 51	2.3
40	6 33	17 52	0 27	1 30	23 4	1.9	12 39	2.3
35	6 29	17 56	0 25	1 24	23 14	2.1	12 29	2.2
30	6 26	17 59	0 24	1 20	23 23	2.1	12 21	2.2
20	6 20	18 5	0 22	1 13	23 39	2.1	12 6	2.1
10	6 14	18 10	0 21	1 10	23 53	2.1	11 53	2.1
0	6 9	18 16	0 21	1 9	...	...	11 41	2.0
10	6 4	18 21	0 21	1 11	...	...	11 28	2.0
20	5 58	18 26	0 22	1 15	...	...	11 15	1.9
30	5 51	18 33	0 24	1 22	...	...	11 1	1.9
35	5 47	18 37	0 26	1 27	...	...	10 52	1.8
40	5 43	18 41	0 28	1 34	0 13	2.3	10 42	1.8
45	5 38	18 46	0 30	1 44	0 24	2.3	10 31	1.7
50	5 31	18 52	0 33	1 58	0 37	2.4	10 17	1.7
55	5 23	18 60	0 38	2 17	0 54	2.5	9 59	1.6
60	5 13	19 10	0 44	2 51	1 17	2.7	9 36	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	280 18.2	127 15	20.7 51	348 31.1	5 35.6	264 20.6	-20 59.6	
2	309 21.5	126 15	30.9 50	18 36.6	5 35.9	294 25.3	-20 59.6	
4	338 24.7	125 15	40.9 48	48 42.2	5 36.1	324 30.0	-20 59.6	
6	7 27.7	124 15	50.6 47	78 47.7	5 36.4	354 34.7	-20 59.6	
8	36 30.5	123 16	.0 46	108 53.2	5 36.7	24 39.4	-20 59.6	
10	65 33.1	122 16	9.1 44	138 58.7	5 36.9	54 44.1	-20 59.6	
12	94 35.5	121 16	18.0 43	169 4.2	5 37.2	84 48.8	-20 59.7	
14	123 37.8	120 16	26.5 41	199 9.7	5 37.4	114 53.6	-20 59.7	
16	152 39.8	119 16	34.8 40	229 15.3	5 37.7	144 58.3	-20 59.7	
18	181 41.6	118 16	42.7 38	259 20.8	5 38.0	175 3.0	-20 59.7	
20	210 43.3	117 16	50.3 37	289 26.3	5 38.2	205 7.7	-20 59.7	
22	239 44.8	116 16	57.7 35	319 31.8	5 38.5	235 12.4	-20 59.7	
Δ				28	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	-12 20.4	.5	16.2	T _m	5 29	2.0	54.7 14.9		
12	-12 14.4	T _{m☉}	12 h 12.2 min	Starost	21.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 38	.1	41	-3.1	♃	0 46	.0	189	-2.0
	5 7	.1	124	-.1	♄	6 22	.0	105	.7

2. MART

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 57.9	- 7 7.3	160 12.7	200 27.4	-16 23.2	283 42.8	-18 31.9
2	206 58.1	- 7 5.4	190 17.6	230 26.1	-16 21.5	313 45.8	-18 32.4
4	236 58.4	- 7 3.5	220 22.5	260 24.8	-16 19.8	343 48.7	-18 32.9
6	266 58.6	- 7 1.6	250 27.5	290 23.5	-16 18.1	13 51.6	-18 33.3
8	296 58.9	- 6 59.7	280 32.4	320 22.3	-16 16.4	43 54.6	-18 33.8
10	326 59.2	- 6 57.8	310 37.3	350 21.0	-16 14.7	73 57.5	-18 34.3
12	356 59.4	- 6 55.8	340 42.2	20 19.7	-16 13.0	104 .4	-18 34.7
14	26 59.7	- 6 53.9	10 47.2	50 18.5	-16 11.3	134 3.4	-18 35.2
16	56 59.9	- 6 52.0	40 52.1	80 17.2	-16 9.6	164 6.3	-18 35.7
18	87 .2	- 6 50.1	70 57.0	110 15.9	-16 7.9	194 9.3	-18 36.1
20	117 .5	- 6 48.2	101 2.0	140 14.7	-16 6.1	224 12.2	-18 36.6
22	147 .7	- 6 46.3	131 6.9	170 13.4	-16 4.4	254 15.2	-18 37.1
Δ	1	10		-6	9	15	-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	6 54	17 31	0 42	2 19	22 34	2.1	14 48	2.3
55	6 47	17 38	0 36	2 1	23 1	2.1	14 21	2.3
50	6 41	17 44	0 32	1 48	23 21	2.1	14 2	2.2
45	6 36	17 49	0 29	1 38	23 37	2.1	13 46	2.2
40	6 31	17 53	0 27	1 30	23 50	2.1	13 33	2.2
35	6 28	17 57	0 25	1 24	...	...	13 23	2.2
30	6 25	17 60	0 24	1 20	...	...	13 13	2.2
20	6 19	18 6	0 22	1 13	...	...	12 57	2.1
10	6 14	18 11	0 21	1 10	...	...	12 43	2.1
0	6 9	18 15	0 21	1 9	0 6	2.1	12 29	2.1
10	6 4	18 20	0 21	1 11	0 18	2.1	12 16	2.1
20	5 58	18 26	0 22	1 14	0 32	2.1	12 2	2.1
30	5 52	18 32	0 24	1 22	0 48	2.2	11 45	2.0
35	5 48	18 35	0 26	1 27	0 57	2.2	11 36	2.0
40	5 44	18 39	0 28	1 34	1 8	2.2	11 25	2.0
45	5 39	18 44	0 30	1 44	1 20	2.3	11 12	2.0
50	5 33	18 50	0 33	1 57	1 35	2.3	10 57	2.0
55	5 26	18 57	0 38	2 16	1 54	2.4	10 37	1.9
60	5 16	19 7	0 44	2 49	2 20	2.4	10 11	1.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	268 46.0	115 17	4.7 33	349 37.3	5 38.7	265 17.2	-20 59.7	
2	297 47.1	114 17	11.4 32	19 42.8	5 39.0	295 21.9	-20 59.7	
4	326 48.0	113 17	17.8 30	49 48.4	5 39.3	325 26.6	-20 59.7	
6	355 48.6	112 17	23.8 29	79 53.9	5 39.5	355 31.3	-20 59.8	
8	24 49.1	111 17	29.5 27	109 59.4	5 39.8	25 36.0	-20 59.8	
10	53 49.4	110 17	34.9 25	140 4.9	5 40.0	55 40.8	-20 59.8	
12	82 49.5	109 17	39.9 23	170 10.4	5 40.3	85 45.5	-20 59.8	
14	111 49.4	109 17	44.6 22	200 16.0	5 40.6	115 50.2	-20 59.8	
16	140 49.1	108 17	48.9 20	230 21.5	5 40.8	145 54.9	-20 59.8	
18	169 48.6	107 17	52.9 18	260 27.0	5 41.1	175 59.7	-20 59.8	
20	198 47.9	106 17	56.6 16	290 32.5	5 41.3	206 4.4	-20 59.8	
22	227 47.0	105 17	59.8 15	320 38.0	5 41.6	236 9.1	-20 59.8	
Δ				28	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	-12 8.5	.5	16.2	T _m	6 17	2.1	55.2 15.0		
12	-12 2.3	T _{m☉}	12 h 12.0 min	Starost	22.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 39	.1	40	-3.1	♃	0 41	.0	189	-2.0
	5 5	.1	123	-.1	♄	6 18	.0	105	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	1.0	-6	44.3	161	11.8	200	12.2	-16	2.7	284	18.1	-18	37.5	
2	207	1.3	-6	42.4	191	16.7	230	10.9	-16	1.0	314	21.1	-18	38.0	
4	237	1.5	-6	40.5	221	21.7	260	9.7	-15	59.2	344	24.0	-18	38.5	
6	267	1.8	-6	38.6	251	26.6	290	8.4	-15	57.5	14	27.0	-18	38.9	
8	297	2.0	-6	36.7	281	31.5	320	7.2	-15	55.8	44	30.0	-18	39.4	
10	327	2.3	-6	34.7	311	36.5	350	5.9	-15	54.0	74	32.9	-18	39.8	
12	357	2.6	-6	32.8	341	41.4	20	4.7	-15	52.3	104	35.9	-18	40.3	
14	27	2.8	-6	30.9	11	46.3	50	3.4	-15	50.5	134	38.9	-18	40.7	
16	57	3.1	-6	29.0	41	51.2	80	2.2	-15	48.8	164	41.8	-18	41.2	
18	87	3.4	-6	27.0	71	56.2	110	1.0	-15	47.0	194	44.8	-18	41.7	
20	117	3.7	-6	25.1	102	1.1	139	59.7	-15	45.2	224	47.8	-18	42.1	
22	147	3.9	-6	23.2	132	6.0	169	58.5	-15	43.5	254	50.8	-18	42.6	
Δ		1		10				-6		9			15		-2

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	6 51	17 33	0 42	2 20	23 24	2.2	15 43	2.0
55	6 44	17 40	0 36	2 1	23 52	2.2	15 16	2.0
50	6 38	17 46	0 32	1 48	.. .	.0	14 55	2.1
45	6 34	17 51	0 29	1 38	.. .	.0	14 39	2.1
40	6 30	17 54	0 27	1 30	.. .	.0	14 26	2.1
35	6 26	17 58	0 25	1 24	0 1	2.1	14 15	2.1
30	6 23	18 1	0 24	1 19	0 10	2.1	14 5	2.1
20	6 18	18 6	0 22	1 13	0 27	2.1	13 48	2.2
10	6 13	18 11	0 21	1 10	0 42	2.2	13 34	2.2
0	6 9	18 15	0 21	1 9	0 55	2.2	13 20	2.2
10	6 4	18 20	0 21	1 10	1 9	2.2	13 6	2.2
20	5 59	18 25	0 22	1 14	1 24	2.2	12 51	2.2
30	5 53	18 31	0 24	1 22	1 40	2.2	12 34	2.2
35	5 49	18 34	0 26	1 27	1 50	2.2	12 25	2.2
40	5 45	18 38	0 27	1 34	2 1	2.2	12 13	2.3
45	5 40	18 42	0 30	1 43	2 14	2.2	12 0	2.3
50	5 35	18 48	0 33	1 56	2 31	2.2	11 44	2.3
55	5 28	18 55	0 38	2 15	2 51	2.1	11 23	2.3
60	5 18	19 4	0 44	2 47	3 19	2.1	10 55	2.3
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	256	46.0	104	18	2.8	13	350	43.6	5	41.8	266	13.9	-20	59.8	
2	285	44.7	103	18	5.3	11	20	49.1	5	42.1	296	18.6	-20	59.9	
4	314	43.3	102	18	7.5	9	50	54.6	5	42.4	326	23.3	-20	59.9	
6	343	41.7	101	18	9.3	7	81	.1	5	42.6	356	28.1	-20	59.9	
8	12	39.9	100	18	10.7	5	111	5.7	5	42.9	26	32.8	-20	59.9	
10	41	37.9	99	18	11.7	3	141	11.2	5	43.1	56	37.5	-20	59.9	
12	70	35.7	98	18	12.4	1	171	16.7	5	43.4	86	42.2	-20	59.9	
14	99	33.4	97	18	12.6	-1	201	22.2	5	43.7	116	47.0	-20	59.9	
16	128	30.9	97	18	12.5	-3	231	27.8	5	43.9	146	51.7	-20	59.9	
18	157	28.2	96	18	12.0	-5	261	33.3	5	44.2	176	56.5	-20	59.9	
20	186	25.3	95	18	11.0	-7	291	38.8	5	44.4	207	1.2	-20	59.9	
22	215	22.3	94	18	9.7	-9	321	44.3	5	44.7	237	5.9	-20	59.9	
Δ								28		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	-11 56.1	.5	16.2	T _m	7 8	2.2	55.9 15.2		
12	-11 49.6	T _{m☉}	12 h 11.8 min	Starost	23.4 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	10 40	.1	39	-3.1	♄	0 37	.0	190	-2.0
♂	5 2	.1	123	-2	♅	6 14	.0	105	.7

4. MART

PETAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	4.2	-6	21.3	162	11.0	199	57.2	-15	41.7	284	53.7	-18	43.0	
2	207	4.5	-6	19.3	192	15.9	229	56.0	-15	39.9	314	56.7	-18	43.5	
4	237	4.7	-6	17.4	222	20.8	259	54.8	-15	38.2	344	59.7	-18	43.9	
6	267	5.0	-6	15.5	252	25.7	289	53.6	-15	36.4	15	2.7	-18	44.4	
8	297	5.3	-6	13.6	282	30.7	319	52.3	-15	34.6	45	5.7	-18	44.8	
10	327	5.6	-6	11.6	312	35.6	349	51.1	-15	32.8	75	8.7	-18	45.3	
12	357	5.8	-6	9.7	342	40.5	19	49.9	-15	31.1	105	11.6	-18	45.7	
14	27	6.1	-6	7.8	12	45.5	49	48.7	-15	29.3	135	14.6	-18	46.2	
16	57	6.4	-6	5.8	42	50.4	79	47.4	-15	27.5	165	17.6	-18	46.6	
18	87	6.7	-6	3.9	72	55.3	109	46.2	-15	25.7	195	20.6	-18	47.1	
20	117	7.0	-6	2.0	103	.2	139	45.0	-15	23.9	225	23.6	-18	47.5	
22	147	7.2	-6	.0	133	5.2	169	43.8	-15	22.1	255	26.6	-18	48.0	
Δ		1		10				-6		9			15		-2

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	6 49	17 36	0 42	2 20	.. .	.0	16 30	1.6
55	6 42	17 43	0 36	2 1	.. .	.0	16 4	1.8
50	6 36	17 48	0 32	1 48	0 12	2.5	15 45	1.9
45	6 32	17 52	0 29	1 38	0 28	2.4	15 29	1.9
40	6 28	17 55	0 27	1 30	0 41	2.4	15 17	2.0
35	6 25	17 59	0 25	1 24	0 52	2.4	15 6	2.0
30	6 22	18 1	0 24	1 19	1 2	2.3	14 56	2.1
20	6 17	18 6	0 22	1 13	1 19	2.3	14 40	2.1
10	6 13	18 11	0 21	1 10	1 33	2.3	14 26	2.2
0	6 8	18 15	0 21	1 9	1 47	2.2	14 12	2.2
10	6 4	18 19	0 21	1 10	2 1	2.2	13 59	2.3
20	5 59	18 24	0 22	1 14	2 15	2.2	13 45	2.4
30	5 53	18 29	0 24	1 21	2 32	2.1	13 28	2.4
35	5 50	18 33	0 26	1 27	2 42	2.1	13 19	2.4
40	5 46	18 36	0 27	1 34	2 53	2.1	13 8	2.5
45	5 42	18 41	0 30	1 43	3 6	2.0	12 55	2.5
50	5 36	18 46	0 33	1 56	3 22	2.0	12 39	2.6
55	5 30	18 52	0 37	2 14	3 43	1.9	12 19	2.7
60	5 21	19 1	0 44	2 45	4 10	1.8	11 51	2.8
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	244	19.1	93	18	8.0	-11	351	49.8	5	45.0	267	10.7	-20	60.0	
2	273	15.8	93	18	5.9	-13	21	55.4	5	45.2	297	15.4	-20	60.0	
4	302	12.3	92	18	3.3	-15	52	.9	5	45.5	327	20.1	-20	60.0	
6	331	8.7	91	18	.4	-17	82	6.4	5	45.8	357	24.9	-20	60.0	
8	0	4.9	90	17	57.0	-19	112	11.9	5	46.0	27	29.6	-20	60.0	
10	29	.9	90	17	53.2	-21	142	17.5	5	46.3	57	34.4	-20	60.0	
12	57	56.9	89	17	49.1	-23	172	23.0	5	46.5	87	39.1	-21	.0	
14	86	52.7	88	17	44.5	-25	202	28.5	5	46.8	117	43.8	-21	.0	
16	115	48.3	88	17	39.4	-27	232	34.0	5	47.1	147	48.6	-21	.0	
18	144	43.9	87	17	34.0	-29	262	39.6	5	47.3	177	53.3	-21	.0	
20	173	39.3	86	17	28.1	-31	292	45.1	5	47.6	207	58.1	-21	.0	
22	202	34.5	86	17	21.8	-34	322	50.6	5	47.8	238	2.8	-21	.0	
Δ								28		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	-11 43.2	.6	16.2	T _m	7 60	2.2	56.7 15.5
12	-11 36.6	T _{m☉}	12 h 11.6 min	Starost	24.4 d	Faza	☉

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	7.5	-5	58.1	163	10.1	199	42.6	-15	20.3	285	29.6	-18	48.4	
2	207	7.8	-5	56.2	193	15.0	229	41.4	-15	18.5	315	32.6	-18	48.9	
4	237	8.1	-5	54.2	223	20.0	259	40.2	-15	16.7	345	35.6	-18	49.3	
6	267	8.4	-5	52.3	253	24.9	289	39.0	-15	14.9	15	38.7	-18	49.8	
8	297	8.7	-5	50.4	283	29.8	319	37.8	-15	13.1	45	41.7	-18	50.2	
10	327	8.9	-5	48.4	313	34.7	349	36.6	-15	11.2	75	44.7	-18	50.6	
12	357	9.2	-5	46.5	343	39.7	19	35.4	-15	9.4	105	47.7	-18	51.1	
14	27	9.5	-5	44.6	13	44.6	49	34.2	-15	7.6	135	50.7	-18	51.5	
16	57	9.8	-5	42.6	43	49.5	79	33.0	-15	5.8	165	53.7	-18	52.0	
18	87	10.1	-5	40.7	73	54.5	109	31.8	-15	3.9	195	56.8	-18	52.4	
20	117	10.4	-5	38.7	103	59.4	139	30.6	-15	2.1	225	59.8	-18	52.8	
22	147	10.7	-5	36.8	134	4.3	169	29.4	-15	.3	256	2.8	-18	53.3	
Δ		1		10				-6		9			15		-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	6 46	17 38	0 42	2 20	0 26	3.0	17 9	1.3
55	6 39	17 45	0 36	2 1	0 52	2.9	16 46	1.5
50	6 34	17 49	0 32	1 48	1 11	2.8	16 29	1.7
45	6 30	17 53	0 29	1 38	1 26	2.7	16 16	1.8
40	6 27	17 57	0 27	1 30	1 38	2.6	16 4	1.9
35	6 24	17 59	0 25	1 24	1 49	2.5	15 55	1.9
30	6 21	18 2	0 24	1 19	1 58	2.5	15 46	2.0
20	6 16	18 7	0 22	1 13	2 14	2.4	15 31	2.1
10	6 12	18 11	0 21	1 10	2 27	2.3	15 18	2.2
0	6 8	18 15	0 21	1 9	2 40	2.3	15 6	2.3
10	6 4	18 19	0 21	1 10	2 53	2.2	14 54	2.4
20	5 59	18 23	0 22	1 14	3 7	2.1	14 41	2.5
30	5 54	18 28	0 24	1 21	3 23	2.0	14 26	2.6
35	5 51	18 31	0 26	1 26	3 32	2.0	14 17	2.6
40	5 47	18 35	0 27	1 33	3 42	1.9	14 7	2.7
45	5 43	18 39	0 30	1 43	3 55	1.9	13 56	2.8
50	5 38	18 44	0 33	1 55	4 9	1.8	13 41	2.9
55	5 32	18 50	0 37	2 14	4 28	1.6	13 23	3.0
60	5 24	18 58	0 43	2 43	4 53	1.5	12 59	3.2

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	231	29.7	85	17	15.1	-36	352	56.2	5	48.1	268	7.6	-21	.1		
2	260	24.8	85	17	8.0	-38	23	1.7	5	48.4	298	12.3	-21	.1		
4	289	19.7	84	17	.5	-40	53	7.2	5	48.6	328	17.1	-21	.1		
6	318	14.6	84	16	52.5	-42	83	12.7	5	48.9	358	21.8	-21	.1		
8	347	9.3	83	16	44.1	-44	113	18.3	5	49.1	28	26.6	-21	.1		
10	16	4.0	83	16	35.3	-46	143	23.8	5	49.4	58	31.3	-21	.1		
12	44	58.5	82	16	26.1	-48	173	29.3	5	49.7	88	36.1	-21	.1		
14	73	53.0	82	16	16.5	-50	203	34.8	5	49.9	118	40.8	-21	.1		
16	102	47.4	82	16	6.4	-52	233	40.4	5	50.2	148	45.6	-21	.1		
18	131	41.7	81	15	55.9	-54	263	45.9	5	50.4	178	50.3	-21	.1		
20	160	35.9	81	15	45.0	-56	293	51.4	5	50.7	208	55.1	-21	.1		
22	189	30.1	80	15	33.7	-59	323	57.0	5	51.0	238	59.8	-21	.1		
Δ								28		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	-11 29.9	.6	16.2	T _m	8 53	2.3	57.6 15.7
12	-11 23.1	T _{m☉} 12 h 11.4 min		Starost 25.4 d Faza ●			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	10 42	.1	37	-3.1	♄	0 28	.0	190	-2.0
♂	4 58	.1	122	-2	♂	6 7	.0	105	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	177	10.9	-5	534.9	164	9.2	199	28.2	-14	58.4	286	5.8	-18	53.7	
2	207	11.2	-5	532.9	194	14.2	229	27.0	-14	56.6	316	8.9	-18	54.2	
4	237	11.5	-5	531.0	224	19.1	259	25.8	-14	54.8	346	11.9	-18	54.6	
6	267	11.8	-5	529.0	254	24.0	289	24.6	-14	52.9	16	14.9	-18	55.0	
8	297	12.1	-5	527.1	284	28.9	319	23.4	-14	51.1	46	18.0	-18	55.5	
10	327	12.4	-5	525.2	314	33.9	349	22.3	-14	49.2	76	21.0	-18	55.9	
12	357	12.7	-5	523.2	344	38.8	19	21.1	-14	47.4	106	24.1	-18	56.3	
14	27	13.0	-5	521.3	14	43.7	49	19.9	-14	45.5	136	27.1	-18	56.8	
16	57	13.3	-5	519.3	44	48.7	79	18.7	-14	43.6	166	30.2	-18	57.2	
18	87	13.6	-5	517.4	74	53.6	109	17.6	-14	41.8	196	33.2	-18	57.6	
20	117	13.9	-5	515.4	104	58.5	139	16.4	-14	39.9	226	36.3	-18	58.1	
22	147	14.2	-5	513.5	135	3.4	169	15.2	-14	38.0	256	39.3	-18	58.5	
Δ		1		10				-6		9			15		-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	6 43	17 41	0 42	2 20	1 39	3.4	17 41	1.1
55	6 37	17 47	0 36	2 1	2 1	3.2	17 23	1.3
50	6 32	17 51	0 32	1 48	2 17	3.0	17 9	1.5
45	6 28	17 55	0 29	1 38	2 30	2.9	16 58	1.6
40	6 25	17 58	0 27	1 30	2 41	2.8	16 49	1.7
35	6 23	18 0	0 25	1 24	2 50	2.7	16 41	1.8
30	6 20	18 3	0 24	1 19	2 58	2.6	16 34	1.9
20	6 16	18 7	0 22	1 13	3 12	2.5	16 22	2.1
10	6 12	18 11	0 21	1 10	3 24	2.4	16 11	2.2
0	6 8	18 14	0 21	1 9	3 35	2.3	16 1	2.3
10	6 4	18 18	0 21	1 10	3 46	2.2	15 51	2.4
20	5 60	18 22	0 22	1 14	3 58	2.1	15 40	2.5
30	5 55	18 27	0 24	1 21	4 12	2.0	15 28	2.7
35	5 52	18 30	0 26	1 26	4 20	1.9	15 20	2.8
40	5 48	18 33	0 27	1 33	4 29	1.8	15 12	2.9
45	5 44	18 37	0 30	1 42	4 39	1.7	15 2	3.0
50	5 40	18 42	0 33	1 55	4 52	1.6	14 51	3.1
55	5 34	18 47	0 37	2 13	5 8	1.4	14 36	3.3
60	5 26	18 55	0 43	2 41	5 29	1.2	14 16	3.5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	218	24.2	80	15	22.0	-61	354	2.5	5	51.2	269	4.6	-21	.1		
2	247	18.2	80	15	9.9	-63	24	8.0	5	51.5	299	9.3	-21	.2		
4	276	12.2	80	14	57.4	-65	54	13.5	5	51.7	329	14.1	-21	.2		
6	305	6.1	79	14	44.5	-67	84	19.1	5	52.0	359	18.9	-21	.2		
8	334	.0	79	14	31.2	-69	114	24.6	5	52.3	29	23.6	-21	.2		
10	2	53.8	79	14	17.5	-70	144	30.1	5	52.5	59	28.4	-21	.2		
12	31	47.6	79	14	3.4	-72	174	35.7	5	52.8	89	33.1	-21	.2		
14	60	41.3	78	13	48.9	-74	204	41.2	5	53.0	119	37.9	-21	.2		
16	89	35.0	78	13	34.0	-76	234	46.7	5	53.3	149	42.7	-21	.2		
18	118	28.7	78	13	18.8	-78	264	52.2	5	53.6	179	47.4	-21	.2		
20	147	22.3	78	13	3.2	-80	294	57.8	5	53.8	209	52.2	-21	.2		
22	176	15.9	78	12	47.2	-82	325	3.3	5	54.1	239	56.9	-21	.2		
Δ								28		1			24		0	

|--|--|--|--|

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	177 21.8	- 4 24.7	167 6.7	198 46.5	-13 50.4	287 56.4	-19 9.0
2	207 22.1	- 4 22.7	197 11.6	228 45.4	-13 48.5	317 59.5	-19 9.4
4	237 22.4	- 4 20.8	227 16.5	258 44.3	-13 46.6	348 2.6	-19 9.8
6	267 22.7	- 4 18.8	257 21.4	288 43.2	-13 44.6	18 5.7	-19 10.2
8	297 23.1	- 4 16.9	287 26.4	318 42.1	-13 42.7	48 8.9	-19 10.7
10	327 23.4	- 4 14.9	317 31.3	348 40.9	-13 40.7	78 12.0	-19 11.1
12	357 23.7	- 4 13.0	347 36.2	18 39.8	-13 38.8	108 15.1	-19 11.5
14	27 24.0	- 4 11.0	17 41.1	48 38.7	-13 36.8	138 18.2	-19 11.9
16	57 24.3	- 4 9.0	47 46.1	78 37.6	-13 34.8	168 21.4	-19 12.3
18	87 24.6	- 4 7.1	77 51.0	108 36.5	-13 32.9	198 24.5	-19 12.7
20	117 25.0	- 4 5.1	107 55.9	138 35.4	-13 30.9	228 27.6	-19 13.1
22	147 25.3	- 4 3.2	138 .9	168 34.3	-13 29.0	258 30.8	-19 13.5
Δ	2	10		-6	10	16	-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	6 34	17 48	0 41	2 21	5 57	2.9	18 52	3.3
55	6 29	17 53	0 36	2 2	6 1	2.8	18 51	3.1
50	6 26	17 56	0 32	1 48	6 4	2.7	18 51	3.0
45	6 23	17 59	0 29	1 38	6 7	2.6	18 50	2.9
40	6 21	18 1	0 27	1 30	6 9	2.6	18 50	2.8
35	6 18	18 3	0 25	1 24	6 11	2.5	18 49	2.7
30	6 17	18 5	0 24	1 19	6 13	2.5	18 49	2.6
20	6 13	18 8	0 22	1 13	6 16	2.4	18 48	2.5
10	6 10	18 11	0 21	1 10	6 18	2.4	18 47	2.4
0	6 7	18 14	0 21	1 9	6 21	2.3	18 47	2.3
10	6 4	18 17	0 21	1 10	6 23	2.3	18 46	2.2
20	6 1	18 20	0 22	1 14	6 26	2.2	18 45	2.1
30	5 57	18 24	0 24	1 21	6 29	2.1	18 45	2.0
35	5 54	18 26	0 25	1 26	6 30	2.1	18 44	1.9
40	5 52	18 29	0 27	1 32	6 32	2.1	18 43	1.9
45	5 48	18 32	0 30	1 41	6 34	2.0	18 43	1.8
50	5 45	18 35	0 33	1 53	6 37	2.0	18 42	1.7
55	5 40	18 40	0 37	2 10	6 40	1.9	18 41	1.6
60	5 34	18 46	0 43	2 36	6 45	1.8	18 39	1.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	178 32.5	77	4 30.1	-114	357 21.6	6 .6	271 56.2	-21 .3
2	207 25.9	77	4 7.4	-114	27 27.1	6 .8	302 1.0	-21 .4
4	236 19.3	77	3 44.5	-115	57 32.6	6 1.1	332 5.8	-21 .4
6	265 12.8	77	3 21.5	-116	87 38.1	6 1.4	2 10.6	-21 .4
8	294 6.2	77	2 58.3	-116	117 43.7	6 1.6	32 15.4	-21 .4
10	322 59.6	77	2 35.1	-116	147 49.2	6 1.9	62 20.2	-21 .4
12	351 53.0	77	2 11.8	-117	177 54.7	6 2.1	92 25.0	-21 .4
14	20 46.4	77	1 48.5	-117	208 .3	6 2.4	122 29.7	-21 .4
16	49 39.8	77	1 25.0	-117	238 5.8	6 2.7	152 34.5	-21 .4
18	78 33.1	77	1 1.6	-118	268 11.3	6 2.9	182 39.3	-21 .4
20	107 26.5	77	0 38.1	-118	298 16.9	6 3.2	212 44.1	-21 .4
22	136 19.9	77	0 14.5	-28	328 22.4	6 3.4	242 48.9	-21 .4
Δ					28	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 32.8	.6	16.1	T _m	12 34	2.3	60.7 16.5		
12	-10 25.2	T _{m☉}	12 h 10.4 min	Starost	29.4 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	10 45	.1	32	-3.1	♃	0 11	.0	190	-2.0
♂	4 48	.1	121	-3	♄	5 51	.0	105	.7

10. MART

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	177 25.6	- 4 1.2	168 5.8	198 33.2	-13 27.0	288 33.9	-19 13.9
2	207 25.9	- 3 59.2	198 10.7	228 32.1	-13 25.0	318 37.1	-19 14.3
4	237 26.2	- 3 57.3	228 15.6	258 31.0	-13 23.0	348 40.2	-19 14.7
6	267 26.6	- 3 55.3	258 20.6	288 29.9	-13 21.1	18 43.4	-19 15.1
8	297 26.9	- 3 53.3	288 25.5	318 28.8	-13 19.1	48 46.5	-19 15.5
10	327 27.2	- 3 51.4	318 30.4	348 27.7	-13 17.1	78 49.7	-19 15.9
12	357 27.5	- 3 49.4	348 35.4	18 26.6	-13 15.1	108 52.8	-19 16.3
14	27 27.9	- 3 47.5	18 40.3	48 25.5	-13 13.1	138 56.0	-19 16.7
16	57 28.2	- 3 45.5	48 45.2	78 24.4	-13 11.2	168 59.1	-19 17.1
18	87 28.5	- 3 43.5	78 50.1	108 23.3	-13 9.2	199 2.3	-19 17.5
20	117 28.8	- 3 41.6	108 55.1	138 22.2	-13 7.2	229 5.5	-19 17.9
22	147 29.2	- 3 39.6	139 .0	168 21.2	-13 5.2	259 8.6	-19 18.3
Δ	2	10		-5	10	16	-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	6 31	17 51	0 41	2 21	7 6	.9	20 11	3.8
55	6 27	17 55	0 36	2 2	7 7	1.1	20 6	3.5
50	6 24	17 57	0 32	1 48	7 9	1.3	20 2	3.3
45	6 21	17 60	0 29	1 38	7 10	1.5	19 59	3.1
40	6 19	18 2	0 27	1 30	7 11	1.6	19 56	3.0
35	6 17	18 4	0 25	1 24	7 12	1.7	19 54	2.9
30	6 15	18 5	0 24	1 19	7 12	1.8	19 52	2.8
20	6 12	18 8	0 22	1 13	7 14	2.0	19 48	2.6
10	6 10	18 11	0 21	1 10	7 15	2.2	19 45	2.5
0	6 7	18 13	0 21	1 9	7 16	2.3	19 42	2.3
10	6 4	18 16	0 21	1 10	7 17	2.5	19 39	2.2
20	6 1	18 19	0 22	1 14	7 18	2.6	19 36	2.0
30	5 57	18 23	0 24	1 21	7 20	2.8	19 33	1.9
35	5 55	18 25	0 25	1 26	7 21	2.9	19 31	1.8
40	5 53	18 27	0 27	1 32	7 22	3.0	19 28	1.7
45	5 50	18 30	0 30	1 41	7 23	3.2	19 26	1.5
50	5 46	18 33	0 33	1 53	7 24	3.3	19 22	1.4
55	5 42	18 37	0 37	2 10	7 26	3.5	19 18	1.2
60	5 36	18 43	0 42	2 35	7 28	3.8	19 13	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	165 13.2	77	0 9.0	118	358 27.9	6 3.7	272 53.7	-21 .4
2	194 6.5	77	0 32.6	118	28 33.5	6 4.0	302 58.5	-21 .4
4	222 59.8	76	0 56.1	118	58 39.0	6 4.2	333 3.3	-21 .4
6	251 53.1	76	1 19.6	117	88 44.5	6 4.5	3 8.1	-21 .4
8	280 46.4	76	1 43.1	117	118 50.0	6 4.7	33 12.8	-21 .4
10	309 39.6	76	2 6.5	117	148 55.6	6 5.0	63 17.6	-21 .4
12	338 32.8	76	2 29.9	116	179 1.1	6 5.2	93 22.4	-21 .4
14	7 26.0	76	2 53.2	116	209 6.6	6 5.5	123 27.2	-21 .4
16	36 19.2	76	3 16.4	116	239 12.2	6 5.8	153 32.0	-21 .4
18	65 12.3	76	3 39.5	115	269 17.7	6 6.0	183 36.8	-21 .4
20	94 5.5	75	4 2.5	114	299 23.2	6 6.3	213 41.6	-21 .4
22	122 58.6	75	4 25.4	114	329 28.8	6 6.5	243 46.4	-21 .4
Δ					28	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 17.6	.6	16.1	T _m	13 29	2.3	61.0 16.6		
12	-10 9.8	T _{m☉}	12 h 10.2 min	Starost	.9 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♀	h min	'	°	
♂	10 46	.1	30	-3.1	♃	0 6	.0	190	-2.0
♂	4 45	.1	120	-3	♄	5 47	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 29.5 - 3 37.6		169 4.9	198 20.1 -13 3.2	289 11.8 -19 18.7		
2	207 29.8 - 3 35.7		199 9.9	228 19.0 -13 1.2	319 15.0 -19 19.1		
4	237 30.1 - 3 33.7		229 14.8	258 17.9 -12 59.2	349 18.2 -19 19.5		
6	267 30.5 - 3 31.7		259 19.7	288 16.8 -12 57.2	19 21.3 -19 19.9		
8	297 30.8 - 3 29.8		289 24.6	318 15.8 -12 55.2	49 24.5 -19 20.3		
10	327 31.1 - 3 27.8		319 29.6	348 14.7 -12 53.2	79 27.7 -19 20.7		
12	357 31.5 - 3 25.8		349 34.5	18 13.6 -12 51.1	109 30.9 -19 21.1		
14	27 31.8 - 3 23.9		19 39.4	48 12.5 -12 49.1	139 34.1 -19 21.5		
16	57 32.1 - 3 21.9		49 44.4	78 11.5 -12 47.1	169 37.3 -19 21.9		
18	87 32.4 - 3 19.9		79 49.3	108 10.4 -12 45.1	199 40.5 -19 22.3		
20	117 32.8 - 3 18.0		109 54.2	138 9.3 -12 43.1	229 43.7 -19 22.7		
22	147 33.1 - 3 16.0		139 59.1	168 8.3 -12 41.0	259 46.9 -19 23.0		
Δ	2	10		-5	10	16	-2

UT	MESEC				JUPITER				SATURN			
	S _♄	Δ	δ _♄	Δ	S _♃	Δ	δ _♃	Δ	S _♄	Δ	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	151 51.6 75	4 48.2	113		359 34.3	6 6.8			273 51.2 -21	.4		
2	180 44.6 75	5 10.8	112		29 39.8	6 7.0			303 56.0 -21	.4		
4	209 37.6 75	5 33.3	112		59 45.3	6 7.3			334 .8 -21	.4		
6	238 30.6 75	5 55.6	111		89 50.9	6 7.6			4 5.6 -21	.4		
8	267 23.5 74	6 17.7	110		119 56.4	6 7.8			34 10.4 -21	.4		
10	296 16.4 74	6 39.7	109		150 1.9	6 8.1			64 15.2 -21	.4		
12	325 9.3 74	7 1.4	108		180 7.5	6 8.3			94 20.0 -21	.4		
14	354 2.1 74	7 23.0	107		210 13.0	6 8.6			124 24.8 -21	.4		
16	22 54.9 74	7 44.3	106		240 18.5	6 8.8			154 29.6 -21	.4		
18	51 47.7 74	8 5.4	104		270 24.1	6 9.1			184 34.4 -21	.4		
20	80 40.4 73	8 26.3	103		300 29.6	6 9.4			214 39.2 -21	.4		
22	109 33.1 73	8 46.9	102		330 35.1	6 9.6			244 44.1 -21	.5		
Δ					28	1			24	0		

UT	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
h	h min	h min	h min	h min	h min	min	h min	min
0	6 28	17 53	0 41	2 22	7 27	1.0	21 41	3.6
55	6 24	17 57	0 36	2 2	7 35	1.2	21 30	3.4
50	6 22	17 59	0 32	1 48	7 41	1.4	21 21	3.2
45	6 19	18 1	0 29	1 38	7 46	1.6	21 14	3.1
40	6 17	18 3	0 27	1 30	7 50	1.7	21 8	2.9
35	6 16	18 5	0 25	1 24	7 53	1.8	21 3	2.8
30	6 14	18 6	0 24	1 19	7 57	1.9	20 59	2.7
20	6 12	18 9	0 22	1 13	8 2	2.1	20 51	2.6
10	6 9	18 11	0 21	1 10	8 7	2.2	20 44	2.5
0	6 7	18 13	0 21	1 9	8 12	2.3	20 38	2.3
10	6 4	18 16	0 21	1 10	8 16	2.5	20 32	2.2
20	6 1	18 18	0 22	1 14	8 21	2.6	20 25	2.1
30	5 58	18 21	0 24	1 20	8 27	2.8	20 17	1.9
35	5 56	18 23	0 25	1 25	8 30	2.9	20 13	1.8
40	5 54	18 25	0 27	1 32	8 34	3.0	20 8	1.7
45	5 51	18 28	0 29	1 41	8 39	3.1	20 2	1.6
50	5 48	18 31	0 33	1 52	8 44	3.3	19 55	1.5
55	5 44	18 35	0 37	2 9	8 51	3.5	19 47	1.3
60	5 39	18 40	0 42	2 34	8 60	3.7	19 36	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 2.1	.7	16.1	T _m	14 25	2.3	60.9 16.6
12	-9 54.1	T _{m☉}	12 h 9.9 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	'	°	
♂	10 47	.1	29	-3.1	♄	0 2	.0	190	-2.0
♂	4 43	.1	120	-.3	♂	5 44	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 33.4 - 3 14.0		170 4.1	198 7.2 -12 39.0	289 50.1 -19 23.4		
2	207 33.8 - 3 12.1		200 9.0	228 6.1 -12 37.0	319 53.3 -19 23.8		
4	237 34.1 - 3 10.1		230 13.9	258 5.1 -12 34.9	349 56.5 -19 24.2		
6	267 34.5 - 3 8.1		260 18.9	288 4.0 -12 32.9	19 59.7 -19 24.6		
8	297 34.8 - 3 6.2		290 23.8	318 3.0 -12 30.9	50 2.9 -19 25.0		
10	327 35.1 - 3 4.2		320 28.7	348 1.9 -12 28.8	80 6.1 -19 25.4		
12	357 35.5 - 3 2.2		350 33.6	18 .9 -12 26.8	110 9.3 -19 25.8		
14	27 35.8 - 3 .3		20 38.6	47 59.8 -12 24.8	140 12.5 -19 26.1		
16	57 36.1 - 2 58.3		50 43.5	77 58.8 -12 22.7	170 15.8 -19 26.5		
18	87 36.5 - 2 56.3		80 48.4	107 57.7 -12 20.7	200 19.0 -19 26.9		
20	117 36.8 - 2 54.3		110 53.4	137 56.7 -12 18.6	230 22.2 -19 27.3		
22	147 37.1 - 2 52.4		140 58.3	167 55.6 -12 16.6	260 25.4 -19 27.7		
Δ	2	10		-5	10	16	-2

UT	MESEC				JUPITER				SATURN			
	S _♄	Δ	δ _♄	Δ	S _♃	Δ	δ _♃	Δ	S _♄	Δ	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	138 25.7 73	9 7.2	100		0 40.6	6 9.9			274 48.9 -21	.5		
2	167 18.4 73	9 27.3	99		30 46.2	6 10.1			304 53.7 -21	.5		
4	196 10.9 73	9 47.1	98		60 51.7	6 10.4			334 58.5 -21	.5		
6	225 3.5 73	10 6.7	96		90 57.2	6 10.6			5 3.3 -21	.5		
8	253 56.0 72	10 25.9	95		121 2.8	6 10.9			35 8.1 -21	.5		
10	282 48.5 72	10 44.9	93		151 8.3	6 11.2			65 12.9 -21	.5		
12	311 41.0 72	11 3.5	92		181 13.8	6 11.4			95 17.7 -21	.5		
14	340 33.4 72	11 21.8	90		211 19.3	6 11.7			125 22.5 -21	.5		
16	9 25.8 72	11 39.8	88		241 24.9	6 11.9			155 27.3 -21	.5		
18	38 18.1 72	11 57.4	87		271 30.4	6 12.2			185 32.2 -21	.5		
20	67 10.5 72	12 14.7	85		301 35.9	6 12.4			215 37.0 -21	.5		
22	96 2.8 72	12 31.7	83		331 41.5	6 12.7			245 41.8 -21	.5		
Δ					28	1			24	0		

UT	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	Δ/24	ZALAZ	Δ/24
h	h min	h min	h min	h min	h min	min	h min	min
0	6 25	17 56	0 41	2 22	7 51	1.2	23 8	3.4
55	6 22	17 59	0 36	2 2	8 5	1.4	22 51	3.2
50	6 19	18 1	0 32	1 48	8 15	1.6	22 38	3.0
45	6 18	18 3	0 29	1 38	8 23	1.7	22 27	2.9
40	6 16	18 4	0 27	1 30	8 30	1.8	22 19	2.8
35	6 14	18 5	0 25	1 24	8 37	1.9	22 11	2.7
30	6 13	18 7	0 24	1 19	8 42	2.0	22 5	2.7
20	6 11	18 9	0 22	1 13	8 51	2.1	21 53	2.5
10	6 9	18 11	0 21	1 10	8 60	2.2	21 43	2.4
0	6 6	18 13	0 21	1 9	9 7	2.3	21 34	2.3
10	6 4	18 15	0 21	1 10	9 15	2.5	21 25	2.2
20	6 2	18 17	0 22	1 14	9 24	2.6	21 15	2.1
30	5 59	18 20	0 24	1 20	9 34	2.7	21 4	2.0
35	5 57	18 22	0 25	1 25	9 39	2.8	20 57	2.0
40	5 55	18 24	0 27	1 32	9 46	2.9	20 50	1.9
45	5 52	18 26	0 29	1 40	9 53	3.0	20 41	1.8
50	5 50	18 29	0 32	1 52	10 2	3.1	20 31	1.7
55	5 46	18 32	0 37	2 8	10 14	3.3	20 18	1.5
60	5 41	18 37	0 42	2 33	10 29	3.5	20 1	1.3

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♄	r
h	min s	s	'	h min	min	'	'
00	-9 46.2	.7	16.1	T _m	15 21	2.3	60.6 16.5
12	-9 38.1	T _{m☉}	12 h 9.6 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	'	°	
♂	10 48	.1	28	-3.1	♄	23 53	.0	191	-2.0
♂	4 40	.1	120	-.4	♂	5 40	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 37.5	- 2 50.4	171 3.2	197 54.6	-12 14.5	290 28.7	-19 28.1
2	207 37.8	- 2 48.4	201 8.1	227 53.5	-12 12.4	320 31.9	-19 28.4
4	237 38.2	- 2 46.5	231 13.1	257 52.5	-12 10.4	350 35.1	-19 28.8
6	267 38.5	- 2 44.5	261 18.0	287 51.5	-12 8.3	20 38.4	-19 29.2
8	297 38.8	- 2 42.5	291 22.9	317 50.4	-12 6.2	50 41.6	-19 29.6
10	327 39.2	- 2 40.5	321 27.8	347 49.4	-12 4.2	80 44.9	-19 30.0
12	357 39.5	- 2 38.6	351 32.8	17 48.4	-12 2.1	110 48.1	-19 30.3
14	27 39.9	- 2 36.6	21 37.7	47 47.3	-12 0	140 51.4	-19 30.7
16	57 40.2	- 2 34.6	51 42.6	77 46.3	-11 58.0	170 54.6	-19 31.1
18	87 40.6	- 2 32.7	81 47.6	107 45.3	-11 55.9	200 57.9	-19 31.5
20	117 40.9	- 2 30.7	111 52.5	137 44.3	-11 53.8	231 1.1	-19 31.8
22	147 41.3	- 2 28.7	141 57.4	167 43.2	-11 51.7	261 4.4	-19 32.2
Δ	2	10		-5	10	16	-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	6 22	17 58	0 41	2 22	8 19	1.4	.. ..	.0
55	6 19	18 1	0 36	2 3	8 38	1.6	.. ..	.0
50	6 17	18 2	0 32	1 49	8 53	1.8	23 51	2.8
45	6 16	18 4	0 29	1 38	9 4	1.9	23 37	2.7
40	6 14	18 5	0 27	1 30	9 14	1.9	23 26	2.6
35	6 13	18 6	0 25	1 24	9 22	2.0	23 17	2.6
30	6 12	18 7	0 24	1 20	9 29	2.1	23 9	2.5
20	6 10	18 9	0 22	1 13	9 42	2.2	22 55	2.5
10	6 8	18 11	0 21	1 10	9 53	2.3	22 42	2.4
0	6 6	18 13	0 21	1 9	10 4	2.3	22 30	2.3
10	6 4	18 14	0 21	1 10	10 14	2.4	22 19	2.3
20	6 2	18 17	0 22	1 14	10 26	2.5	22 6	2.2
30	5 59	18 19	0 24	1 20	10 39	2.6	21 52	2.1
35	5 58	18 20	0 25	1 25	10 46	2.7	21 44	2.1
40	5 56	18 22	0 27	1 32	10 55	2.7	21 35	2.0
45	5 54	18 24	0 29	1 40	11 5	2.8	21 24	2.0
50	5 51	18 27	0 32	1 52	11 17	2.9	21 11	1.9
55	5 48	18 30	0 36	2 8	11 33	3.1	20 54	1.8
60	5 44	18 34	0 42	2 31	11 54	3.2	20 32	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	124 55.1	71 12 48.3	81	1 47.0	6 12.9	275 46.6	-21 .5	
2	153 47.4	71 13 4.5	79	31 52.5	6 13.2	305 51.4	-21 .5	
4	182 39.7	71 13 20.4	77	61 58.0	6 13.5	335 56.2	-21 .5	
6	211 31.9	71 13 35.9	76	92 3.6	6 13.7	6 1.1	-21 .5	
8	240 24.2	71 13 51.0	74	122 9.1	6 14.0	36 5.9	-21 .5	
10	269 16.4	71 14 5.7	72	152 14.6	6 14.2	66 10.7	-21 .5	
12	298 8.7	71 14 20.0	70	182 20.1	6 14.5	96 15.5	-21 .5	
14	327 .9	71 14 34.0	68	212 25.7	6 14.7	126 20.3	-21 .5	
16	355 53.1	71 14 47.5	66	242 31.2	6 15.0	156 25.2	-21 .5	
18	24 45.4	71 15 .6	64	272 36.7	6 15.2	186 30.0	-21 .5	
20	53 37.6	71 15 13.3	61	302 42.2	6 15.5	216 34.8	-21 .5	
22	82 29.9	71 15 25.6	59	332 47.8	6 15.7	246 39.6	-21 .5	
Δ				28	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 30.1	.7	16.1	T _m	16 17	2.3	60.0	16.4	
12	- 9 21.8	T _{m☉}	12 h 9.4 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	'	°	
♁	10 49	.1	27	-3.1	♃	23 48	.0	191	-2.0
♂	4 38	.1	119	-4	♄	5 36	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 41.6	- 2 26.7	172 2.3	197 42.2	-11 49.6	291 7.7	-19 32.6
2	207 41.9	- 2 24.8	202 7.3	227 41.2	-11 47.6	321 10.9	-19 33.0
4	237 42.3	- 2 22.8	232 12.2	257 40.2	-11 45.5	351 14.2	-19 33.3
6	267 42.6	- 2 20.8	262 17.1	287 39.1	-11 43.4	21 17.5	-19 33.7
8	297 43.0	- 2 18.8	292 22.1	317 38.1	-11 41.3	51 20.7	-19 34.1
10	327 43.3	- 2 16.9	322 27.0	347 37.1	-11 39.2	81 24.0	-19 34.4
12	357 43.7	- 2 14.9	352 31.9	17 36.1	-11 37.1	111 27.3	-19 34.8
14	27 44.0	- 2 12.9	22 36.8	47 35.1	-11 35.0	141 30.6	-19 35.2
16	57 44.4	- 2 10.9	52 41.8	77 34.1	-11 32.9	171 33.9	-19 35.6
18	87 44.7	- 2 9.0	82 46.7	107 33.1	-11 30.8	201 37.1	-19 35.9
20	117 45.1	- 2 7.0	112 51.6	137 32.1	-11 28.7	231 40.4	-19 36.3
22	147 45.4	- 2 5.0	142 56.6	167 31.1	-11 26.6	261 43.7	-19 36.7
Δ	2	10		-5	10	16	-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	6 19	18 1	0 41	2 23	8 53	1.8	0 31	3.0
55	6 17	18 3	0 36	2 3	9 17	1.9	0 8	2.9
50	6 15	18 4	0 32	1 49	9 35	2.0	.. ..	.0
45	6 14	18 5	0 29	1 38	9 49	2.0	.. ..	.0
40	6 13	18 6	0 27	1 30	10 0	2.1	.. ..	.0
35	6 12	18 7	0 25	1 24	10 10	2.1	.. ..	.0
30	6 11	18 8	0 24	1 20	10 19	2.2	.. ..	.0
20	6 9	18 9	0 22	1 13	10 34	2.2	23 54	2.4
10	6 7	18 11	0 21	1 10	10 47	2.3	23 40	2.3
0	6 6	18 12	0 21	1 9	10 60	2.3	23 27	2.3
10	6 4	18 14	0 21	1 10	11 12	2.4	23 13	2.3
20	6 2	18 16	0 22	1 13	11 26	2.4	22 59	2.2
30	5 60	18 18	0 24	1 20	11 41	2.5	22 43	2.2
35	5 59	18 19	0 25	1 25	11 50	2.5	22 34	2.2
40	5 57	18 21	0 27	1 31	12 1	2.5	22 23	2.1
45	5 55	18 22	0 29	1 40	12 13	2.6	22 11	2.2
50	5 53	18 24	0 32	1 51	12 27	2.6	21 55	2.1
55	5 50	18 27	0 36	2 7	12 46	2.7	21 36	2.0
60	5 46	18 31	0 42	2 30	13 11	2.8	21 10	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	111 22.2	72 15 37.5	57	2 53.3	6 16.0	276 44.5	-21 .5	
2	140 14.5	72 15 48.9	55	32 58.8	6 16.3	306 49.3	-21 .5	
4	169 6.8	72 15 59.9	53	63 4.4	6 16.5	336 54.1	-21 .5	
6	197 59.2	72 16 10.5	51	93 9.9	6 16.8	6 58.9	-21 .5	
8	226 51.6	72 16 20.7	49	123 15.4	6 17.0	37 3.8	-21 .5	
10	255 44.0	72 16 30.4	46	153 20.9	6 17.3	67 8.6	-21 .5	
12	284 36.5	73 16 39.7	44	183 26.4	6 17.5	97 13.4	-21 .5	
14	313 29.1	73 16 48.5	42	213 32.0	6 17.8	127 18.3	-21 .5	
16	342 21.7	73 16 56.9	40	243 37.5	6 18.0	157 23.1	-21 .5	
18	11 14.3	74 17 4.9	38	273 43.0	6 18.3	187 27.9	-21 .5	
20	40 7.0	74 17 12.4	35	303 48.5	6 18.5	217 32.8	-21 .5	
22	68 59.8	74 17 19.5	33	333 54.1	6 18.8	247 37.6	-21 .5	
Δ				28	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 13.6	.7	16.1	T _m	17 13	2.3	59.3	16.2	
12	- 9 5.3	T _{m☉}	12 h 9.1 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	'	°	
♁	10 50	.1	26	-3.1	♃	23 44	.0	191	-2.0
♂	4 35	.1	119	-4	♄	5 32	.0	105	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	45.8	-2	3.0	173	1.5	197	30.1	-11	24.5	291	47.0	-19	37.0
2	207	46.1	-2	1.1	203	6.4	227	29.1	-11	22.4	321	50.3	-19	37.4
4	237	46.5	-1	59.1	233	11.3	257	28.1	-11	20.3	351	53.6	-19	37.8
6	267	46.8	-1	57.1	263	16.3	287	27.1	-11	18.1	21	56.9	-19	38.1
8	297	47.2	-1	55.1	293	21.2	317	26.1	-11	16.0	52	.2	-19	38.5
10	327	47.5	-1	53.2	323	26.1	347	25.1	-11	13.9	82	3.6	-19	38.8
12	357	47.9	-1	51.2	353	31.1	17	24.1	-11	11.8	112	6.9	-19	39.2
14	27	48.2	-1	49.2	23	36.0	47	23.1	-11	9.7	142	10.2	-19	39.6
16	57	48.6	-1	47.2	53	40.9	77	22.1	-11	7.5	172	13.5	-19	39.9
18	87	48.9	-1	45.3	83	45.8	107	21.1	-11	5.4	202	16.8	-19	40.3
20	117	49.3	-1	43.3	113	50.8	137	20.1	-11	3.3	232	20.1	-19	40.7
22	147	49.7	-1	41.3	143	55.7	167	19.1	-11	1.1	262	23.5	-19	41.0
Δ	2	10					-5	11			17		-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	6 16	18 3	0 41	2 23	9 36	2.1	1 44	2.6
55	6 14	18 5	0 36	2 3	10 2	2.2	1 17	2.5
50	6 13	18 6	0 32	1 49	10 22	2.2	0 58	2.5
45	6 12	18 6	0 29	1 38	10 38	2.2	0 43	2.4
40	6 11	18 7	0 27	1 30	10 51	2.2	0 30	2.4
35	6 10	18 8	0 25	1 24	11 1	2.2	0 19	2.4
30	6 10	18 9	0 24	1 20	11 11	2.2	0 10	2.4
20	6 8	18 10	0 22	1 13	11 28	2.3	...	.0
10	6 7	18 11	0 21	1 10	11 42	2.3	...	.0
0	6 6	18 12	0 21	1 9	11 56	2.3	...	.0
10	6 4	18 13	0 21	1 10	12 9	2.3	...	.0
20	6 2	18 15	0 22	1 13	12 24	2.3	23 53	2.3
30	6 1	18 17	0 24	1 20	12 41	2.3	23 36	2.3
35	5 59	18 18	0 25	1 25	12 50	2.3	23 27	2.3
40	5 58	18 19	0 27	1 31	13 1	2.3	23 15	2.3
45	5 56	18 20	0 29	1 40	13 15	2.3	23 2	2.3
50	5 54	18 22	0 32	1 51	13 31	2.3	22 46	2.3
55	5 52	18 25	0 36	2 6	13 51	2.3	22 25	2.3
60	5 49	18 28	0 42	2 29	14 19	2.3	21 57	2.3
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	97	52.7	75	17	26.1	31	3	59.6	6	19.0	277	42.4	-21	.5
2	126	45.6	75	17	32.3	29	34	5.1	6	19.3	307	47.3	-21	.5
4	155	38.6	76	17	38.0	26	64	10.6	6	19.5	337	52.1	-21	.5
6	184	31.7	76	17	43.3	24	94	16.2	6	19.8	7	56.9	-21	.5
8	213	24.9	77	17	48.1	22	124	21.7	6	20.0	38	1.8	-21	.5
10	242	18.3	77	17	52.5	20	154	27.2	6	20.3	68	6.6	-21	.5
12	271	11.7	78	17	56.5	18	184	32.7	6	20.5	98	11.4	-21	.5
14	300	5.2	78	18	.0	15	214	38.2	6	20.8	128	16.3	-21	.5
16	328	58.8	79	18	3.1	13	244	43.8	6	21.0	158	21.1	-21	.5
18	357	52.6	79	18	5.7	11	274	49.3	6	21.3	188	26.0	-21	.5
20	26	46.4	80	18	7.9	9	304	54.8	6	21.5	218	30.8	-21	.4
22	55	40.5	81	18	9.6	7	335	.3	6	21.8	248	35.6	-21	.4
Δ							28	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	- 8 56.9	.7	16.1	T _m	18 9	2.2	58.5 16.0
12	- 8 48.4	T _{m☉}	12 h 8.8 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	'	°	'
♀	10 50	.1	24	-3.1	♃	23 40	.0	191	-2.0
♂	4 32	.1	119	-.4	♄	5 28	.0	105	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	177	50.0	-1	39.3	174	.6	197	18.1	-10	59.0	292	26.8	-19	41.4
2	207	50.4	-1	37.4	204	5.6	227	17.2	-10	56.9	322	30.1	-19	41.7
4	237	50.7	-1	35.4	234	10.5	257	16.2	-10	54.7	352	33.5	-19	42.1
6	267	51.1	-1	33.4	264	15.4	287	15.2	-10	52.6	22	36.8	-19	42.4
8	297	51.4	-1	31.4	294	20.3	317	14.2	-10	50.4	52	40.1	-19	42.8
10	327	51.8	-1	29.5	324	25.3	347	13.2	-10	48.3	82	43.5	-19	43.2
12	357	52.1	-1	27.5	354	30.2	17	12.3	-10	46.1	112	46.8	-19	43.5
14	27	52.5	-1	25.5	24	35.1	47	11.3	-10	44.0	142	50.2	-19	43.9
16	57	52.9	-1	23.5	54	40.1	77	10.3	-10	41.8	172	53.5	-19	44.2
18	87	53.2	-1	21.6	84	45.0	107	9.3	-10	39.7	202	56.9	-19	44.6
20	117	53.6	-1	19.6	114	49.9	137	8.4	-10	37.5	233	.3	-19	44.9
22	147	53.9	-1	17.6	144	54.8	167	7.4	-10	35.4	263	3.6	-19	45.3
Δ	2	10					-5	11			17		-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	6 13	18 6	0 42	2 24	10 27	2.5	2 45	2.1
55	6 12	18 6	0 36	2 3	10 55	2.4	2 18	2.1
50	6 11	18 7	0 32	1 49	11 15	2.4	1 57	2.1
45	6 10	18 8	0 29	1 39	11 31	2.4	1 41	2.2
40	6 9	18 8	0 27	1 31	11 44	2.3	1 28	2.2
35	6 9	18 9	0 25	1 24	11 55	2.3	1 17	2.2
30	6 8	18 9	0 24	1 20	12 5	2.3	1 7	2.2
20	6 7	18 10	0 22	1 13	12 22	2.3	0 50	2.2
10	6 6	18 11	0 21	1 10	12 36	2.2	0 36	2.2
0	6 5	18 12	0 21	1 9	12 50	2.2	0 22	2.2
10	6 4	18 13	0 21	1 10	13 4	2.2	0 8	2.3
20	6 3	18 14	0 22	1 13	13 19	2.1	...	.0
30	6 1	18 15	0 24	1 20	13 36	2.1	...	.0
35	6 0	18 16	0 25	1 25	13 45	2.1	...	.0
40	5 59	18 17	0 27	1 31	13 57	2.0	...	.0
45	5 58	18 19	0 29	1 39	14 10	2.0	23 57	2.4
50	5 56	18 20	0 32	1 51	14 26	2.0	23 41	2.5
55	5 54	18 22	0 36	2 6	14 46	1.9	23 21	2.6
60	5 51	18 25	0 42	2 28	15 14	1.8	22 54	2.7
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	84	34.6	81	18	10.9	4	5	5.8	6	22.0	278	40.5	-21	.4
2	113	28.9	82	18	11.8	2	35	11.4	6	22.3	308	45.3	-21	.4
4	142	23.3	83	18	12.3	0	65	16.9	6	22.5	338	50.2	-21	.4
6	171	17.9	84	18	12.3	-2	95	22.4	6	22.8	8	55.0	-21	.4
8	200	12.6	84	18	11.9	-4	125	27.9	6	23.0	38	59.9	-21	.4
10	229	7.5	85	18	11.0	-6	155	33.4	6	23.3	69	4.7	-21	.4
12	258	2.5	86	18	9.8	-8	185	39.0	6	23.5	99	9.6	-21	.4
14	286	57.7	87	18	8.1	-10	215	44.5	6	23.8	129	14.4	-21	.4
16	315	53.1	88	18	6.0	-12	245	50.0	6	24.0	159	19.3	-21	.4
18	344	48.6	89	18	3.5	-14	275	55.5	6	24.3	189	24.1	-21	.4
20	13	44.4	89	18	.6	-17	306	1.0	6	24.5	219	29.0	-21	.4
22	42	40.3	90	17	57.3	-18	336	6.6	6	24.8	249	33.8	-21	.4
Δ							28	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	- 8 40.0	.7	16.1	T _m	19 3	2.2	57.8 15.7
12	- 8 31.4	T _{m☉}	12 h 8.5 min	Starost	6.9 d	Faza	☉

|--|--|--|--|--|--|--|--|

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	°	'	°	'
0	177 54.3	- 1 15.6	174 59.8	197 6.4	-10 33.2	293 7.0	-19 45.6
2	207 54.7	- 1 13.7	205 4.7	227 5.5	-10 31.1	323 10.3	-19 46.0
4	237 55.0	- 1 11.7	235 9.6	257 4.5	-10 28.9	353 13.7	-19 46.3
6	267 55.4	- 1 9.7	265 14.5	287 3.6	-10 26.7	23 17.1	-19 46.7
8	297 55.7	- 1 7.7	295 19.5	317 2.6	-10 24.6	53 20.5	-19 47.0
10	327 56.1	- 1 5.7	325 24.4	347 1.6	-10 22.4	83 23.8	-19 47.4
12	357 56.5	- 1 3.8	355 29.3	17 .7	-10 20.2	113 27.2	-19 47.7
14	27 56.8	- 1 1.8	25 34.3	46 59.7	-10 18.1	143 30.6	-19 48.1
16	57 57.2	- 0 59.8	55 39.2	76 58.8	-10 15.9	173 34.0	-19 48.4
18	87 57.6	- 0 57.8	85 44.1	106 57.8	-10 13.7	203 37.4	-19 48.8
20	117 57.9	- 0 55.9	115 49.0	136 56.9	-10 11.5	233 40.8	-19 49.1
22	147 58.3	- 0 53.9	145 54.0	166 55.9	-10 9.3	263 44.2	-19 49.5
Δ	2	10		-5	11	17	-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	6 10	18 8	0 42	2 25	11 27	2.8	3 35	1.6
55	6 9	18 8	0 36	2 4	11 53	2.6	3 8	1.7
50	6 9	18 9	0 32	1 49	12 13	2.5	2 49	1.8
45	6 8	18 9	0 29	1 39	12 28	2.5	2 33	1.9
40	6 8	18 9	0 27	1 31	12 40	2.4	2 20	1.9
35	6 7	18 10	0 25	1 24	12 51	2.3	2 10	2.0
30	6 7	18 10	0 24	1 20	13 0	2.3	2 0	2.0
20	6 6	18 10	0 22	1 13	13 16	2.2	1 44	2.1
10	6 6	18 11	0 21	1 10	13 30	2.2	1 29	2.1
0	6 5	18 11	0 21	1 9	13 43	2.1	1 16	2.2
10	6 4	18 12	0 21	1 10	13 56	2.1	1 2	2.2
20	6 3	18 13	0 22	1 13	14 10	2.0	0 48	2.3
30	6 2	18 14	0 24	1 20	14 26	1.9	0 31	2.3
35	6 1	18 15	0 25	1 25	14 35	1.9	0 21	2.3
40	6 0	18 16	0 27	1 31	14 46	1.8	0 10	2.4
45	5 59	18 17	0 29	1 39	14 58	1.7	...	.0
50	5 58	18 18	0 32	1 50	15 13	1.7	...	.0
55	5 56	18 19	0 36	2 5	15 32	1.6	...	.0
60	5 54	18 21	0 42	2 28	15 58	1.4	23 57	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	71 36.3	91	17 53.7	-20	6 12.1	6 25.0	279 38.7	-21 .4
2	100 32.6	92	17 49.6	-22	36 17.6	6 25.3	309 43.5	-21 .4
4	129 29.1	93	17 45.1	-24	66 23.1	6 25.5	339 48.4	-21 .4
6	158 25.7	94	17 40.2	-26	96 28.6	6 25.8	9 53.2	-21 .4
8	187 22.5	95	17 35.0	-28	126 34.1	6 26.0	39 58.1	-21 .4
10	216 19.6	96	17 29.3	-30	156 39.7	6 26.3	70 2.9	-21 .4
12	245 16.8	97	17 23.3	-32	186 45.2	6 26.5	100 7.8	-21 .4
14	274 14.2	98	17 17.0	-34	216 50.7	6 26.8	130 12.6	-21 .4
16	303 11.9	99	17 10.2	-35	246 56.2	6 27.0	160 17.5	-21 .4
18	332 9.7	100	17 3.1	-37	277 1.7	6 27.2	190 22.4	-21 .4
20	1 7.8	101	16 55.7	-39	307 7.2	6 27.5	220 27.2	-21 .4
22	30 6.0	102	16 47.9	-41	337 12.7	6 27.7	250 32.1	-21 .4
Δ					28	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	- 8 22.8	.7	16.1	T _m	19 55	2.1	57.0 15.5		
12	- 8 14.1	T _{m☉}	12 h 8.2 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	'	°	
♂	10 52	.1	22	-3.0	♄	23 31	.0	191	-2.0
♂	4 27	.1	118	-5	♂	5 21	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	°	'	°	'
0	177 58.7	- 0 51.9	175 58.9	196 55.0	-10 7.2	293 47.6	-19 49.8
2	207 59.0	- 0 49.9	206 3.8	226 54.0	-10 5.0	323 51.0	-19 50.2
4	237 59.4	- 0 48.0	236 8.8	256 53.1	-10 2.8	353 54.4	-19 50.5
6	267 59.7	- 0 46.0	266 13.7	286 52.1	-10 .6	23 57.8	-19 50.8
8	298 .1	- 0 44.0	296 18.6	316 51.2	- 9 58.4	54 1.2	-19 51.2
10	328 .5	- 0 42.0	326 23.5	346 50.2	- 9 56.2	84 4.6	-19 51.5
12	358 .8	- 0 40.0	356 28.5	16 49.3	- 9 54.0	114 8.0	-19 51.9
14	28 1.2	- 0 38.1	26 33.4	46 48.4	- 9 51.8	144 11.4	-19 52.2
16	58 1.6	- 0 36.1	56 38.3	76 47.4	- 9 49.6	174 14.9	-19 52.5
18	88 1.9	- 0 34.1	86 43.3	106 46.5	- 9 47.4	204 18.3	-19 52.9
20	118 2.3	- 0 32.1	116 48.2	136 45.6	- 9 45.2	234 21.7	-19 53.2
22	148 2.7	- 0 30.2	146 53.1	166 44.6	- 9 43.0	264 25.1	-19 53.6
Δ	2	10		-5	11	17	-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	6 7	18 11	0 42	2 25	12 34	2.9	4 13	1.3
55	6 7	18 10	0 36	2 4	12 56	2.7	3 50	1.4
50	6 6	18 10	0 32	1 50	13 13	2.6	3 32	1.5
45	6 6	18 10	0 29	1 39	13 27	2.5	3 18	1.6
40	6 6	18 10	0 27	1 31	13 38	2.4	3 7	1.7
35	6 6	18 10	0 25	1 25	13 47	2.4	2 57	1.8
30	6 6	18 10	0 24	1 20	13 55	2.3	2 48	1.8
20	6 6	18 11	0 22	1 13	14 10	2.2	2 33	1.9
10	6 5	18 11	0 21	1 10	14 22	2.1	2 20	2.0
0	6 5	18 11	0 21	1 9	14 34	2.0	2 8	2.1
10	6 4	18 12	0 21	1 10	14 45	1.9	1 55	2.1
20	6 3	18 12	0 22	1 13	14 58	1.8	1 42	2.2
30	6 2	18 13	0 24	1 20	15 12	1.7	1 27	2.3
35	6 2	18 14	0 25	1 25	15 20	1.7	1 18	2.4
40	6 1	18 14	0 27	1 31	15 29	1.6	1 7	2.4
45	6 0	18 15	0 29	1 39	15 40	1.5	0 56	2.5
50	5 59	18 16	0 32	1 50	15 53	1.4	0 41	2.6
55	5 58	18 17	0 36	2 5	16 10	1.3	0 23	2.7
60	5 56	18 18	0 42	2 27	16 32	1.1	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	59 4.5	103	16 39.8	-42	7 18.3	6 28.0	280 36.9	-21 .4
2	88 3.1	104	16 31.3	-44	37 23.8	6 28.2	310 41.8	-21 .4
4	117 2.0	105	16 22.5	-46	67 29.3	6 28.5	340 46.7	-21 .4
6	146 1.1	107	16 13.4	-47	97 34.8	6 28.7	10 51.5	-21 .4
8	175 .4	108	16 3.9	-49	127 40.3	6 29.0	40 56.4	-21 .4
10	203 59.9	109	15 54.1	-50	157 45.8	6 29.2	71 1.3	-21 .4
12	232 59.6	110	15 44.1	-52	187 51.3	6 29.5	101 6.1	-21 .4
14	261 59.6	111	15 33.7	-53	217 56.8	6 29.7	131 11.0	-21 .4
16	290 59.7	112	15 23.0	-55	248 2.4	6 29.9	161 15.9	-21 .4
18	320 .1	113	15 12.0	-56	278 7.9	6 30.2	191 20.7	-21 .4
20	349 .7	114	15 .7	-58	308 13.4	6 30.4	221 25.6	-21 .3
22	18 1.4	115	14 49.2	-59	338 18.9	6 30.7	251 30.5	-21 .3
Δ					28	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	- 8 5.4	.7	16.1	T _m	20 45	2.0	56.4 15.4		
12	- 7 56.6	T _{m☉}	12 h 7.9 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	'	°	
♂	10 53	.1	21	-3.0	♄	23 26	.0	191	-2.0
♂	4 24	.1	118	-5	♂	5 17	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	'	'							
0	178	3.0	-0	28.2	176	58.0	196	43.7	-9	40.8	294	28.6	-19	53.9
2	208	3.4	-0	26.2	207	3.0	226	42.8	-9	38.6	324	32.0	-19	54.2
4	238	3.8	-0	24.2	237	7.9	256	41.8	-9	36.4	354	35.5	-19	54.6
6	268	4.1	-0	22.3	267	12.8	286	40.9	-9	34.2	24	38.9	-19	54.9
8	298	4.5	-0	20.3	297	17.8	316	40.0	-9	32.0	54	42.4	-19	55.2
10	328	4.9	-0	18.3	327	22.7	346	39.1	-9	29.8	84	45.8	-19	55.6
12	358	5.3	-0	16.3	357	27.6	16	38.1	-9	27.6	114	49.3	-19	55.9
14	28	5.6	-0	14.4	27	32.5	46	37.2	-9	25.3	144	52.7	-19	56.2
16	58	6.0	-0	12.4	57	37.5	76	36.3	-9	23.1	174	56.2	-19	56.6
18	88	6.4	-0	10.4	87	42.4	106	35.4	-9	20.9	204	59.6	-19	56.9
20	118	6.7	-0	8.4	117	47.3	136	34.5	-9	18.7	235	3.1	-19	57.2
22	148	7.1	-0	6.5	147	52.3	166	33.5	-9	16.5	265	6.6	-19	57.6
Δ		2		10				-5		11		17		-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	6 4	18 13	0 42	2 26	13 44	3.0	4 44	1.0
55	6 4	18 12	0 36	2 5	14 2	2.8	4 24	1.2
50	6 4	18 12	0 32	1 50	14 16	2.6	4 9	1.3
45	6 4	18 12	0 29	1 39	14 27	2.5	3 58	1.4
40	6 5	18 11	0 27	1 31	14 36	2.4	3 48	1.5
35	6 5	18 11	0 25	1 25	14 44	2.3	3 39	1.6
30	6 5	18 11	0 24	1 20	14 50	2.3	3 32	1.7
20	6 5	18 11	0 22	1 13	15 2	2.1	3 19	1.8
10	6 5	18 11	0 21	1 10	15 12	2.0	3 8	1.9
0	6 4	18 11	0 21	1 9	15 22	1.9	2 57	2.0
10	6 4	18 11	0 21	1 10	15 32	1.8	2 46	2.1
20	6 4	18 11	0 22	1 13	15 42	1.7	2 35	2.2
30	6 3	18 12	0 24	1 20	15 54	1.6	2 22	2.3
35	6 3	18 12	0 25	1 25	16 0	1.5	2 14	2.3
40	6 2	18 12	0 27	1 31	16 8	1.5	2 6	2.4
45	6 2	18 13	0 29	1 39	16 17	1.4	1 55	2.5
50	6 1	18 14	0 32	1 50	16 27	1.2	1 43	2.6
55	5 60	18 14	0 36	2 4	16 41	1.1	1 27	2.8
60	5 58	18 15	0 42	2 26	16 58	.9	1 7	3.0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	'	'	'	'	'	'						
0	47	2.4	116	14	37.3	-61	8	24.4	6	30.9	281	35.3	-21	.3
2	76	3.6	117	14	25.2	-62	38	29.9	6	31.2	311	40.2	-21	.3
4	105	5.0	118	14	12.9	-63	68	35.4	6	31.4	341	45.1	-21	.3
6	134	6.6	119	14	.2	-64	98	40.9	6	31.6	11	49.9	-21	.3
8	163	8.5	120	13	47.3	-66	128	46.4	6	31.9	41	54.8	-21	.3
10	192	10.5	121	13	34.2	-67	158	51.9	6	32.1	71	59.7	-21	.3
12	221	12.7	122	13	20.8	-68	188	57.4	6	32.4	102	4.6	-21	.3
14	250	15.1	123	13	7.2	-69	219	2.9	6	32.6	132	9.4	-21	.3
16	279	17.7	124	12	53.3	-70	249	8.5	6	32.9	162	14.3	-21	.3
18	308	20.5	125	12	39.3	-72	279	14.0	6	33.1	192	19.2	-21	.3
20	337	23.5	126	12	25.0	-73	309	19.5	6	33.3	222	24.1	-21	.3
22	36	26.7	127	12	10.4	-74	339	25.0	6	33.6	252	29.0	-21	.3
Δ							28		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	- 7 47.8	.7	16.1	T _m	21 33	1.9	55.8	15.2
12	- 7 39.0	T _{m☉}	12 h 7.6 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	'	°	'
♀	10 53	.1	20	-3.0	♃	23 22	.0	191	-2.0
♂	4 22	.1	118	-.5	♄	5 13	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	'	'	'							
0	178	7.5	-0	4.5	177	57.2	196	32.6	-9	14.2	295	10.0	-19	57.9
2	208	7.8	-0	2.5	208	2.1	226	31.7	-9	12.0	325	13.5	-19	58.2
4	238	8.2	-0	.5	238	7.0	256	30.8	-9	9.8	355	17.0	-19	58.6
6	268	8.6	0	1.5	268	12.0	286	29.9	-9	7.5	25	20.5	-19	58.9
8	298	9.0	0	3.4	298	16.9	316	29.0	-9	5.3	55	23.9	-19	59.2
10	328	9.3	0	5.4	328	21.8	346	28.1	-9	3.1	85	27.4	-19	59.6
12	358	9.7	0	7.4	358	26.7	16	27.2	-9	.8	115	30.9	-19	59.9
14	28	10.1	0	9.4	28	31.7	46	26.3	-8	58.6	145	34.4	-20	.2
16	58	10.5	0	11.3	58	36.6	76	25.4	-8	56.4	175	37.9	-20	.5
18	88	10.8	0	13.3	88	41.5	106	24.4	-8	54.1	205	41.4	-20	.9
20	118	11.2	0	15.3	118	46.5	136	23.5	-8	51.9	235	44.9	-20	1.2
22	148	11.6	0	17.2	148	51.4	166	22.6	-8	49.6	265	48.4	-20	1.5
Δ		2		10				-5		11		17		-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	6 1	18 15	0 42	2 27	14 56	3.0	5 8	.8
55	6 1	18 14	0 36	2 5	15 9	2.8	4 53	1.0
50	6 2	18 14	0 32	1 50	15 19	2.6	4 41	1.2
45	6 3	18 13	0 29	1 39	15 27	2.5	4 32	1.3
40	6 3	18 12	0 27	1 31	15 34	2.4	4 25	1.4
35	6 3	18 12	0 25	1 25	15 40	2.3	4 18	1.5
30	6 4	18 12	0 24	1 20	15 45	2.2	4 12	1.6
20	6 4	18 11	0 22	1 13	15 53	2.1	4 2	1.7
10	6 4	18 11	0 21	1 10	16 1	2.0	3 53	1.8
0	6 4	18 11	0 21	1 9	16 8	1.9	3 45	1.9
10	6 4	18 11	0 21	1 10	16 16	1.8	3 36	2.0
20	6 4	18 10	0 22	1 13	16 23	1.6	3 27	2.1
30	6 4	18 11	0 24	1 20	16 32	1.5	3 17	2.2
35	6 3	18 11	0 25	1 24	16 37	1.4	3 11	2.3
40	6 3	18 11	0 27	1 31	16 43	1.3	3 4	2.4
45	6 3	18 11	0 29	1 39	16 49	1.2	2 56	2.5
50	6 2	18 11	0 32	1 49	16 57	1.1	2 46	2.6
55	6 2	18 12	0 36	2 4	17 7	1.0	2 34	2.8
60	6 1	18 12	0 41	2 25	17 20	.8	2 18	3.0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	'	'	'	'	'	'						
0	35	30.1	128	11	55.7	-75	9	30.5	6	33.8	282	33.8	-21	.3
2	64	33.7	129	11	40.8	-76	39	36.0	6	34.1	312	38.7	-21	.3
4	93	37.4	130	11	25.6	-77	69	41.5	6	34.3	342	43.6	-21	.3
6	122	41.4	131	11	10.3	-78	99	47.0	6	34.5	12	48.5	-21	.3
8	151	45.5	131	10	54.8	-78	129	52.5	6	34.8	42	53.4	-21	.3
10	180	49.7	132	10	39.1	-79	159	58.0	6	35.0	72	58.2	-21	.3
12	209	54.2	133	10	23.2	-80	190	3.5	6	35.3	103	3.1	-21	.3
14	238	58.8	134	10	7.2	-81	220	9.0	6	35.5	133	8.0	-21	.2
16	268	3.6	135	9	51.0	-82	250	14.5	6	35.7	163	12.9	-21	.2
18	297	8.6	136	9	34.6	-83	280	20.0	6	36.0	193	17.8	-21	.2
20	326	13.7	136	9	18.1	-83	310	25.5	6	36.2	223	22.7	-21	.2
22	355	19.0	137	9	1.4	-84	340	31.0	6	36.5	253	27.5	-21	.2
Δ							28		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	- 7 30.1	.7	16.1	T _m	22 19	1.9	55.3	15.1
12	- 7 21.1	T _{m☉}	12 h 7.4 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	'	°	'
♀	10 54	.1	19	-3.0	♃	23 18	.0		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 11.9	0 19.2	178 56.3	196 21.7 - 8	47.4	295 51.9 -20	1.8
2	208 12.3	0 21.2	209 1.2	226 20.9 - 8	45.1	325 55.4 -20	2.2
4	238 12.7	0 23.2	239 6.2	256 20.0 - 8	42.9	355 59.0 -20	2.5
6	268 13.1	0 25.1	269 11.1	286 19.1 - 8	40.6	26 2.5 -20	2.8
8	298 13.4	0 27.1	299 16.0	316 18.2 - 8	38.4	56 6.0 -20	3.1
10	328 13.8	0 29.1	329 21.0	346 17.3 - 8	36.1	86 9.5 -20	3.4
12	358 14.2	0 31.1	359 25.9	16 16.4 - 8	33.9	116 13.0 -20	3.8
14	28 14.6	0 33.0	29 30.8	46 15.5 - 8	31.6	146 16.6 -20	4.1
16	58 14.9	0 35.0	59 35.7	76 14.6 - 8	29.4	176 20.1 -20	4.4
18	88 15.3	0 37.0	89 40.7	106 13.7 - 8	27.1	206 23.7 -20	4.7
20	118 15.7	0 39.0	119 45.6	136 12.8 - 8	24.8	236 27.2 -20	5.0
22	148 16.1	0 40.9	149 50.5	166 11.9 - 8	22.6	266 30.7 -20	5.4
Δ	2	10		-4	11	18	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	24 24.4 138	8 44.6	-85	10 36.5	6 36.7	283 32.4 -21	.2	
2	53 29.9 139	8 27.7	-85	40 42.0	6 36.9	313 37.3 -21	.2	
4	82 35.7 139	8 10.6	-86	70 47.5	6 37.2	343 42.2 -21	.2	
6	111 41.5 140	7 53.4	-87	100 53.0	6 37.4	13 47.1 -21	.2	
8	140 47.5 141	7 36.0	-87	130 58.5	6 37.6	43 52.0 -21	.2	
10	169 53.6 141	7 18.6	-88	161 4.0	6 37.9	73 56.9 -21	.2	
12	198 59.9 142	7 1.0	-88	191 9.5	6 38.1	104 1.8 -21	.2	
14	228 6.3 143	6 43.3	-89	221 15.0	6 38.4	134 6.7 -21	.2	
16	257 12.8 143	6 25.6	-89	251 20.5	6 38.6	164 11.6 -21	.2	
18	286 19.4 144	6 7.7	-90	281 26.0	6 38.8	194 16.5 -21	.2	
20	315 26.2 144	5 49.8	-90	311 31.5	6 39.1	224 21.3 -21	.2	
22	344 33.0 145	5 31.7	-91	341 37.0	6 39.3	254 26.2 -21	.1	
Δ				27	1	24	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 58	18 18	0 42	2 28	16 7	3.0	5 28	.7
55	5 59	18 16	0 36	2 5	16 15	2.8	5 18	.9
50	5 60	18 15	0 32	1 50	16 22	2.6	5 10	1.1
45	6 1	18 14	0 29	1 39	16 27	2.5	5 3	1.2
40	6 1	18 13	0 27	1 31	16 31	2.4	4 58	1.3
35	6 2	18 13	0 25	1 25	16 35	2.3	4 53	1.4
30	6 2	18 12	0 24	1 20	16 38	2.2	4 49	1.5
20	6 3	18 11	0 22	1 13	16 44	2.0	4 42	1.6
10	6 3	18 11	0 21	1 10	16 49	1.9	4 36	1.7
0	6 4	18 10	0 21	1 9	16 53	1.8	4 30	1.8
10	6 4	18 10	0 21	1 10	16 58	1.7	4 24	1.9
20	6 4	18 10	0 22	1 13	17 3	1.6	4 18	2.1
30	6 4	18 9	0 24	1 20	17 8	1.4	4 11	2.2
35	6 4	18 9	0 25	1 24	17 11	1.4	4 6	2.3
40	6 4	18 9	0 27	1 31	17 15	1.3	4 1	2.4
45	6 4	18 9	0 29	1 39	17 19	1.2	3 56	2.5
50	6 4	18 9	0 32	1 49	17 24	1.0	3 49	2.6
55	6 4	18 9	0 36	2 4	17 30	.9	3 41	2.8
60	6 3	18 9	0 41	2 25	17 38	.7	3 30	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	- 7 12.2	.7	16.1	T _m	23 4	1.8	54.9 15.0
12	- 7 3.2	T _{m☉}	12 h 7.1 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	'	°	
♂	10 55	.1	17	-3.0	♂	23 13	.0	192	-2.0
♂	4 16	.1	117	-.6	♂	5 5	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 16.4	0 42.9	179 55.5	196 11.1 - 8	20.3	296 34.3 -20	5.7
2	208 16.8	0 44.9	210 .4	226 10.2 - 8	18.0	326 37.8 -20	6.0
4	238 17.2	0 46.8	240 5.3	256 9.3 - 8	15.8	356 41.4 -20	6.3
6	268 17.6	0 48.8	270 10.2	286 8.4 - 8	13.5	26 44.9 -20	6.6
8	298 18.0	0 50.8	300 15.2	316 7.5 - 8	11.2	56 48.5 -20	6.9
10	328 18.3	0 52.8	330 20.1	346 6.7 - 8	9.0	86 52.1 -20	7.3
12	358 18.7	0 54.7	0 25.0	16 5.8 - 8	6.7	116 55.6 -20	7.6
14	28 19.1	0 56.7	30 30.0	46 4.9 - 8	4.4	146 59.2 -20	7.9
16	58 19.5	0 58.7	60 34.9	76 4.0 - 8	2.1	177 2.8 -20	8.2
18	88 19.8	1 .6	90 39.8	106 3.2 - 7	59.8	207 6.4 -20	8.5
20	118 20.2	1 2.6	120 44.7	136 2.3 - 7	57.6	237 9.9 -20	8.8
22	148 20.6	1 4.6	150 49.7	166 1.4 - 7	55.3	267 13.5 -20	9.1
Δ	2	10		-4	11	18	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	13 40.0 145	5 13.6	-91	11 42.5	6 39.5	284 31.1 -21	.1	
2	42 47.1 146	4 55.4	-91	41 48.0	6 39.8	314 36.0 -21	.1	
4	71 54.2 146	4 37.2	-92	71 53.5	6 40.0	344 40.9 -21	.1	
6	101 1.5 147	4 18.9	-92	101 59.0	6 40.2	14 45.8 -21	.1	
8	130 8.8 147	4 .5	-92	132 4.5	6 40.5	44 50.7 -21	.1	
10	159 16.3 148	3 42.0	-92	162 10.0	6 40.7	74 55.6 -21	.1	
12	188 23.8 148	3 23.6	-93	192 15.4	6 40.9	105 .5 -21	.1	
14	217 31.4 148	3 5.0	-93	222 20.9	6 41.2	135 5.4 -21	.1	
16	246 39.1 149	2 46.5	-93	252 26.4	6 41.4	165 10.3 -21	.1	
18	275 46.8 149	2 27.9	-93	282 31.9	6 41.6	195 15.2 -21	.1	
20	304 54.6 149	2 9.3	-93	312 37.4	6 41.9	225 20.1 -21	.1	
22	334 2.5 150	1 50.6	-93	342 42.9	6 42.1	255 25.1 -21	.1	
Δ				27	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	5 55	18 20	0 42	2 28	17 18	2.2	5 45	.7
55	5 56	18 18	0 36	2 6	17 22	2.1	5 40	.9
50	5 58	18 17	0 32	1 51	17 24	2.0	5 36	1.0
45	5 59	18 15	0 29	1 40	17 26	2.0	5 32	1.1
40	5 60	18 14	0 27	1 31	17 28	2.0	5 29	1.2
35	6 0	18 14	0 25	1 25	17 29	1.9	5 27	1.3
30	6 1	18 13	0 24	1 20	17 31	1.9	5 25	1.4
20	6 2	18 12	0 22	1 13	17 33	1.9	5 21	1.6
10	6 3	18 11	0 21	1 10	17 35	1.8	5 17	1.7
0	6 3	18 10	0 21	1 9	17 37	1.8	5 14	1.8
10	6 4	18 9	0 21	1 10	17 38	1.7	5 11	1.9
20	6 4	18 9	0 22	1 13	17 40	1.7	5 7	2.0
30	6 5	18 8	0 24	1 20	17 43	1.7	5 4	2.2
35	6 5	18 8	0 25	1 24	17 44	1.6	5 1	2.3
40	6 5	18 8	0 27	1 30	17 45	1.6	4 59	2.4
45	6 5	18 7	0 29	1 38	17 47	1.6	4 56	2.5
50	6 6	18 7	0 32	1 49	17 49	1.5	4 52	2.6
55	6 6	18 7	0 36	2 3	17 51	1.5	4 47	2.8
60	6 6	18 6	0 41	2 24	17 55	1.4	4 42	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 54.2	.8	16.1	T _m	23 47	1.8	54.5 14.9
12	- 6 45.2	T _{m☉}	12 h 6.8 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	'	°	
♂	10 56	.1	16	-3.0	♂	23 9	.0	192	-2.0
♂	4 13	.1	117	-.6	♂	5 1	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 21.0	1 6.6	180 54.6	196 .6 - 7 53.0	297 17.1 -20 9.4		
2	208 21.3	1 8.5	210 59.5	225 59.7 - 7 50.7	327 20.7 -20 9.7		
4	238 21.7	1 10.5	241 4.5	255 58.8 - 7 48.4	357 24.3 -20 10.1		
6	268 22.1	1 12.5	271 9.4	285 57.9 - 7 46.1	27 27.9 -20 10.4		
8	298 22.5	1 14.4	301 14.3	315 57.1 - 7 43.8	57 31.5 -20 10.7		
10	328 22.9	1 16.4	331 19.2	345 56.2 - 7 41.6	87 35.1 -20 11.0		
12	358 23.2	1 18.4	1 24.2	15 55.4 - 7 39.3	117 38.7 -20 11.3		
14	28 23.6	1 20.3	31 29.1	45 54.5 - 7 37.0	147 42.3 -20 11.6		
16	58 24.0	1 22.3	61 34.0	75 53.6 - 7 34.7	177 45.9 -20 11.9		
18	88 24.4	1 24.3	91 39.0	105 52.8 - 7 32.4	207 49.5 -20 12.2		
20	118 24.7	1 26.2	121 43.9	135 51.9 - 7 30.1	237 53.2 -20 12.5		
22	148 25.1	1 28.2	151 48.8	165 51.1 - 7 27.8	267 56.8 -20 12.8		
Δ	2	10		-4 11	18		-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 51	18 23	0 42	2 29	18 10	.7	6 1	2.6
55	5 54	18 20	0 36	2 6	18 12	.9	6 0	2.4
50	5 56	18 18	0 32	1 51	18 13	1.0	5 60	2.3
45	5 57	18 17	0 29	1 40	18 14	1.1	5 60	2.2
40	5 58	18 15	0 27	1 31	18 15	1.2	5 59	2.2
35	5 59	18 14	0 25	1 25	18 16	1.3	5 59	2.1
30	5 60	18 13	0 24	1 20	18 16	1.4	5 59	2.0
20	6 1	18 12	0 22	1 13	18 17	1.5	5 58	1.9
10	6 2	18 11	0 21	1 10	18 18	1.7	5 58	1.9
0	6 3	18 10	0 21	1 9	18 19	1.8	5 57	1.8
10	6 4	18 9	0 21	1 10	18 20	1.9	5 57	1.7
20	6 5	18 8	0 22	1 13	18 21	2.0	5 56	1.6
30	6 5	18 7	0 24	1 20	18 22	2.2	5 56	1.5
35	6 6	18 7	0 25	1 24	18 23	2.2	5 55	1.5
40	6 6	18 6	0 27	1 30	18 24	2.3	5 55	1.4
45	6 7	18 5	0 29	1 38	18 25	2.4	5 55	1.3
50	6 7	18 5	0 32	1 49	18 26	2.6	5 54	1.3
55	6 8	18 4	0 36	2 3	18 27	2.7	5 53	1.1
60	6 8	18 3	0 41	2 23	18 29	2.9	5 53	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	3 10.4 150	1 31.9 -93	12 48.4	6 42.3	285 30.0 -21 .1			
2	32 18.4 150	1 13.3 -93	42 53.9	6 42.6	315 34.9 -21 .0			
4	61 26.5 150	0 54.6 -93	72 59.4	6 42.8	345 39.8 -21 .0			
6	90 34.5 151	0 35.9 -93	103 4.9	6 43.0	15 44.7 -21 .0			
8	119 42.7 151	0 17.2 -78	133 10.3	6 43.3	45 49.6 -21 .0			
10	148 50.8 151	0 1.5 93	163 15.8	6 43.5	75 54.5 -21 .0			
12	177 59.0 151	0 20.2 93	193 21.3	6 43.7	105 59.4 -21 .0			
14	207 7.2 151	0 38.8 93	223 26.8	6 44.0	136 4.3 -21 .0			
16	236 15.5 151	0 57.5 93	253 32.3	6 44.2	166 9.2 -20 60.0			
18	265 23.7 151	1 16.1 93	283 37.8	6 44.4	196 14.1 -20 60.0			
20	294 32.0 151	1 34.7 93	313 43.3	6 44.7	226 19.1 -20 60.0			
22	323 40.3 152	1 53.2 93	343 48.7	6 44.9	256 24.0 -20 60.0			
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	h min	min	' / "	' / "
00	- 6 36.1	.8	16.1	T _m	1.0	54.3	14.8
12	- 6 27.1	T _{m☉} 12 h 6.4 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	' / "	°	°
♄	10 56	.1	15	-3.0	♃	23 5	.0	192	-2.0
♂	4 10	.1	116	-.6	♄	4 57	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 25.5	1 30.2	181 53.7	195 50.2 - 7 25.5	298 .4 -20 13.1		
2	208 25.9	1 32.1	211 58.7	225 49.4 - 7 23.2	328 4.0 -20 13.4		
4	238 26.3	1 34.1	242 3.6	255 48.5 - 7 20.9	358 7.7 -20 13.7		
6	268 26.6	1 36.1	272 8.5	285 47.6 - 7 18.6	28 11.3 -20 14.0		
8	298 27.0	1 38.0	302 13.4	315 46.8 - 7 16.3	58 14.9 -20 14.3		
10	328 27.4	1 40.0	332 18.4	345 45.9 - 7 13.9	88 18.6 -20 14.6		
12	358 27.8	1 42.0	2 23.3	15 45.1 - 7 11.6	118 22.2 -20 14.9		
14	28 28.2	1 43.9	32 28.2	45 44.3 - 7 9.3	148 25.9 -20 15.2		
16	58 28.5	1 45.9	62 33.2	75 43.4 - 7 7.0	178 29.5 -20 15.5		
18	88 28.9	1 47.9	92 38.1	105 42.6 - 7 4.7	208 33.2 -20 15.8		
20	118 29.3	1 49.8	122 43.0	135 41.7 - 7 2.4	238 36.9 -20 16.1		
22	148 29.7	1 51.8	152 47.9	165 40.9 - 7 .1	268 40.5 -20 16.4		
Δ	2	10		-4 12	18		-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 48	18 25	0 42	2 30	18 26	.7	7 3	2.9
55	5 51	18 22	0 36	2 7	18 33	.9	6 59	2.7
50	5 53	18 20	0 32	1 51	18 37	1.1	6 56	2.6
45	5 55	18 18	0 29	1 40	18 41	1.2	6 53	2.4
40	5 56	18 16	0 27	1 32	18 45	1.3	6 51	2.3
35	5 58	18 15	0 25	1 25	18 47	1.4	6 49	2.2
30	5 59	18 14	0 24	1 20	18 50	1.4	6 48	2.1
20	6 0	18 12	0 22	1 13	18 54	1.6	6 45	2.0
10	6 2	18 11	0 21	1 10	18 58	1.7	6 42	1.9
0	6 3	18 9	0 21	1 9	19 2	1.8	6 40	1.8
10	6 4	18 8	0 21	1 10	19 6	1.9	6 38	1.7
20	6 5	18 7	0 22	1 13	19 10	2.0	6 35	1.5
30	6 6	18 6	0 24	1 19	19 14	2.1	6 32	1.4
35	6 7	18 5	0 25	1 24	19 17	2.2	6 31	1.3
40	6 7	18 4	0 27	1 30	19 20	2.3	6 29	1.2
45	6 8	18 4	0 29	1 38	19 23	2.4	6 27	1.1
50	6 9	18 3	0 32	1 49	19 27	2.5	6 24	1.0
55	6 10	18 2	0 36	2 3	19 33	2.7	6 21	.9
60	6 11	18 0	0 41	2 23	19 39	2.9	6 17	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	352 48.6 152	2 11.7 92	13 54.2	6 45.1	286 28.9 -20 60.0			
2	21 56.9 152	2 30.2 92	43 59.7	6 45.3	316 33.8 -20 60.0			
4	51 5.2 151	2 48.6 92	74 5.2	6 45.6	346 38.7 -20 59.9			
6	80 13.5 151	3 7.0 92	104 10.7	6 45.8	16 43.6 -20 59.9			
8	109 21.8 151	3 25.3 91	134 16.2	6 46.0	46 48.5 -20 59.9			
10	138 30.1 151	3 43.5 91	164 21.6	6 46.3	76 53.5 -20 59.9			
12	167 38.4 151	4 1.7 91	194 27.1	6 46.5	106 58.4 -20 59.9			
14	196 46.6 151	4 19.8 90	224 32.6	6 46.7	137 3.3 -20 59.9			
16	225 54.8 151	4 37.8 90	254 38.1	6 46.9	167 8.2 -20 59.9			
18	255 3.0 151	4 55.7 89	284 43.6	6 47.2	197 13.1 -20 59.9			
20	284 11.2 151	5 13.6 89	314 49.0	6 47.4	227 18.1 -20 59.9			
22	313 19.3 150	5 31.4 88	344 54.5	6 47.6	257 23.0 -20 59.9			
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	h min	min	' / "	' / "
00	- 6 18.0	.8	16.1	T _m	0 30	1.8	54.1
12	- 6 8.9	T _{m☉} 12 h 6.1 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	' / "	°	°
♄	10 57	.1	14	-3.0	♃	23 0	.0	192	-2.0
♂	4 7	.1	116	-.6	♄	4 53	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 30.1	1 53.8	182 52.9	195 40.0	- 6 57.7	298 44.2	-20 16.7
2	208 30.4	1 55.7	212 57.8	225 39.2	- 6 55.4	328 47.9	-20 17.0
4	238 30.8	1 57.7	243 2.7	255 38.3	- 6 53.1	358 51.5	-20 17.3
6	268 31.2	1 59.7	273 7.7	285 37.5	- 6 50.8	28 55.2	-20 17.6
8	298 31.6	2 1.6	303 12.6	315 36.7	- 6 48.5	58 58.9	-20 17.9
10	328 32.0	2 3.6	333 17.5	345 35.8	- 6 46.1	89 2.6	-20 18.2
12	358 32.3	2 5.5	3 22.4	15 35.0	- 6 43.8	119 6.3	-20 18.5
14	28 32.7	2 7.5	33 27.4	45 34.2	- 6 41.5	149 10.0	-20 18.8
16	58 33.1	2 9.5	63 32.3	75 33.3	- 6 39.2	179 13.7	-20 19.1
18	88 33.5	2 11.4	93 37.2	105 32.5	- 6 36.8	209 17.4	-20 19.4
20	118 33.8	2 13.4	123 42.2	135 31.7	- 6 34.5	239 21.1	-20 19.7
22	148 34.2	2 15.4	153 47.1	165 30.8	- 6 32.2	269 24.8	-20 20.0
Δ	2	10		-4	12	18	-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 45	18 28	0 42	2 31	18 43	.8	8 13	2.9
55	5 49	18 24	0 37	2 8	18 54	1.0	8 4	2.7
50	5 51	18 21	0 32	1 52	19 3	1.1	7 57	2.5
45	5 53	18 19	0 29	1 40	19 9	1.3	7 51	2.4
40	5 55	18 17	0 27	1 32	19 15	1.3	7 47	2.3
35	5 56	18 16	0 25	1 25	19 20	1.4	7 43	2.2
30	5 57	18 15	0 24	1 20	19 24	1.5	7 39	2.2
20	5 59	18 13	0 22	1 14	19 32	1.6	7 33	2.0
10	6 1	18 11	0 21	1 10	19 39	1.7	7 28	1.9
0	6 3	18 9	0 21	1 9	19 45	1.8	7 23	1.8
10	6 4	18 8	0 21	1 10	19 51	1.9	7 18	1.7
20	6 5	18 6	0 22	1 13	19 58	2.0	7 12	1.6
30	6 7	18 5	0 24	1 19	20 6	2.2	7 6	1.5
35	6 7	18 4	0 25	1 24	20 10	2.2	7 3	1.4
40	6 8	18 3	0 27	1 30	20 15	2.3	6 59	1.3
45	6 9	18 2	0 29	1 38	20 21	2.4	6 54	1.2
50	6 10	18 1	0 32	1 48	20 28	2.5	6 49	1.1
55	6 12	17 59	0 36	2 2	20 37	2.7	6 42	.9
60	6 13	17 57	0 41	2 22	20 49	2.9	6 33	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	342 27.4	150	5 49.0	88	14 60.0	6 47.8	287 27.9	-20 59.9
2	11 35.4	150	6 6.6	87	45 5.5	6 48.1	317 32.8	-20 59.8
4	40 43.4	150	6 24.1	87	75 10.9	6 48.3	347 37.8	-20 59.8
6	69 51.3	149	6 41.4	86	105 16.4	6 48.5	17 42.7	-20 59.8
8	98 59.2	149	6 58.7	86	135 21.9	6 48.7	47 47.6	-20 59.8
10	128 7.1	149	7 15.8	85	165 27.4	6 49.0	77 52.5	-20 59.8
12	157 14.8	148	7 32.8	84	195 32.9	6 49.2	107 57.5	-20 59.8
14	186 22.5	148	7 49.7	84	225 38.3	6 49.4	138 2.4	-20 59.8
16	215 30.1	148	8 6.5	83	255 43.8	6 49.6	168 7.3	-20 59.8
18	244 37.7	147	8 23.1	82	285 49.3	6 49.9	198 12.3	-20 59.8
20	273 45.2	147	8 39.6	82	315 54.7	6 50.1	228 17.2	-20 59.8
22	302 52.6	147	8 55.9	81	346 .2	6 50.3	258 22.1	-20 59.8
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	- 5 59.8	.8	16.1	T _m	1 12	1.8	54.0 14.7
12	- 5 50.7	T _{m☉}	12 h 5.8 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	'	°	
♂	10 58	.1	13	-3.0	♄	22 56	.0	192	-2.0
♂	4 5	.1	116	-.7	♂	4 49	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 34.6	2 17.3	183 52.0	195 30.0	- 6 29.8	299 28.5	-20 20.3
2	208 35.0	2 19.3	213 56.9	225 29.2	- 6 27.5	329 32.2	-20 20.5
4	238 35.4	2 21.2	244 1.9	255 28.3	- 6 25.2	359 35.9	-20 20.8
6	268 35.7	2 23.2	274 6.8	285 27.5	- 6 22.8	29 39.6	-20 21.1
8	298 36.1	2 25.2	304 11.7	315 26.7	- 6 20.5	59 43.4	-20 21.4
10	328 36.5	2 27.1	334 16.7	345 25.9	- 6 18.1	89 47.1	-20 21.7
12	358 36.9	2 29.1	4 21.6	15 25.0	- 6 15.8	119 50.8	-20 22.0
14	28 37.3	2 31.0	34 26.5	45 24.2	- 6 13.5	149 54.6	-20 22.3
16	58 37.6	2 33.0	64 31.4	75 23.4	- 6 11.1	179 58.3	-20 22.6
18	88 38.0	2 34.9	94 36.4	105 22.6	- 6 8.8	210 2.1	-20 22.9
20	118 38.4	2 36.9	124 41.3	135 21.8	- 6 6.4	240 5.8	-20 23.1
22	148 38.8	2 38.9	154 46.2	165 20.9	- 6 4.1	270 9.6	-20 23.4
Δ	2	10		-4	12	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	5 42	18 30	0 42	2 32	19 3	1.0	9 22	2.8
55	5 46	18 26	0 37	2 8	19 18	1.1	9 8	2.6
50	5 49	18 23	0 33	1 52	19 30	1.3	8 58	2.5
45	5 51	18 21	0 29	1 40	19 40	1.4	8 49	2.4
40	5 53	18 19	0 27	1 32	19 47	1.5	8 42	2.3
35	5 55	18 17	0 25	1 25	19 54	1.5	8 36	2.2
30	5 56	18 15	0 24	1 20	20 0	1.6	8 31	2.2
20	5 59	18 13	0 22	1 14	20 11	1.7	8 22	2.0
10	6 1	18 11	0 21	1 10	20 20	1.8	8 13	1.9
0	6 2	18 9	0 21	1 9	20 29	1.9	8 6	1.8
10	6 4	18 7	0 21	1 10	20 37	2.0	7 58	1.8
20	6 6	18 5	0 22	1 13	20 47	2.1	7 50	1.7
30	6 7	18 3	0 24	1 19	20 57	2.2	7 41	1.5
35	6 8	18 2	0 25	1 24	21 4	2.2	7 36	1.5
40	6 9	18 1	0 27	1 30	21 11	2.3	7 30	1.4
45	6 10	17 60	0 29	1 38	21 19	2.4	7 23	1.3
50	6 12	17 58	0 32	1 48	21 29	2.5	7 15	1.2
55	6 13	17 57	0 36	2 2	21 41	2.6	7 5	1.1
60	6 16	17 54	0 41	2 22	21 58	2.8	6 51	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	331 59.9	146	9 12.1	80	16 5.7	6 50.5	288 27.0	-20 59.7
2	1 7.1	146	9 28.1	79	46 11.2	6 50.8	318 32.0	-20 59.7
4	30 14.3	145	9 44.0	79	76 16.6	6 51.0	348 36.9	-20 59.7
6	59 21.3	145	9 59.7	78	106 22.1	6 51.2	18 41.8	-20 59.7
8	88 28.3	144	10 15.3	77	136 27.6	6 51.4	48 46.8	-20 59.7
10	117 35.1	144	10 30.7	76	166 33.0	6 51.6	78 51.7	-20 59.7
12	146 41.9	143	10 45.9	75	196 38.5	6 51.9	108 56.7	-20 59.7
14	175 48.5	143	11 .9	74	226 44.0	6 52.1	139 1.6	-20 59.7
16	204 55.0	142	11 15.7	73	256 49.4	6 52.3	169 6.5	-20 59.7
18	234 1.5	142	11 30.4	72	286 54.9	6 52.5	199 11.5	-20 59.7
20	263 7.8	141	11 44.9	71	317 .4	6 52.7	229 16.4	-20 59.6
22	292 14.0	140	11 59.1	70	347 5.8	6 53.0	259 21.3	-20 59.6
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	- 5 41.6	.8	16.1	T _m	1 55	1.8	54.0 14.7
12	- 5 32.5	T _{m☉}	12 h 5.5 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	'	°	
♂	10 58	.1	12	-3.0	♄	22 51	.0	192	-2.0
♂	4 2	.1	116	-.7	♂	4 45	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 39.2	2 40.8	184 51.2	195 20.1 - 6 1.7	300 13.3 -20 23.7		
2	208 39.5	2 42.8	214 56.1	225 19.3 - 5 59.4	330 17.1 -20 24.0		
4	238 39.9	2 44.7	245 1.0	255 18.5 - 5 57.0	0 20.8 -20 24.3		
6	268 40.3	2 46.7	275 5.9	285 17.7 - 5 54.7	30 24.6 -20 24.6		
8	298 40.7	2 48.6	305 10.9	315 16.8 - 5 52.3	60 28.4 -20 24.8		
10	328 41.1	2 50.6	335 15.8	345 16.0 - 5 50.0	90 32.1 -20 25.1		
12	358 41.4	2 52.5	5 20.7	15 15.2 - 5 47.6	120 35.9 -20 25.4		
14	28 41.8	2 54.5	35 25.6	45 14.4 - 5 45.3	150 39.7 -20 25.7		
16	58 42.2	2 56.5	65 30.6	75 13.6 - 5 42.9	180 43.5 -20 26.0		
18	88 42.6	2 58.4	95 35.5	105 12.8 - 5 40.5	210 47.3 -20 26.3		
20	118 42.9	3 .4	125 40.4	135 12.0 - 5 38.2	240 51.1 -20 26.5		
22	148 43.3	3 2.3	155 45.4	165 11.2 - 5 35.8	270 54.9 -20 26.8		
Δ	2	10		-4 12	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	5 39	18 33	0 42	2 34	19 26	1.2	10 30	2.7
55	5 44	18 28	0 37	2 9	19 46	1.3	10 12	2.6
50	5 47	18 25	0 33	1 52	20 1	1.5	9 58	2.5
45	5 49	18 22	0 30	1 41	20 13	1.5	9 47	2.4
40	5 52	18 20	0 27	1 32	20 22	1.6	9 37	2.3
35	5 53	18 18	0 25	1 25	20 31	1.7	9 29	2.2
30	5 55	18 16	0 24	1 20	20 39	1.7	9 23	2.2
20	5 58	18 13	0 22	1 14	20 52	1.8	9 11	2.1
10	5 60	18 11	0 21	1 10	21 3	1.9	9 0	2.0
0	6 2	18 8	0 21	1 9	21 14	1.9	8 50	1.9
10	6 4	18 6	0 21	1 10	21 25	2.0	8 40	1.8
20	6 6	18 4	0 22	1 13	21 36	2.1	8 30	1.7
30	6 8	18 2	0 24	1 19	21 49	2.2	8 18	1.6
35	6 9	18 1	0 25	1 24	21 57	2.2	8 11	1.6
40	6 10	17 60	0 27	1 30	22 6	2.3	8 4	1.5
45	6 12	17 58	0 29	1 38	22 16	2.3	7 55	1.4
50	6 13	17 56	0 32	1 48	22 29	2.4	7 44	1.4
55	6 15	17 54	0 36	2 2	22 44	2.5	7 30	1.2
60	6 18	17 51	0 41	2 21	23 5	2.0	7 12	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	321 20.1	140 12	13.2 69	17 11.3	6 53.2	289 26.3	-20 59.6	
2	350 26.0	139 12	27.1 68	47 16.8	6 53.4	319 31.2	-20 59.6	
4	19 31.9	139 12	40.7 67	77 22.2	6 53.6	349 36.2	-20 59.6	
6	48 37.6	138 12	54.2 66	107 27.7	6 53.8	19 41.1	-20 59.6	
8	77 43.1	137 13	7.4 65	137 33.1	6 54.0	49 46.1	-20 59.6	
10	106 48.6	137 13	20.4 64	167 38.6	6 54.3	79 51.0	-20 59.6	
12	135 53.9	136 13	33.2 63	197 44.1	6 54.5	109 55.9	-20 59.6	
14	164 59.1	135 13	45.7 62	227 49.5	6 54.7	140 .9	-20 59.5	
16	194 4.1	135 13	58.1 60	257 55.0	6 54.9	170 5.8	-20 59.5	
18	223 9.0	134 14	10.1 59	288 .4	6 55.1	200 10.8	-20 59.5	
20	252 13.8	133 14	22.0 58	318 5.9	6 55.3	230 15.7	-20 59.5	
22	281 18.4	132 14	33.6 57	348 11.4	6 55.6	260 20.7	-20 59.5	
Δ				27	1	25	0	

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	- 5 23.4	.8	16.1	2 39	1.9	54.1	14.7		
12	- 5 14.3	T _{m☉} 12 h 5.2 min		Starost 17.9 d	Faza ☉				
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	. / ' / "	°	°	♃	h min / ' / "	. / ' / "	°	°
♁	10 59	.1	10	-3.0	♃	22 47	.0	192	-2.0
♂	3 59	.1	115	-7	♄	4 41	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 43.7	3 4.3	185 50.3	195 10.4 - 5 33.5	300 58.7 -20 27.1		
2	208 44.1	3 6.2	215 55.2	225 9.6 - 5 31.1	331 2.5 -20 27.4		
4	238 44.5	3 8.2	246 .1	255 8.7 - 5 28.7	1 6.3 -20 27.6		
6	268 44.8	3 10.1	276 5.1	285 7.9 - 5 26.4	31 10.1 -20 27.9		
8	298 45.2	3 12.1	306 10.0	315 7.1 - 5 24.0	61 13.9 -20 28.2		
10	328 45.6	3 14.0	336 14.9	345 6.3 - 5 21.6	91 17.7 -20 28.5		
12	358 46.0	3 16.0	6 19.9	15 5.5 - 5 19.3	121 21.5 -20 28.8		
14	28 46.4	3 17.9	36 24.8	45 4.7 - 5 16.9	151 25.4 -20 29.0		
16	58 46.7	3 19.9	66 29.7	75 3.9 - 5 14.5	181 29.2 -20 29.3		
18	88 47.1	3 21.8	96 34.6	105 3.1 - 5 12.2	211 33.0 -20 29.6		
20	118 47.5	3 23.8	126 39.6	135 2.3 - 5 9.8	241 36.9 -20 29.9		
22	148 47.9	3 25.7	156 44.5	165 1.5 - 5 7.4	271 40.7 -20 30.1		
Δ	2	10		-4 12	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	5 36	18 35	0 43	2 35	19 54	1.5	11 36	2.6
55	5 41	18 30	0 37	2 9	20 18	1.6	11 14	2.5
50	5 45	18 26	0 33	1 53	20 35	1.7	10 57	2.4
45	5 48	18 23	0 30	1 41	20 49	1.7	10 43	2.3
40	5 50	18 21	0 27	1 32	21 1	1.8	10 32	2.2
35	5 52	18 18	0 25	1 26	21 11	1.8	10 23	2.2
30	5 54	18 17	0 24	1 21	21 20	1.9	10 14	2.2
20	5 57	18 13	0 22	1 14	21 35	1.9	10 0	2.1
10	5 59	18 11	0 21	1 10	21 48	2.0	9 48	2.0
0	6 2	18 8	0 21	1 9	22 0	2.0	9 36	2.0
10	6 4	18 6	0 21	1 10	22 13	2.1	9 24	1.9
20	6 6	18 4	0 22	1 13	22 26	2.1	9 12	1.9
30	6 8	18 1	0 24	1 19	22 41	2.1	8 58	1.8
35	6 10	17 60	0 25	1 24	22 50	2.2	8 50	1.7
40	6 11	17 58	0 27	1 30	23 0	2.2	8 40	1.7
45	6 13	17 56	0 29	1 38	23 12	2.0	8 29	1.6
50	6 15	17 54	0 32	1 48	23 27	2.0	8 16	1.6
55	6 17	17 51	0 36	2 2	23 45	2.0	7 60	1.5
60	6 20	17 48	0 41	2 21	23 53	2.7	7 38	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	310 22.9	132 14	44.9 55	18 16.8	6 55.8	290 25.6	-20 59.5	
2	339 27.2	131 14	56.0 54	48 22.3	6 56.0	320 30.6	-20 59.5	
4	8 31.4	130 15	6.8 53	78 27.7	6 56.2	350 35.5	-20 59.5	
6	37 35.4	129 15	17.4 52	108 33.2	6 56.4	20 40.5	-20 59.5	
8	66 39.3	129 15	27.7 50	138 38.6	6 56.6	50 45.4	-20 59.4	
10	95 43.1	128 15	37.7 49	168 44.1	6 56.8	80 50.4	-20 59.4	
12	124 46.7	127 15	47.5 47	198 49.5	6 57.1	110 55.3	-20 59.4	
14	153 50.1	126 15	57.0 46	228 55.0	6 57.3	141 .3	-20 59.4	
16	182 53.4	126 16	6.2 45	259 .4	6 57.5	171 5.3	-20 59.4	
18	211 56.5	125 16	15.1 43	289 5.9	6 57.7	201 10.2	-20 59.4	
20	240 59.5	124 16	23.7 42	319 11.3	6 57.9	231 15.2	-20 59.4	
22	270 2.3	123 16	32.0 40	349 16.8	6 58.1	261 20.1	-20 59.4	
Δ				27	1	25	0	

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	- 5 5.2	.8	16.0	3 25	2.0	54.3	14.8		
12	- 4 56.1	T _{m☉} 12 h 4.9 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 / ' / "	. / ' / "	°	°
♁	10 60	.1	9	-3.0	♃	22 43	.0	192	-2.0
♂	3 56	.1	115	-7	♄	4 38	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 48.2	3 27.6	186 49.4	195 .7 - 5	5.0	301 44.5	-20 30.4
2	208 48.6	3 29.6	216 54.4	224 59.9 - 5	2.7	331 48.4	-20 30.7
4	238 49.0	3 31.5	246 59.3	254 59.1 - 5	.3	1 52.2	-20 30.9
6	268 49.4	3 33.5	277 4.2	284 58.3 - 4	57.9	31 56.1	-20 31.2
8	298 49.7	3 35.4	307 9.1	314 57.6 - 4	55.5	61 60.0	-20 31.5
10	328 50.1	3 37.4	337 14.1	344 56.8 - 4	53.2	92 3.8	-20 31.8
12	358 50.5	3 39.3	7 19.0	14 56.0 - 4	50.8	122 7.7	-20 32.0
14	28 50.9	3 41.3	37 23.9	44 55.2 - 4	48.4	152 11.6	-20 32.3
16	58 51.3	3 43.2	67 28.9	74 54.4 - 4	46.0	182 15.4	-20 32.6
18	88 51.6	3 45.1	97 33.8	104 53.6 - 4	43.6	212 19.3	-20 32.8
20	118 52.0	3 47.1	127 38.7	134 52.8 - 4	41.2	242 23.2	-20 33.1
22	148 52.4	3 49.0	157 43.6	164 52.0 - 4	38.9	272 27.1	-20 33.4
Δ	2	10		-4	12	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	5 33	18 37	0 43	2 36	20 30	1.9	12 39	2.4
55	5 39	18 32	0 37	2 10	20 56	1.9	12 13	2.3
50	5 43	18 28	0 33	1 53	21 16	2.0	11 53	2.2
45	5 46	18 24	0 30	1 41	21 31	2.0	11 38	2.2
40	5 48	18 22	0 27	1 32	21 44	2.0	11 26	2.2
35	5 51	18 19	0 25	1 26	21 55	2.0	11 15	2.2
30	5 53	18 17	0 24	1 21	22 4	2.0	11 6	2.1
20	5 56	18 14	0 22	1 14	22 21	2.0	10 50	2.1
10	5 59	18 11	0 21	1 10	22 35	2.1	10 36	2.1
0	6 1	18 8	0 21	1 9	22 48	2.1	10 23	2.0
10	6 4	18 5	0 21	1 10	23 2	2.1	10 10	2.0
20	6 6	18 3	0 22	1 13	23 16	2.1	9 56	2.0
30	6 9	17 60	0 24	1 19	23 33	2.1	9 41	1.9
35	6 11	17 58	0 25	1 24	23 42	2.1	9 31	1.9
40	6 12	17 56	0 27	1 30	23 53	2.1	9 21	1.9
45	6 14	17 54	0 29	1 38	...	.0	9 8	1.9
50	6 17	17 52	0 32	1 48	...	.0	8 54	1.8
55	6 19	17 49	0 36	2 1	...	.0	8 35	1.7
60	6 23	17 45	0 41	2 21	...	.0	8 9	1.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	299 4.9	123 16	40.1	39	19 22.2	6 58.3	291 25.1	-20 59.3
2	328 7.4	122 16	47.8	37	49 27.7	6 58.5	321 30.0	-20 59.3
4	357 9.8	121 16	55.2	36	79 33.1	6 58.8	351 35.0	-20 59.3
6	26 12.0	120 17	2.3	34	109 38.6	6 59.0	21 40.0	-20 59.3
8	55 14.0	119 17	9.1	32	139 44.0	6 59.2	51 44.9	-20 59.3
10	84 15.9	119 17	15.6	31	169 49.5	6 59.4	81 49.9	-20 59.3
12	113 17.6	118 17	21.8	29	199 54.9	6 59.6	111 54.9	-20 59.3
14	142 19.2	117 17	27.6	28	230 .4	6 59.8	141 59.8	-20 59.3
16	171 20.6	116 17	33.1	26	260 5.8	7 .0	172 4.8	-20 59.2
18	200 21.8	116 17	38.3	24	290 11.2	7 .2	202 9.7	-20 59.2
20	229 22.9	115 17	43.2	23	320 16.7	7 .4	232 14.7	-20 59.2
22	258 23.9	114 17	47.7	21	350 22.1	7 .6	262 19.7	-20 59.2
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	- 4 47.0	.8	16.0	T _m	4 12	2.0	54.7 14.9
12	- 4 38.0	T _{m☉}	12 h 4.6 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	' / "	°	' / "
♂	11 0	.1	8	-3.0	♃	22 38	.0	193	-2.0
♂	3 53	.1	115	-.8	♄	4 34	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 52.8	3 51.0	187 48.6	194 51.2 - 4	36.5	302 31.0	-20 33.6
2	208 53.1	3 52.9	217 53.5	224 50.4 - 4	34.1	332 34.9	-20 33.9
4	238 53.5	3 54.9	247 58.4	254 49.6 - 4	31.7	2 38.8	-20 34.2
6	268 53.9	3 56.8	278 3.4	284 48.9 - 4	29.3	32 42.7	-20 34.4
8	298 54.3	3 58.7	308 8.3	314 48.1 - 4	26.9	62 46.6	-20 34.7
10	328 54.6	4 .7	338 13.2	344 47.3 - 4	24.5	92 50.5	-20 35.0
12	358 55.0	4 2.6	8 18.1	14 46.5 - 4	22.1	122 54.4	-20 35.2
14	28 55.4	4 4.5	38 23.1	44 45.7 - 4	19.8	152 58.3	-20 35.5
16	58 55.8	4 6.5	68 28.0	74 44.9 - 4	17.4	183 2.3	-20 35.8
18	88 56.1	4 8.4	98 32.9	104 44.2 - 4	15.0	213 6.2	-20 36.0
20	118 56.5	4 10.4	128 37.9	134 43.4 - 4	12.6	243 10.1	-20 36.3
22	148 56.9	4 12.3	158 42.8	164 42.6 - 4	10.2	273 14.1	-20 36.5
Δ	2	10		-4	12	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	5 30	18 40	0 43	2 38	21 15	2.3	13 35	2.0
55	5 36	18 34	0 37	2 11	21 42	2.3	13 8	2.1
50	5 40	18 29	0 33	1 54	22 3	2.2	12 47	2.1
45	5 44	18 26	0 30	1 42	22 19	2.2	12 31	2.1
40	5 47	18 23	0 27	1 33	22 32	2.2	12 18	2.1
35	5 49	18 20	0 25	1 26	22 43	2.2	12 7	2.1
30	5 51	18 18	0 24	1 21	22 53	2.2	11 57	2.1
20	5 55	18 14	0 22	1 14	23 10	2.1	11 41	2.1
10	5 58	18 11	0 21	1 10	23 24	2.1	11 26	2.1
0	6 1	18 8	0 21	1 9	23 38	2.1	11 12	2.1
10	6 4	18 5	0 21	1 10	23 52	2.1	10 59	2.1
20	6 7	18 2	0 22	1 13	...	.0	10 44	2.1
30	6 10	17 59	0 24	1 19	...	.0	10 27	2.1
35	6 11	17 57	0 25	1 24	...	.0	10 17	2.1
40	6 13	17 55	0 27	1 30	...	.0	10 6	2.1
45	6 16	17 52	0 29	1 38	0 6	2.2	9 53	2.1
50	6 18	17 50	0 32	1 48	0 22	2.2	9 37	2.1
55	6 21	17 46	0 36	2 1	0 42	2.2	9 17	2.1
60	6 25	17 42	0 41	2 20	1 10	2.2	8 49	2.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	287 24.7	113 17	51.8	19	20 27.6	7 .8	292 24.6	-20 59.2
2	316 25.3	112 17	55.7	17	50 33.0	7 1.0	322 29.6	-20 59.2
4	345 25.8	112 17	59.1	16	80 38.5	7 1.3	352 34.6	-20 59.2
6	14 26.2	111 18	2.3	14	110 43.9	7 1.5	22 39.5	-20 59.2
8	43 26.4	110 18	5.1	12	140 49.3	7 1.7	52 44.5	-20 59.1
10	72 26.4	110 18	7.5	10	170 54.8	7 1.9	82 49.5	-20 59.1
12	101 26.3	109 18	9.6	9	201 .2	7 2.1	112 54.5	-20 59.1
14	130 26.1	108 18	11.3	7	231 5.6	7 2.3	142 59.4	-20 59.1
16	159 25.7	107 18	12.6	5	261 11.1	7 2.5	173 4.4	-20 59.1
18	188 25.2	107 18	13.6	3	291 16.5	7 2.7	203 9.4	-20 59.1
20	217 24.5	106 18	14.2	1	321 21.9	7 2.9	233 14.4	-20 59.1
22	246 23.7	105 18	14.4	-1	351 27.4	7 3.1	263 19.3	-20 59.0
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	- 4 29.0	.7	16.0	T _m	5 0	2.1	55.2 15.0
12	- 4 20.0	T _{m☉}	12 h 4.3 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	' / "	°	' / "
♂	11 1	.1	7	-3.0	♃	22 34	.0	193	-2.0

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 57.2	4 14.2	188 47.7	194 41.8 - 4	7 8	303 18.0 -20	36.8
2	208 57.6	4 16.2	218 52.6	224 41.0 - 4	5 4	333 22.0 -20	37.1
4	238 58.0	4 18.1	248 57.6	254 40.3 - 4	3 0	3 25.9 -20	37.3
6	268 58.4	4 20.0	279 2.5	284 39.5 - 4	.6	33 29.9 -20	37.6
8	298 58.7	4 22.0	309 7.4	314 38.7 - 3	58.2	63 33.8 -20	37.8
10	328 59.1	4 23.9	339 12.3	344 37.9 - 3	55.8	93 37.8 -20	38.1
12	358 59.5	4 25.8	9 17.3	14 37.1 - 3	53.4	123 41.7 -20	38.4
14	28 59.9	4 27.8	39 22.2	44 36.4 - 3	51.0	153 45.7 -20	38.6
16	59 .2	4 29.7	69 27.1	74 35.6 - 3	48.6	183 49.7 -20	38.9
18	89 .6	4 31.6	99 32.1	104 34.8 - 3	46.2	213 53.7 -20	39.1
20	119 1.0	4 33.5	129 37.0	134 34.1 - 3	43.8	243 57.6 -20	39.4
22	149 1.3	4 35.5	159 41.9	164 33.3 - 3	41.4	274 1.6 -20	39.6
Δ	2	10		-4	12	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	5 27	18 42	0 43	2 39	22 10	2.7	14 24	1.7
55	5 33	18 36	0 37	2 12	22 37	2.6	13 57	1.8
50	5 38	18 31	0 33	1 54	22 57	2.5	13 37	1.9
45	5 42	18 27	0 30	1 42	23 12	2.2	13 21	1.9
40	5 45	18 24	0 27	1 33	23 25	2.2	13 8	2.0
35	5 48	18 21	0 25	1 26	23 36	2.2	12 57	2.0
30	5 50	18 18	0 24	1 21	23 45	2.2	12 48	2.0
20	5 54	18 14	0 22	1 14	...	.0	12 31	2.1
10	5 58	18 11	0 21	1 10	...	.0	12 16	2.1
0	6 1	18 7	0 21	1 9	...	.0	12 3	2.2
10	6 4	18 4	0 21	1 10	...	.0	11 49	2.2
20	6 7	18 1	0 22	1 13	0 7	2.1	11 34	2.2
30	6 10	17 57	0 24	1 19	0 24	2.1	11 18	2.3
35	6 12	17 55	0 25	1 24	0 34	2.1	11 8	2.3
40	6 14	17 53	0 27	1 30	0 45	2.0	10 57	2.3
45	6 17	17 51	0 29	1 37	0 58	2.0	10 43	2.4
50	6 20	17 48	0 32	1 48	1 14	2.0	10 27	2.4
55	6 23	17 44	0 36	2 1	1 35	1.9	10 7	2.4
60	6 28	17 39	0 41	2 20	2 3	1.9	9 39	2.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	275 22.8	105	18 14.3	-3	21 32.8	7 3.3	293 24.3	-20 59.0
2	304 21.7	104	18 13.7	-4	51 38.2	7 3.5	323 29.3	-20 59.0
4	333 20.5	103	18 12.8	-6	81 43.7	7 3.7	353 34.3	-20 59.0
6	2 19.2	103	18 11.6	-8	111 49.1	7 3.9	23 39.2	-20 59.0
8	31 17.8	102	18 9.9	-10	141 54.5	7 4.1	53 44.2	-20 59.0
10	60 16.2	102	18 7.9	-12	171 60.0	7 4.3	83 49.2	-20 59.0
12	89 14.5	101	18 5.4	-14	202 5.4	7 4.5	113 54.2	-20 59.0
14	118 12.7	100	18 2.6	-16	232 10.8	7 4.7	143 59.2	-20 58.9
16	147 10.8	100	17 59.4	-18	262 16.2	7 4.9	174 4.1	-20 58.9
18	176 8.7	99	17 55.8	-20	292 21.7	7 5.1	204 9.1	-20 58.9
20	205 6.5	99	17 51.8	-22	322 27.1	7 5.3	234 14.1	-20 58.9
22	234 4.3	98	17 47.4	-24	352 32.5	7 5.5	264 19.1	-20 58.9
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	- 4 11.0	.7	16.0	T _m	5 50	2.2	55.8 15.2
12	- 4 2.1	T _{m☉}	12 h 4.0 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	'	°	
♂	11 1	.1	6	-3.0	♄	22 30	.0	193	-2.0
♂	3 46	.1	114	-.8	♂	4 26	.0	105	.6

1. APRIL

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 1.7	4 37.4	189 46.8	194 32.5 - 3	39.0	304 5.6 -20	39.9
2	209 2.1	4 39.3	219 51.8	224 31.7 - 3	36.6	334 9.6 -20	40.2
4	239 2.5	4 41.3	249 56.7	254 31.0 - 3	34.1	4 13.6 -20	40.4
6	269 2.8	4 43.2	280 1.6	284 30.2 - 3	31.7	34 17.6 -20	40.7
8	299 3.2	4 45.1	310 6.6	314 29.4 - 3	29.3	64 21.6 -20	40.9
10	329 3.6	4 47.0	340 11.5	344 28.7 - 3	26.9	94 25.6 -20	41.2
12	359 3.9	4 49.0	10 16.4	14 27.9 - 3	24.5	124 29.6 -20	41.4
14	29 4.3	4 50.9	40 21.3	44 27.1 - 3	22.1	154 33.7 -20	41.7
16	59 4.7	4 52.8	70 26.3	74 26.4 - 3	19.7	184 37.7 -20	41.9
18	89 5.0	4 54.7	100 31.2	104 25.6 - 3	17.3	214 41.7 -20	42.2
20	119 5.4	4 56.7	130 36.1	134 24.8 - 3	14.9	244 45.7 -20	42.4
22	149 5.8	4 58.6	160 41.1	164 24.1 - 3	12.4	274 49.8 -20	42.7
Δ	2	10		-4	12	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	5 24	18 45	0 43	2 41	23 16	2.2	15 5	1.4
55	5 31	18 38	0 37	2 12	23 40	2.2	14 41	1.6
50	5 36	18 32	0 33	1 55	23 58	2.2	14 22	1.7
45	5 40	18 28	0 30	1 42	...	.0	14 8	1.8
40	5 44	18 25	0 27	1 33	...	.0	13 56	1.9
35	5 46	18 22	0 26	1 26	...	.0	13 45	1.9
30	5 49	18 19	0 24	1 21	...	.0	13 36	2.0
20	5 53	18 14	0 22	1 14	0 2	2.3	13 21	2.1
10	5 57	18 11	0 21	1 10	0 16	2.2	13 7	2.1
0	6 0	18 7	0 21	1 9	0 29	2.2	12 54	2.2
10	6 4	18 4	0 21	1 10	0 43	2.1	12 42	2.3
20	6 7	18 0	0 22	1 13	0 57	2.1	12 28	2.3
30	6 11	17 56	0 24	1 19	1 13	2.0	12 12	2.4
35	6 13	17 54	0 25	1 24	1 23	2.0	12 3	2.5
40	6 15	17 52	0 27	1 30	1 34	1.9	11 52	2.5
45	6 18	17 49	0 29	1 37	1 46	1.9	11 40	2.6
50	6 21	17 45	0 32	1 47	2 2	1.8	11 25	2.7
55	6 25	17 41	0 36	2 1	2 22	1.7	11 5	2.8
60	6 30	17 36	0 41	2 20	2 48	1.6	10 40	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	263 1.9	98	17 42.7	-26	22 37.9	7 5.7	294 24.1	-20 58.9
2	291 59.4	97	17 37.5	-28	52 43.4	7 5.9	324 29.1	-20 58.9
4	320 56.8	97	17 31.9	-30	82 48.8	7 6.1	354 34.0	-20 58.8
6	349 54.1	96	17 26.0	-32	112 54.2	7 6.3	24 39.0	-20 58.8
8	18 51.3	96	17 19.6	-34	142 59.6	7 6.5	54 44.0	-20 58.8
10	47 48.5	95	17 12.8	-36	173 5.1	7 6.7	84 49.0	-20 58.8
12	76 45.5	95	17 5.7	-38	203 10.5	7 6.9	114 54.0	-20 58.8
14	105 42.4	94	16 58.1	-40	233 15.9	7 7.1	144 59.0	-20 58.8
16	134 39.3	94	16 50.2	-42	263 21.3	7 7.3	175 4.0	-20 58.8
18	163 36.0	93	16 41.8	-44	293 26.7	7 7.5	205 9.0	-20 58.7
20	192 32.7	93	16 33.1	-46	323 32.1	7 7.7	235 14.0	-20 58.7
22	221 29.3	93	16 24.0	-48	353 37.6	7 7.9	265 19.0	-20 58.7
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	- 3 53.1	.7	16.0	T _m	6 42	2.2	56.6 15.4
12	- 3 44.3	T _{m☉}	12 h 3.7 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	'	°	
♂	11 2	.1	5	-3.0	♄	22 25	.0	193	-2.0
♂	3 43	.1	114	-.8	♂	4 22	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 6.1 5 .5		190 46.0	194 23.3 - 3 10.0	304 53.8 -20 42.9		
2	209 6.5 5 2.4		220 50.9	224 22.5 - 3 7.6	334 57.9 -20 43.2		
4	239 6.9 5 4.3		250 55.8	254 21.8 - 3 5.2	5 1.9 -20 43.4		
6	269 7.3 5 6.3		281 .8	284 21.0 - 3 2.8	35 6.0 -20 43.7		
8	299 7.6 5 8.2		311 5.7	314 20.2 - 3 .4	65 10.0 -20 43.9		
10	329 8.0 5 10.1		341 10.6	344 19.5 - 2 57.9	95 14.1 -20 44.2		
12	359 8.4 5 12.0		11 15.6	14 18.7 - 2 55.5	125 18.2 -20 44.4		
14	29 8.7 5 13.9		41 20.5	44 17.9 - 2 53.1	155 22.2 -20 44.7		
16	59 9.1 5 15.8		71 25.4	74 17.2 - 2 50.7	185 26.3 -20 44.9		
18	89 9.4 5 17.8		101 30.3	104 16.4 - 2 48.3	215 30.4 -20 45.1		
20	119 9.8 5 19.7		131 35.3	134 15.7 - 2 45.8	245 34.5 -20 45.4		
22	149 10.2 5 21.6		161 40.2	164 14.9 - 2 43.4	275 38.6 -20 45.6		
Δ	2	10		-4	12	20	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	250 25.8 92 16 14.4 -50		23 43.0 7 8.1	295 24.0 -20 58.7				
2	279 22.2 92 16 4.5 -52		53 48.4 7 8.3	325 28.9 -20 58.7				
4	308 18.6 91 15 54.2 -54		83 53.8 7 8.5	355 33.9 -20 58.7				
6	337 14.9 91 15 43.5 -55		113 59.2 7 8.7	25 38.9 -20 58.6				
8	6 11.1 91 15 32.4 -57		144 4.6 7 8.8	55 43.9 -20 58.6				
10	35 7.3 90 15 20.9 -59		174 10.0 7 9.0	85 48.9 -20 58.6				
12	64 3.3 90 15 9.0 -61		204 15.4 7 9.2	115 53.9 -20 58.6				
14	92 59.3 90 14 56.8 -63		234 20.9 7 9.4	145 58.9 -20 58.6				
16	121 55.3 89 14 44.2 -65		264 26.3 7 9.6	176 3.9 -20 58.6				
18	150 51.2 89 14 31.2 -67		294 31.7 7 9.8	206 8.9 -20 58.6				
20	179 47.0 89 14 17.8 -69		324 37.1 7 10.0	236 13.9 -20 58.5				
22	208 42.8 89 14 4.0 -71		354 42.5 7 10.2	266 18.9 -20 58.5				
Δ			27	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	5 21	18 47	0 43	2 42	. . .	.0	15 39	1.2
55	5 28	18 40	0 37	2 13	. . .	.0	15 19	1.4
50	5 34	18 34	0 33	1 55	. . .	.0	15 3	1.5
45	5 38	18 29	0 30	1 43	0 12	2.7	14 51	1.6
40	5 42	18 26	0 27	1 33	0 23	2.6	14 40	1.7
35	5 45	18 22	0 26	1 26	0 33	2.6	14 31	1.8
30	5 48	18 20	0 24	1 21	0 42	2.5	14 24	1.9
20	5 53	18 15	0 22	1 14	0 57	2.4	14 10	2.0
10	5 57	18 11	0 21	1 10	1 10	2.3	13 58	2.1
0	6 0	18 7	0 21	1 9	1 22	2.2	13 47	2.2
10	6 4	18 3	0 21	1 10	1 34	2.1	13 36	2.3
20	6 7	17 59	0 22	1 13	1 47	2.0	13 24	2.4
30	6 11	17 55	0 24	1 19	2 2	1.9	13 10	2.5
35	6 14	17 53	0 25	1 24	2 10	1.9	13 2	2.6
40	6 16	17 50	0 27	1 30	2 20	1.8	12 53	2.7
45	6 19	17 47	0 29	1 37	2 31	1.7	12 42	2.8
50	6 23	17 43	0 32	1 47	2 45	1.6	12 29	2.9
55	6 27	17 39	0 36	2 1	3 2	1.5	12 12	3.1
60	6 32	17 33	0 41	2 19	3 26	1.3	11 50	3.3

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	- 3 35.4	.7	16.0	T _m	7 34	2.2	57.5 15.7
12	- 3 26.6	T _{m☉}	12 h 3.4 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	' / "	°	
♂	11 3	.1	4	-2.9	♃	22 21	.0	193	-2.0
♂	3 40	.1	114	-.9	♄	4 18	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 10.5 5 23.5		191 45.1	194 14.1 - 2 41.0	305 42.6 -20 45.9		
2	209 10.9 5 25.4		221 50.1	224 13.4 - 2 38.6	335 46.7 -20 46.1		
4	239 11.3 5 27.3		251 55.0	254 12.6 - 2 36.2	5 50.8 -20 46.4		
6	269 11.6 5 29.2		281 59.9	284 11.9 - 2 33.7	35 55.0 -20 46.6		
8	299 12.0 5 31.2		312 4.8	314 11.1 - 2 31.3	65 59.1 -20 46.8		
10	329 12.4 5 33.1		342 9.8	344 10.4 - 2 28.9	96 3.2 -20 47.1		
12	359 12.7 5 35.0		12 14.7	14 9.6 - 2 26.5	126 7.3 -20 47.3		
14	29 13.1 5 36.9		42 19.6	44 8.8 - 2 24.0	156 11.4 -20 47.6		
16	59 13.5 5 38.8		72 24.5	74 8.1 - 2 21.6	186 15.5 -20 47.8		
18	89 13.8 5 40.7		102 29.5	104 7.3 - 2 19.2	216 19.7 -20 48.0		
20	119 14.2 5 42.6		132 34.4	134 6.6 - 2 16.8	246 23.8 -20 48.3		
22	149 14.5 5 44.5		162 39.3	164 5.8 - 2 14.3	276 28.0 -20 48.5		
Δ	2	10		-4	12	21	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	237 38.5 88 13 49.9 -72		24 47.9 7 10.4	296 23.9 -20 58.5				
2	266 34.1 88 13 35.4 -74		54 53.3 7 10.6	326 28.9 -20 58.5				
4	295 29.7 88 13 20.5 -76		84 58.7 7 10.8	356 33.9 -20 58.5				
6	324 25.2 87 13 5.3 -78		115 4.1 7 10.9	26 38.9 -20 58.5				
8	353 20.7 87 12 49.8 -80		145 9.5 7 11.1	56 43.9 -20 58.4				
10	22 16.2 87 12 33.9 -81		175 14.9 7 11.3	86 49.0 -20 58.4				
12	51 11.5 87 12 17.6 -83		205 20.3 7 11.5	116 54.0 -20 58.4				
14	80 6.9 86 12 1.0 -85		235 25.7 7 11.7	146 59.0 -20 58.4				
16	109 2.1 86 11 44.1 -86		265 31.1 7 11.9	177 4.0 -20 58.4				
18	137 57.3 86 11 26.8 -88		295 36.5 7 12.1	207 9.0 -20 58.4				
20	166 52.5 86 11 9.2 -90		325 41.9 7 12.3	237 14.0 -20 58.3				
22	195 47.6 85 10 51.3 -91		355 47.3 7 12.4	267 19.0 -20 58.3				
Δ			27	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	5 18	18 50	0 44	2 44	0 32	3.4	16 7	1.0
55	5 26	18 42	0 37	2 14	0 51	3.2	15 52	1.2
50	5 32	18 36	0 33	1 56	1 5	3.0	15 40	1.4
45	5 36	18 31	0 30	1 43	1 17	2.9	15 30	1.5
40	5 40	18 27	0 27	1 34	1 26	2.8	15 22	1.7
35	5 44	18 23	0 26	1 27	1 34	2.7	15 15	1.8
30	5 47	18 20	0 24	1 21	1 42	2.6	15 9	1.8
20	5 52	18 15	0 22	1 14	1 54	2.5	14 59	2.0
10	5 56	18 10	0 21	1 10	2 5	2.4	14 49	2.1
0	5 60	18 6	0 21	1 9	2 15	2.2	14 40	2.2
10	6 4	18 2	0 21	1 10	2 25	2.1	14 32	2.4
20	6 8	17 58	0 22	1 13	2 36	2.0	14 22	2.5
30	6 12	17 54	0 24	1 19	2 48	1.9	14 11	2.7
35	6 15	17 51	0 25	1 24	2 55	1.8	14 5	2.7
40	6 17	17 48	0 27	1 30	3 3	1.7	13 58	2.8
45	6 21	17 45	0 29	1 37	3 13	1.6	13 49	3.0
50	6 24	17 41	0 32	1 47	3 24	1.5	13 39	3.1
55	6 29	17 36	0 36	2 1	3 38	1.3	13 26	3.3
60	6 35	17 30	0 41	2 19	3 56	1.1	13 9	3.5

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	- 3 17.8	.7	16.0	T _m	8 28	2.2	58.4 15.9
12	- 3 9.1	T _{m☉}	12 h 3.2 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	' / "	°	
♂	11 3	.1	2	-2.9	♃	22 17	.0	193	-2.0
♂	3								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 14.9	5 46.4	192 44.3	194 5.1 - 2 11.9	306 32.1 -20 48.8		
2	209 15.3	5 48.3	222 49.2	224 4.3 - 2 9.5	336 36.3 -20 49.0		
4	239 15.6	5 50.2	252 54.1	254 3.6 - 2 7.0	6 40.4 -20 49.2		
6	269 16.0	5 52.1	282 59.0	284 2.8 - 2 4.6	36 44.6 -20 49.5		
8	299 16.3	5 54.0	313 4.0	314 2.1 - 2 2.2	66 48.7 -20 49.7		
10	329 16.7	5 55.9	343 8.9	344 1.3 - 1 59.7	96 52.9 -20 49.9		
12	359 17.1	5 57.8	13 13.8	14 .6 - 1 57.3	126 57.1 -20 50.2		
14	29 17.4	5 59.7	43 18.8	43 59.8 - 1 54.9	157 1.2 -20 50.4		
16	59 17.8	6 1.6	73 23.7	73 59.1 - 1 52.4	187 5.4 -20 50.7		
18	89 18.1	6 3.5	103 28.6	103 58.3 - 1 50.0	217 9.6 -20 50.9		
20	119 18.5	6 5.4	133 33.5	133 57.6 - 1 47.6	247 13.8 -20 51.1		
22	149 18.9	6 7.3	163 38.5	163 56.8 - 1 45.1	277 18.0 -20 51.4		
Δ	2	10		-4 12	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	5 15	18 52	0 44	2 46	1 54	3.6	16 31	.9
55	5 23	18 44	0 38	2 15	2 7	3.4	16 21	1.1
50	5 30	18 37	0 33	1 56	2 18	3.2	16 13	1.3
45	5 35	18 32	0 30	1 43	2 26	3.0	16 7	1.5
40	5 39	18 28	0 28	1 34	2 33	2.9	16 2	1.6
35	5 42	18 24	0 26	1 27	2 39	2.8	15 58	1.7
30	5 45	18 21	0 24	1 21	2 44	2.7	15 53	1.8
20	5 51	18 15	0 22	1 14	2 53	2.5	15 46	2.0
10	5 55	18 10	0 21	1 10	3 1	2.4	15 40	2.1
0	5 60	18 6	0 21	1 9	3 9	2.3	15 34	2.3
10	6 4	18 2	0 21	1 10	3 16	2.1	15 28	2.4
20	6 8	17 58	0 22	1 13	3 24	2.0	15 22	2.6
30	6 13	17 53	0 24	1 19	3 33	1.8	15 15	2.7
35	6 15	17 50	0 25	1 24	3 38	1.7	15 10	2.8
40	6 18	17 47	0 27	1 30	3 44	1.6	15 6	2.9
45	6 22	17 43	0 29	1 37	3 51	1.5	15 0	3.1
50	6 26	17 39	0 32	1 47	3 59	1.4	14 53	3.2
55	6 31	17 34	0 36	2 1	4 9	1.2	14 45	3.4
60	6 37	17 27	0 42	2 19	4 22	.9	14 34	3.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	224 42.7	85 10	33.1	-93	25 52.7	7 12.6	297 24.0	-20 58.3
2	253 37.7	85 10	14.6	-94	55 58.1	7 12.8	327 29.0	-20 58.3
4	282 32.7	85 9	55.8	-96	86 3.5	7 13.0	357 34.0	-20 58.3
6	311 27.6	84 9	36.6	-97	116 8.9	7 13.2	27 39.1	-20 58.3
8	340 22.4	84 9	17.2	-98	146 14.3	7 13.4	57 44.1	-20 58.2
10	9 17.2	84 8	57.5	-100	176 19.7	7 13.6	87 49.1	-20 58.2
12	38 12.0	83 8	37.6	-101	206 25.1	7 13.7	117 54.1	-20 58.2
14	67 6.7	83 8	17.4	-102	236 30.4	7 13.9	147 59.1	-20 58.2
16	96 1.3	83 7	56.9	-104	266 35.8	7 14.1	178 4.1	-20 58.2
18	124 55.9	83 7	36.2	-105	296 41.2	7 14.3	208 9.1	-20 58.2
20	153 50.4	82 7	15.2	-106	326 46.6	7 14.5	238 14.2	-20 58.1
22	182 44.9	82 6	54.0	-107	356 52.0	7 14.6	268 19.2	-20 58.1
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	- 3 .4	.7	16.0	T _m	9 21	2.3	59.4 16.2
12	- 2 51.8	T _{m☉}	12 h 2.9 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	'	°	
♃	11 4	.1	1	-2.9	♄	22 12	.0	193	-2.0
♄	3 33	.1	114	-.9	♃	4 10	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 19.2	6 9.2	193 43.4	193 56.1 - 1 42.7	307 22.2 -20 51.6		
2	209 19.6	6 11.1	223 48.3	223 55.3 - 1 40.3	337 26.4 -20 51.8		
4	239 19.9	6 13.0	253 53.3	253 54.6 - 1 37.8	7 30.6 -20 52.0		
6	269 20.3	6 14.9	283 58.2	283 53.8 - 1 35.4	37 34.8 -20 52.3		
8	299 20.6	6 16.8	314 3.1	313 53.1 - 1 33.0	67 39.0 -20 52.5		
10	329 21.0	6 18.7	344 8.0	343 52.3 - 1 30.5	97 43.3 -20 52.7		
12	359 21.3	6 20.6	14 13.0	13 51.6 - 1 28.1	127 47.5 -20 53.0		
14	29 21.7	6 22.5	44 17.9	43 50.8 - 1 25.7	157 51.7 -20 53.2		
16	59 22.1	6 24.4	74 22.8	73 50.1 - 1 23.2	187 56.0 -20 53.4		
18	89 22.4	6 26.3	104 27.8	103 49.3 - 1 20.8	218 .2 -20 53.7		
20	119 22.8	6 28.2	134 32.7	133 48.6 - 1 18.3	248 4.4 -20 53.9		
22	149 23.1	6 30.1	164 37.6	163 47.8 - 1 15.9	278 8.7 -20 54.1		
Δ	2	9		-4 12	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	5 12	18 55	0 44	2 48	3 21	3.8	16 53	1.7
55	5 21	18 46	0 38	2 16	3 28	3.5	16 49	1.8
50	5 27	18 39	0 33	1 57	3 34	3.3	16 45	1.9
45	5 33	18 33	0 30	1 44	3 39	3.1	16 43	2.0
40	5 37	18 29	0 28	1 34	3 43	3.0	16 41	2.0
35	5 41	18 25	0 26	1 27	3 46	2.9	16 39	2.1
30	5 44	18 21	0 24	1 22	3 49	2.8	16 37	2.1
20	5 50	18 15	0 22	1 14	3 54	2.6	16 34	2.2
10	5 55	18 10	0 21	1 10	3 59	2.4	16 31	2.2
0	5 59	18 6	0 21	1 9	4 3	2.3	16 29	2.3
10	6 4	18 1	0 21	1 10	4 7	2.1	16 26	2.4
20	6 8	17 57	0 22	1 13	4 12	2.0	16 24	2.4
30	6 13	17 51	0 24	1 19	4 17	1.8	16 20	2.5
35	6 16	17 48	0 25	1 24	4 20	1.7	16 19	2.6
40	6 19	17 45	0 27	1 30	4 23	1.6	16 16	2.6
45	6 23	17 41	0 29	1 37	4 27	1.5	16 14	2.7
50	6 27	17 37	0 32	1 47	4 32	1.3	16 11	2.7
55	6 33	17 31	0 36	2 1	4 38	1.1	16 7	2.8
60	6 40	17 24	0 42	2 19	4 45	.8	16 2	3.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	211 39.3	82 6	32.6	-108	26 57.4	7 14.8	298 24.2	-20 58.1
2	240 33.6	81 6	11.0	-109	57 2.8	7 15.0	328 29.2	-20 58.1
4	269 27.9	81 5	49.1	-110	87 8.2	7 15.2	358 34.2	-20 58.1
6	298 22.1	81 5	27.1	-111	117 13.5	7 15.4	28 39.3	-20 58.1
8	327 16.3	80 5	4.9	-112	147 18.9	7 15.6	58 44.3	-20 58.0
10	356 10.4	80 4	42.5	-113	177 24.3	7 15.7	88 49.3	-20 58.0
12	25 4.4	80 4	19.9	-114	207 29.7	7 15.9	118 54.3	-20 58.0
14	53 58.3	79 3	57.2	-114	237 35.1	7 16.1	148 59.4	-20 58.0
16	82 52.2	79 3	34.3	-115	267 40.4	7 16.3	179 4.4	-20 58.0
18	111 46.0	79 3	11.3	-116	297 45.8	7 16.4	209 9.4	-20 58.0
20	140 39.7	78 2	48.2	-116	327 51.2	7 16.6	239 14.4	-20 57.9
22	169 33.4	78 2	25.0	-117	357 56.6	7 16.8	269 19.5	-20 57.9
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	- 2 43.2	.7	16.0	T _m	10 16	2.3	60.2 16.4
12	- 2 34.6	T _{m☉}	12 h 2.6 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	'	°	
♃	11 5	.1	0	-2.9	♄	22			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 23.5	6 31.9	194 42.5	193 47.1 - 1	13.5	308 13.0 -20	54.3
2	209 23.8	6 33.8	224 47.5	223 46.4 - 1	11.0	338 17.2 -20	54.6
4	239 24.2	6 35.7	254 52.4	253 45.6 - 1	8.6	8 21.5 -20	54.8
6	269 24.5	6 37.6	284 57.3	283 44.9 - 1	6.1	38 25.7 -20	55.0
8	299 24.9	6 39.5	315 2.3	313 44.1 - 1	3.7	68 30.0 -20	55.2
10	329 25.2	6 41.4	345 7.2	343 43.4 - 1	1.3	98 34.3 -20	55.5
12	359 25.6	6 43.3	15 12.1	13 42.6 - 0	58.8	128 38.6 -20	55.7
14	29 25.9	6 45.1	45 17.0	43 41.9 - 0	56.4	158 42.9 -20	55.9
16	59 26.3	6 47.0	75 22.0	73 41.2 - 0	53.9	188 47.2 -20	56.1
18	89 26.6	6 48.9	105 26.9	103 40.4 - 0	51.5	218 51.5 -20	56.4
20	119 27.0	6 50.8	135 31.8	133 39.7 - 0	49.1	248 55.8 -20	56.6
22	149 27.3	6 52.7	165 36.8	163 38.9 - 0	46.6	279 .1 -20	56.8
Δ	2	9		-4	12	21	-1

UT	MESEC			JUPITER		SATURN	
	S _♃	Δ	δ _♃	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	198 27.0	77 2	1.6 -117	28 1.9	7 17.0	299 24.5 -20	57.9
2	227 20.5	77 1	38.2 -118	58 7.3	7 17.1	329 29.5 -20	57.9
4	256 13.9	77 1	14.7 -118	88 12.7	7 17.3	359 34.6 -20	57.9
6	285 7.2	76 0	51.1 -118	118 18.1	7 17.5	29 39.6 -20	57.8
8	314 .4	76 0	27.5 -118	148 23.4	7 17.7	59 44.6 -20	57.8
10	342 53.6	75 0	3.8 81	178 28.8	7 17.8	89 49.7 -20	57.8
12	11 46.7	75 0	19.9 119	208 34.2	7 18.0	119 54.7 -20	57.8
14	40 39.6	74 0	43.6 119	238 39.6	7 18.2	149 59.7 -20	57.8
16	69 32.5	74 1	7.4 119	268 44.9	7 18.4	180 4.8 -20	57.8
18	98 25.3	73 1	31.1 119	298 50.3	7 18.5	210 9.8 -20	57.7
20	127 18.0	73 1	54.8 118	328 55.7	7 18.7	240 14.8 -20	57.7
22	156 10.6	73 2	18.5 118	359 1.0	7 18.9	270 19.9 -20	57.7
Δ				27	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	5 9	18 57	0 44	2 50	4 52	1.5	17 34	3.8
55	5 18	18 48	0 38	2 17	4 53	1.6	17 32	3.6
50	5 25	18 40	0 33	1 57	4 54	1.7	17 31	3.4
45	5 31	18 34	0 30	1 44	4 54	1.8	17 30	3.2
40	5 36	18 30	0 28	1 34	4 55	1.9	17 29	3.1
35	5 40	18 26	0 26	1 27	4 55	2.0	17 28	2.9
30	5 43	18 22	0 24	1 22	4 56	2.0	17 28	2.8
20	5 49	18 16	0 22	1 14	4 57	2.1	17 26	2.7
10	5 54	18 10	0 21	1 11	4 57	2.2	17 25	2.5
0	5 59	18 6	0 21	1 9	4 58	2.3	17 24	2.3
10	6 4	18 1	0 21	1 10	4 59	2.4	17 23	2.2
20	6 8	17 56	0 22	1 13	4 59	2.5	17 22	2.0
30	6 14	17 50	0 24	1 19	5 0	2.6	17 21	1.9
35	6 17	17 47	0 25	1 24	5 1	2.7	17 20	1.8
40	6 20	17 44	0 27	1 30	5 1	2.8	17 19	1.6
45	6 24	17 40	0 29	1 37	5 2	2.8	17 18	1.5
50	6 29	17 35	0 32	1 47	5 3	3.0	17 17	1.4
55	6 35	17 29	0 36	2 0	5 4	3.1	17 15	1.2
60	6 42	17 21	0 42	2 19	5 5	3.3	17 13	.9

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 2 26.1	.7	16.0	T _m 11 11	2.3	60.9	16.6
12	- 2 17.7	T _{m☉} 12 h 2.3 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	'	°	
♂	11 5	.1	359	-2.9	♂	22 4	.0	193	-2.0
♂	3 27	.1	113	-1.0	♂	4 2	.0	105	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 27.7	6 54.5	195 41.7	193 38.2 - 0	44.2	309 4.4 -20	57.0
2	209 28.0	6 56.4	225 46.6	223 37.4 - 0	41.7	339 8.7 -20	57.2
4	239 28.4	6 58.3	255 51.5	253 36.7 - 0	39.3	9 13.0 -20	57.5
6	269 28.7	7 .2	285 56.5	283 36.0 - 0	36.8	39 17.3 -20	57.7
8	299 29.1	7 2.0	316 1.4	313 35.2 - 0	34.4	69 21.7 -20	57.9
10	329 29.4	7 3.9	346 6.3	343 34.5 - 0	32.0	99 26.0 -20	58.1
12	359 29.8	7 5.8	16 11.2	13 33.7 - 0	29.5	129 30.3 -20	58.3
14	29 30.1	7 7.7	46 16.2	43 33.0 - 0	27.1	159 34.7 -20	58.6
16	59 30.5	7 9.5	76 21.1	73 32.3 - 0	24.6	189 39.0 -20	58.8
18	89 30.8	7 11.4	106 26.0	103 31.5 - 0	22.2	219 43.4 -20	59.0
20	119 31.1	7 13.3	136 31.0	133 30.8 - 0	19.7	249 47.8 -20	59.2
22	149 31.5	7 15.1	166 35.9	163 30.0 - 0	17.3	279 52.1 -20	59.4
Δ	2	9		-4	12	22	-1

UT	MESEC			JUPITER		SATURN	
	S _♃	Δ	δ _♃	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	185 3.1	72 2	42.2 118	29 6.4	7 19.1	300 24.9 -20	57.7
2	213 55.5	72 3	5.7 118	59 11.8	7 19.2	330 29.9 -20	57.7
4	242 47.9	71 3	29.3 117	89 17.1	7 19.4	0 35.0 -20	57.6
6	271 40.1	71 3	52.7 117	119 22.5	7 19.6	30 40.0 -20	57.6
8	300 32.2	70 4	16.1 116	149 27.8	7 19.7	60 45.1 -20	57.6
10	329 24.2	70 4	39.3 116	179 33.2	7 19.9	90 50.1 -20	57.6
12	358 16.1	69 5	2.4 115	209 38.6	7 20.1	120 55.1 -20	57.6
14	27 7.9	69 5	25.4 114	239 43.9	7 20.2	151 .2 -20	57.5
16	55 59.6	68 5	48.3 113	269 49.3	7 20.4	181 5.2 -20	57.5
18	84 51.2	68 6	11.0 113	299 54.6	7 20.6	211 10.3 -20	57.5
20	113 42.7	67 6	33.5 112	329 60.0	7 20.7	241 15.3 -20	57.5
22	142 34.1	66 6	55.9 111	0 5.3	7 20.9	271 20.4 -20	57.5
Δ				27	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	5 6	18 59	0 44	2 52	5 28	1.0	19 6	3.8
55	5 16	18 49	0 38	2 18	5 32	1.2	18 58	3.6
50	5 23	18 42	0 33	1 58	5 35	1.4	18 52	3.4
45	5 29	18 36	0 30	1 44	5 38	1.6	18 47	3.2
40	5 34	18 31	0 28	1 35	5 41	1.7	18 43	3.1
35	5 38	18 26	0 26	1 27	5 43	1.8	18 39	2.9
30	5 42	18 23	0 24	1 22	5 45	1.9	18 36	2.9
20	5 48	18 16	0 22	1 15	5 48	2.1	18 30	2.7
10	5 54	18 10	0 21	1 11	5 51	2.2	18 25	2.5
0	5 59	18 5	0 21	1 9	5 54	2.4	18 21	2.4
10	6 4	18 0	0 21	1 10	5 57	2.5	18 16	2.3
20	6 9	17 55	0 22	1 13	5 60	2.7	18 11	2.1
30	6 14	17 49	0 24	1 19	5 63	2.9	18 6	1.9
35	6 18	17 46	0 25	1 24	6 5	3.0	18 2	1.8
40	6 21	17 42	0 27	1 30	6 8	3.1	17 59	1.7
45	6 26	17 38	0 29	1 37	6 10	3.2	17 54	1.6
50	6 31	17 33	0 32	1 47	6 14	3.4	17 49	1.5
55	6 37	17 26	0 36	2 0	6 18	3.6	17 43	1.3
60	6 44	17 18	0 42	2 19	6 23	3.9	17 35	1.0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	s	'	h min	min	'	'
00	- 2 9.3	.7	16.0	T _m 12 7	2.4	61.3	16.7
12	- 2 1.0	T _{m☉} 12 h 2.0 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	'	°	
♂	11 6	.1	358	-2.9	♂	21 60	.0	193	-2.0
♂	3 23	.1	113	-1.0	♂	3 58	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 31.8	7 17.0	196 40.8	193 29.3	- 0 14.8	309 56.5	-20 59.6
2	209 32.2	7 18.9	226 45.7	223 28.6	- 0 12.4	340 .9	-20 59.9
4	239 32.5	7 20.8	256 50.7	253 27.8	- 0 10.0	10 5.2	-21 .1
6	269 32.9	7 22.6	286 55.6	283 27.1	- 0 7.5	40 9.6	-21 .3
8	299 33.2	7 24.5	317 .5	313 26.3	- 0 5.1	70 14.0	-21 .5
10	329 33.5	7 26.3	347 5.5	343 25.6	- 0 2.6	100 18.4	-21 .7
12	359 33.9	7 28.2	17 10.4	13 24.9	- 0 .2	130 22.8	-21 .9
14	29 34.2	7 30.1	47 15.3	43 24.1	0 2.3	160 27.2	-21 1.1
16	59 34.6	7 31.9	77 20.2	73 23.4	0 4.7	190 31.6	-21 1.4
18	89 34.9	7 33.8	107 25.2	103 22.7	0 7.2	220 36.0	-21 1.6
20	119 35.2	7 35.7	137 30.1	133 21.9	0 9.6	250 40.4	-21 1.8
22	149 35.6	7 37.5	167 35.0	163 21.2	0 12.1	280 44.9	-21 2.0
Δ	2	9		-4	12	22	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	171 25.4	66	7 18.0	110	30 10.7	7 21.1	301 25.4	-20 57.4
2	200 16.6	65	7 40.0	109	60 16.1	7 21.2	331 30.4	-20 57.4
4	229 7.7	65	8 1.7	108	90 21.4	7 21.4	1 35.5	-20 57.4
6	257 58.7	65	8 23.2	106	120 26.8	7 21.6	31 40.5	-20 57.4
8	286 49.6	64	8 44.5	105	150 32.1	7 21.7	61 45.6	-20 57.4
10	315 40.4	64	9 5.5	104	180 37.5	7 21.9	91 50.6	-20 57.3
12	344 31.1	63	9 26.3	102	210 42.8	7 22.1	121 55.7	-20 57.3
14	13 21.8	63	9 46.7	101	240 48.2	7 22.2	152 .7	-20 57.3
16	42 12.3	62	10 6.9	99	270 53.5	7 22.4	182 5.8	-20 57.3
18	71 2.8	62	10 26.8	98	300 58.9	7 22.6	212 10.8	-20 57.3
20	99 53.1	61	10 46.4	96	331 4.2	7 22.7	242 15.9	-20 57.2
22	128 43.4	61	11 5.7	95	1 9.5	7 22.9	272 20.9	-20 57.2
Δ					27	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	5 3	19 2	0 45	2 55	5 50	1.1	20 38	3.7
55	5 13	18 51	0 38	2 19	6 1	1.3	20 23	3.4
50	5 21	18 43	0 34	1 59	6 9	1.5	20 12	3.2
45	5 27	18 37	0 30	1 45	6 16	1.7	20 3	3.1
40	5 32	18 32	0 28	1 35	6 21	1.8	19 56	3.0
35	5 37	18 27	0 26	1 28	6 26	1.9	19 50	2.9
30	5 41	18 23	0 24	1 22	6 30	2.0	19 44	2.8
20	5 47	18 16	0 22	1 15	6 38	2.1	19 34	2.7
10	5 53	18 10	0 21	1 11	6 44	2.3	19 26	2.5
0	5 58	18 5	0 21	1 9	6 51	2.4	19 18	2.4
10	6 4	17 60	0 21	1 10	6 57	2.5	19 10	2.3
20	6 9	17 54	0 22	1 13	7 4	2.7	19 2	2.2
30	6 15	17 48	0 24	1 19	7 12	2.8	18 52	2.0
35	6 19	17 44	0 25	1 24	7 16	2.9	18 47	2.0
40	6 22	17 41	0 27	1 30	7 21	3.0	18 40	1.9
45	6 27	17 36	0 29	1 37	7 27	3.2	18 33	1.8
50	6 32	17 31	0 32	1 47	7 35	3.3	18 24	1.6
55	6 39	17 24	0 36	2 0	7 44	3.5	18 14	1.4
60	6 47	17 15	0 42	2 19	7 56	3.8	17 60	1.2

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 52.7	.7	16.0	T _m	13 4	2.5	61.4 16.7
12	- 1 44.5	T _{m☉}	12 h 1.7 min	Starost	.5 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	11 6	.1	357	-2.9	♄	21 55	.0	193	-1.9
♂	3 20	.1	113	-1.0	♄	3 54	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 35.9	7 39.4	197 40.0	193 20.4	0 14.5	310 49.3	-21 2.2
2	209 36.3	7 41.2	227 44.9	223 19.7	0 17.0	340 53.7	-21 2.4
4	239 36.6	7 43.1	257 49.8	253 19.0	0 19.4	10 58.2	-21 2.6
6	269 36.9	7 44.9	287 54.7	283 18.2	0 21.9	41 2.6	-21 2.8
8	299 37.3	7 46.8	317 59.7	313 17.5	0 24.3	71 7.0	-21 3.0
10	329 37.6	7 48.6	348 4.6	343 16.7	0 26.8	101 11.5	-21 3.2
12	359 37.9	7 50.5	18 9.5	13 16.0	0 29.2	131 15.9	-21 3.4
14	29 38.3	7 52.4	48 14.5	43 15.3	0 31.6	161 20.4	-21 3.7
16	59 38.6	7 54.2	78 19.4	73 14.5	0 34.1	191 24.9	-21 3.9
18	89 38.9	7 56.1	108 24.3	103 13.8	0 36.5	221 29.3	-21 4.1
20	119 39.3	7 57.9	138 29.2	133 13.1	0 39.0	251 33.8	-21 4.3
22	149 39.6	7 59.8	168 34.2	163 12.3	0 41.4	281 38.3	-21 4.5
Δ	2	9		-4	12	22	-1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	157 33.6	61	11 24.6	93	31 14.9	7 23.0	302 26.0	-20 57.2
2	186 23.8	60	11 43.3	91	61 20.2	7 23.2	332 31.1	-20 57.2
4	215 13.8	60	12 1.5	90	91 25.6	7 23.4	2 36.1	-20 57.2
6	244 3.8	60	12 19.4	88	121 30.9	7 23.5	32 41.2	-20 57.1
8	272 53.8	59	12 37.0	86	151 36.2	7 23.7	62 46.2	-20 57.1
10	301 43.6	59	12 54.1	84	181 41.6	7 23.8	92 51.3	-20 57.1
12	330 33.5	59	13 10.9	82	211 46.9	7 24.0	122 56.3	-20 57.1
14	359 23.3	59	13 27.3	80	241 52.3	7 24.2	153 1.4	-20 57.1
16	28 13.0	59	13 43.3	78	271 57.6	7 24.3	183 6.5	-20 57.0
18	57 2.7	58	13 58.9	76	302 2.9	7 24.5	213 11.5	-20 57.0
20	85 52.4	58	14 14.1	74	332 8.3	7 24.6	243 16.6	-20 57.0
22	114 42.0	58	14 28.8	72	2 13.6	7 24.8	273 21.6	-20 57.0
Δ					27	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	5 0	19 4	0 45	2 58	6 17	1.3	22 6	3.4
55	5 11	18 53	0 38	2 20	6 33	1.6	21 46	3.2
50	5 19	18 45	0 34	1 59	6 46	1.7	21 30	3.0
45	5 25	18 38	0 30	1 45	6 56	1.8	21 18	2.9
40	5 31	18 33	0 28	1 35	7 4	1.9	21 8	2.8
35	5 36	18 28	0 26	1 28	7 12	2.0	20 59	2.8
30	5 40	18 24	0 24	1 22	7 18	2.1	20 52	2.7
20	5 47	18 17	0 22	1 15	7 29	2.2	20 39	2.6
10	5 53	18 10	0 22	1 11	7 39	2.3	20 27	2.5
0	5 58	18 5	0 21	1 9	7 49	2.4	20 16	2.4
10	6 4	17 59	0 21	1 10	7 58	2.5	20 6	2.4
20	6 9	17 53	0 22	1 13	8 8	2.6	19 54	2.3
30	6 16	17 47	0 24	1 19	8 20	2.8	19 41	2.2
35	6 19	17 43	0 25	1 24	8 27	2.8	19 34	2.1
40	6 23	17 39	0 27	1 30	8 34	2.9	19 25	2.0
45	6 28	17 34	0 29	1 37	8 43	3.0	19 15	1.9
50	6 34	17 29	0 32	1 47	8 54	3.1	19 3	1.8
55	6 40	17 22	0 36	2 0	9 8	3.3	18 48	1.7
60	6 49	17 13	0 42	2 19	9 26	3.5	18 29	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	- 1 36.3	.7	16.0	T _m	14 3	2.4	61.1 16.7
12	- 1 28.3	T _{m☉}	12 h 1.5 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	'	°	
♂	11 7	.1	356	-2.9	♄	21 51	.0	194	-1.9
♂	3 16	.1	113	-1.0	♄	3 50	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 39.9	8 1.6	198 39.1	193 11.6	0 43.9	311 42.8	-21 4.7
2	209 40.3	8 3.4	228 44.0	223 10.8	0 46.3	341 47.3	-21 4.9
4	239 40.6	8 5.3	258 49.0	253 10.1	0 48.8	11 51.8	-21 5.1
6	269 40.9	8 7.1	288 53.9	283 9.4	0 51.2	41 56.3	-21 5.3
8	299 41.3	8 9.0	318 58.8	313 8.6	0 53.7	72 .8	-21 5.5
10	329 41.6	8 10.8	349 3.7	343 7.9	0 56.1	102 5.3	-21 5.7
12	359 41.9	8 12.7	19 8.7	13 7.2	0 58.6	132 9.8	-21 5.9
14	29 42.3	8 14.5	49 13.6	43 6.4	1 1.0	162 14.3	-21 6.1
16	59 42.6	8 16.3	79 18.5	73 5.7	1 3.5	192 18.8	-21 6.3
18	89 42.9	8 18.2	109 23.4	103 5.0	1 5.9	222 23.4	-21 6.5
20	119 43.3	8 20.0	139 28.4	133 4.2	1 8.4	252 27.9	-21 6.7
22	149 43.6	8 21.9	169 33.3	163 3.5	1 10.8	282 32.5	-21 6.9
Δ	2	9		-4	12	23	-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 57	19 7	0 45	3 1	6 49	1.7	23 27	2.9
55	5 8	18 55	0 38	2 22	7 11	1.8	23 2	2.8
50	5 17	18 47	0 34	1 60	7 27	2.0	22 43	2.7
45	5 24	18 40	0 30	1 46	7 40	2.0	22 28	2.7
40	5 29	18 34	0 28	1 36	7 51	2.1	22 16	2.6
35	5 34	18 29	0 26	1 28	8 0	2.2	22 6	2.6
30	5 38	18 24	0 24	1 22	8 9	2.2	21 57	2.6
20	5 46	18 17	0 22	1 15	8 23	2.3	21 41	2.5
10	5 52	18 10	0 21	1 11	8 35	2.4	21 28	2.5
0	5 58	18 5	0 21	1 9	8 47	2.4	21 15	2.4
10	6 4	17 59	0 21	1 10	8 59	2.5	21 2	2.4
20	6 10	17 53	0 22	1 13	9 12	2.6	20 49	2.3
30	6 16	17 46	0 24	1 20	9 26	2.6	20 33	2.3
35	6 20	17 42	0 25	1 24	9 35	2.7	20 24	2.2
40	6 24	17 37	0 27	1 30	9 45	2.7	20 14	2.2
45	6 29	17 32	0 30	1 37	9 56	2.8	20 2	2.1
50	6 35	17 26	0 33	1 47	10 10	2.9	19 47	2.1
55	6 42	17 19	0 37	2 0	10 27	3.0	19 29	2.0
60	6 52	17 10	0 42	2 19	10 51	3.1	19 4	1.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	143 31.7	58 14 43.2	69	32 18.9	7 24.9	303 26.7	-20 57.0	
2	172 21.3	58 14 57.0	67	62 24.3	7 25.1	333 31.8	-20 56.9	
4	201 10.9	58 15 10.5	65	92 29.6	7 25.2	3 36.8	-20 56.9	
6	230 .5	58 15 23.5	63	122 34.9	7 25.4	33 41.9	-20 56.9	
8	258 50.1	58 15 36.1	61	152 40.2	7 25.6	63 47.0	-20 56.9	
10	287 39.7	58 15 48.2	58	182 45.6	7 25.7	93 52.0	-20 56.9	
12	316 29.4	58 15 59.9	56	212 50.9	7 25.9	123 57.1	-20 56.8	
14	345 19.0	59 16 11.0	54	242 56.2	7 26.0	154 2.1	-20 56.8	
16	14 8.8	59 16 21.8	51	273 1.5	7 26.2	184 7.2	-20 56.8	
18	42 58.5	59 16 32.0	49	303 6.9	7 26.3	214 12.3	-20 56.8	
20	71 48.3	59 16 41.8	47	333 12.2	7 26.5	244 17.4	-20 56.8	
22	100 38.2	60 16 51.1	44	3 17.5	7 26.6	274 22.4	-20 56.7	
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 20.2	.7	16.0	T _m	15 1	2.4	60.6 16.5		
12	- 1 12.3	T _{m☉}	12 h 1.2 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	' / "	°	°
♂	11 8	.1	355	-2.9	♃	21 47	.0	194	-1.9
	3 13	.1	113	-1.1	♄	3 46	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 43.9	8 23.7	199 38.2	193 2.7	1 13.3	312 37.0	-21 7.1
2	209 44.2	8 25.5	229 43.2	223 2.0	1 15.7	342 41.5	-21 7.3
4	239 44.6	8 27.4	259 48.1	253 1.3	1 18.2	12 46.1	-21 7.5
6	269 44.9	8 29.2	289 53.0	283 .5	1 20.6	42 50.7	-21 7.7
8	299 45.2	8 31.0	319 57.9	312 59.8	1 23.0	72 55.2	-21 7.9
10	329 45.5	8 32.9	350 2.9	342 59.1	1 25.5	102 59.8	-21 8.1
12	359 45.9	8 34.7	20 7.8	12 58.3	1 27.9	133 4.4	-21 8.3
14	29 46.2	8 36.5	50 12.7	42 57.6	1 30.4	163 9.0	-21 8.5
16	59 46.5	8 38.3	80 17.7	72 56.8	1 32.8	193 13.5	-21 8.7
18	89 46.8	8 40.2	110 22.6	102 56.1	1 35.3	223 18.1	-21 8.9
20	119 47.2	8 42.0	140 27.5	132 55.4	1 37.7	253 22.7	-21 9.1
22	149 47.5	8 43.8	170 32.4	162 54.6	1 40.2	283 27.3	-21 9.3
Δ	2	9		-4	12	23	-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 54	19 9	0 45	3 4	7 29	2.1	.. ..	.0
55	5 6	18 57	0 39	2 23	7 55	2.1	.. ..	.0
50	5 15	18 48	0 34	2 1	8 14	2.2	23 48	2.3
45	5 22	18 41	0 30	1 46	8 29	2.2	23 32	2.3
40	5 28	18 35	0 28	1 36	8 42	2.3	23 19	2.3
35	5 33	18 30	0 26	1 28	8 52	2.3	23 8	2.3
30	5 37	18 25	0 24	1 23	9 2	2.3	22 58	2.3
20	5 45	18 17	0 22	1 15	9 18	2.3	22 41	2.3
10	5 52	18 10	0 21	1 11	9 32	2.4	22 27	2.3
0	5 58	18 4	0 21	1 9	9 46	2.4	22 13	2.3
10	6 4	17 58	0 21	1 10	9 59	2.4	21 59	2.3
20	6 10	17 52	0 22	1 13	10 13	2.4	21 44	2.3
30	6 17	17 45	0 24	1 20	10 30	2.5	21 28	2.3
35	6 21	17 41	0 25	1 24	10 39	2.5	21 18	2.3
40	6 25	17 36	0 27	1 30	10 50	2.5	21 7	2.3
45	6 31	17 31	0 30	1 37	11 3	2.5	20 53	2.3
50	6 37	17 24	0 33	1 47	11 19	2.5	20 37	2.3
55	6 44	17 17	0 37	2 0	11 39	2.6	20 17	2.3
60	6 54	17 7	0 42	2 19	12 6	2.6	19 49	2.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	129 28.1	60 17 .0	42	33 22.8	7 26.8	304 27.5	-20 56.7	
2	158 18.1	60 17 8.3	39	63 28.2	7 26.9	334 32.6	-20 56.7	
4	187 8.2	61 17 16.2	37	93 33.5	7 27.1	4 37.6	-20 56.7	
6	215 58.3	61 17 23.6	35	123 38.8	7 27.2	34 42.7	-20 56.6	
8	244 48.6	62 17 30.5	32	153 44.1	7 27.4	64 47.8	-20 56.6	
10	273 38.9	62 17 37.0	30	183 49.4	7 27.5	94 52.9	-20 56.6	
12	302 29.4	63 17 42.9	27	213 54.7	7 27.7	124 57.9	-20 56.6	
14	331 20.0	64 17 48.4	25	244 .0	7 27.8	155 3.0	-20 56.6	
16	0 10.7	64 17 53.4	23	274 5.4	7 28.0	185 8.1	-20 56.5	
18	29 1.5	65 17 57.9	20	304 10.7	7 28.1	215 13.2	-20 56.5	
20	57 52.5	66 18 1.9	18	334 16.0	7 28.3	245 18.2	-20 56.5	
22	86 43.6	66 18 5.5	15	4 21.3	7 28.4	275 23.3	-20 56.5	
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 4.4	.6	16.0	T _m	15 59	2.4	59.8 16.3		
12	- 0 56.6	T _{m☉}	12 h .9 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	' / "	°	°
♂	11 8	.1	353	-2.9	♃	21 43	.0	194	-1.9
	3 9	.1	113	-1.1	♄	3 42	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 47.8	8 45.6	200 37.4	192 53.9	1 42.6	313 31.9	-21 9.5
2	209 48.1	8 47.5	230 42.3	222 53.2	1 45.1	343 36.5	-21 9.7
4	239 48.4	8 49.3	260 47.2	252 52.4	1 47.5	13 41.2	-21 9.9
6	269 48.8	8 51.1	290 52.2	282 51.7	1 50.0	43 45.8	-21 10.0
8	299 49.1	8 52.9	320 57.1	312 50.9	1 52.4	73 50.4	-21 10.2
10	329 49.4	8 54.7	351 2.0	342 50.2	1 54.9	103 55.0	-21 10.4
12	359 49.7	8 56.6	21 6.9	12 49.5	1 57.3	133 59.7	-21 10.6
14	29 50.0	8 58.4	51 11.9	42 48.7	1 59.7	164 4.3	-21 10.8
16	59 50.4	9 .2	81 16.8	72 48.0	2 2.2	194 9.0	-21 11.0
18	89 50.7	9 2.0	111 21.7	102 47.2	2 4.6	224 13.6	-21 11.2
20	119 51.0	9 3.8	141 26.7	132 46.5	2 7.1	254 18.3	-21 11.4
22	149 51.3	9 5.6	171 31.6	162 45.8	2 9.5	284 22.9	-21 11.6
Δ	2	9		-4	12	23	-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 51	19 12	0 46	3 7	8 19	2.5	0 36	2.3
55	5 3	18 59	0 39	2 24	8 46	2.4	0 8	2.3
50	5 13	18 50	0 34	2 1	9 7	2.4	...	.0
45	5 20	18 42	0 31	1 47	9 23	2.4	...	.0
40	5 26	18 36	0 28	1 36	9 36	2.4	...	.0
35	5 32	18 30	0 26	1 29	9 47	2.4	...	.0
30	5 36	18 26	0 24	1 23	9 57	2.3	23 54	2.1
20	5 44	18 17	0 22	1 15	10 14	2.3	23 38	2.2
10	5 51	18 10	0 21	1 11	10 29	2.3	23 23	2.2
0	5 57	18 4	0 21	1 10	10 43	2.3	23 9	2.2
10	6 4	17 58	0 21	1 10	10 57	2.3	22 55	2.3
20	6 10	17 51	0 22	1 14	11 11	2.3	22 41	2.3
30	6 17	17 43	0 24	1 20	11 28	2.2	22 24	2.4
35	6 22	17 39	0 25	1 24	11 38	2.2	22 14	2.4
40	6 26	17 34	0 27	1 30	11 50	2.2	22 2	2.4
45	6 32	17 29	0 30	1 38	12 3	2.2	21 49	2.4
50	6 38	17 22	0 33	1 47	12 19	2.1	21 33	2.5
55	6 46	17 14	0 37	2 1	12 40	2.1	21 12	2.5
60	6 56	17 4	0 42	2 19	13 9	2.0	20 44	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	115 34.9	67 18 8.6	13	34 26.6	7 28.5	305 28.4	-20 56.4	
2	144 26.4	68 18 11.2	11	64 31.9	7 28.7	335 33.5	-20 56.4	
4	173 18.0	69 18 13.3	8	94 37.2	7 28.8	5 38.5	-20 56.4	
6	202 9.8	70 18 15.0	6	124 42.5	7 29.0	35 43.6	-20 56.4	
8	231 1.7	71 18 16.2	4	154 47.8	7 29.1	65 48.7	-20 56.4	
10	259 53.9	72 18 17.0	1	184 53.1	7 29.3	95 53.8	-20 56.3	
12	288 46.2	73 18 17.2	-1	214 58.4	7 29.4	125 58.9	-20 56.3	
14	317 38.7	74 18 17.1	-3	245 3.7	7 29.6	156 4.0	-20 56.3	
16	346 31.5	75 18 16.4	-5	275 9.0	7 29.7	186 9.0	-20 56.3	
18	15 24.4	76 18 15.4	-8	305 14.3	7 29.8	216 14.1	-20 56.2	
20	44 17.6	77 18 13.9	-10	335 19.6	7 30.0	246 19.2	-20 56.2	
22	73 11.0	78 18 11.9	-12	5 24.9	7 30.1	276 24.3	-20 56.2	
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 48.8	.6	16.0	T _m	16 56	2.3	58.9	16.1
12	- 0 41.2	T _{m☉}	12 h .7 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	'	°	
♀	11 9	.1	352	-2.9	♃	21 38	.0	194	-1.9
♂	3 5	.1	113	-1.1	♄	3 37	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 51.6	9 7.4	201 36.5	192 45.0	2 12.0	314 27.6	-21 11.8
2	209 51.9	9 9.3	231 41.4	222 44.3	2 14.4	344 32.3	-21 11.9
4	239 52.2	9 11.1	261 46.4	252 43.5	2 16.9	14 37.0	-21 12.1
6	269 52.6	9 12.9	291 51.3	282 42.8	2 19.3	44 41.6	-21 12.3
8	299 52.9	9 14.7	321 56.2	312 42.1	2 21.7	74 46.3	-21 12.5
10	329 53.2	9 16.5	352 1.2	342 41.3	2 24.2	104 51.0	-21 12.7
12	359 53.5	9 18.3	22 6.1	12 40.6	2 26.6	134 55.7	-21 12.9
14	29 53.8	9 20.1	52 11.0	42 39.8	2 29.1	165 .4	-21 13.1
16	59 54.1	9 21.9	82 15.9	72 39.1	2 31.5	195 5.1	-21 13.3
18	89 54.4	9 23.7	112 20.9	102 38.4	2 34.0	225 9.8	-21 13.4
20	119 54.7	9 25.5	142 25.8	132 37.6	2 36.4	255 14.6	-21 13.6
22	149 55.1	9 27.3	172 30.7	162 36.9	2 38.8	285 19.3	-21 13.8
Δ	2	9		-4	12	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 48	19 14	0 46	3 11	9 18	2.8	1 32	1.8
55	5 1	19 1	0 39	2 26	9 45	2.6	1 4	1.9
50	5 11	18 51	0 34	2 2	10 4	2.5	0 44	2.0
45	5 18	18 43	0 31	1 47	10 20	2.5	0 28	2.0
40	5 25	18 37	0 28	1 37	10 33	2.4	0 15	2.1
35	5 30	18 31	0 26	1 29	10 44	2.4	0 4	2.1
30	5 35	18 26	0 25	1 23	10 53	2.4	...	.0
20	5 43	18 18	0 22	1 15	11 10	2.3	...	.0
10	5 51	18 10	0 21	1 11	11 24	2.2	...	.0
0	5 57	18 4	0 21	1 10	11 38	2.2	...	.0
10	6 4	17 57	0 21	1 10	11 51	2.1	23 50	2.2
20	6 10	17 50	0 22	1 14	12 6	2.1	23 36	2.3
30	6 18	17 42	0 24	1 20	12 22	2.0	23 20	2.3
35	6 22	17 38	0 26	1 24	12 32	2.0	23 11	2.4
40	6 27	17 33	0 27	1 30	12 43	1.9	23 0	2.4
45	6 33	17 27	0 30	1 38	12 55	1.9	22 48	2.5
50	6 40	17 20	0 33	1 47	13 11	1.8	22 33	2.6
55	6 48	17 12	0 37	2 1	13 31	1.7	22 13	2.7
60	6 59	17 1	0 42	2 19	13 58	1.6	21 47	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	102 4.6	79 18 9.5	-14	35 30.2	7 30.3	306 29.4	-20 56.2	
2	130 58.4	80 18 6.7	-16	65 35.5	7 30.4	336 34.5	-20 56.2	
4	159 52.5	82 18 3.5	-18	95 40.8	7 30.5	6 39.6	-20 56.1	
6	188 46.8	83 17 59.8	-20	125 46.1	7 30.7	36 44.6	-20 56.1	
8	217 41.4	84 17 55.7	-22	155 51.4	7 30.8	66 49.7	-20 56.1	
10	246 36.1	85 17 51.3	-24	185 56.7	7 30.9	96 54.8	-20 56.1	
12	275 31.2	86 17 46.4	-26	216 2.0	7 31.1	126 59.9	-20 56.0	
14	304 26.5	88 17 41.1	-28	246 7.3	7 31.2	157 5.0	-20 56.0	
16	333 22.0	89 17 35.4	-30	276 12.6	7 31.4	187 10.1	-20 56.0	
18	2 17.8	90 17 29.4	-32	306 17.8	7 31.5	217 15.2	-20 56.0	
20	31 13.8	92 17 22.9	-34	336 23.1	7 31.6	247 20.3	-20 55.9	
22	60 10.1	93 17 16.1	-36	6 28.4	7 31.8	277 25.4	-20 55.9	
Δ				26	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 33.5	.6	16.0	T _m	17 50	2.2	58.0	15.8
12	- 0 26.0	T _{m☉}	12 h .4 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	'	°	
♀	11 9	.1	351	-2.9	♃	21 34	.0	194	-1.9
♂	3 2	.1	113	-1.1	♄	3 33	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 55.4	9 29.1	202 35.7	192 36.1	2 41.3	315 24.0	-21 14.0
2	209 55.7	9 30.9	232 40.6	222 35.4	2 43.7	345 28.7	-21 14.2
4	239 56.0	9 32.7	262 45.5	252 34.6	2 46.2	15 33.5	-21 14.4
6	269 56.3	9 34.5	292 50.4	282 33.9	2 48.6	45 38.2	-21 14.5
8	299 56.6	9 36.3	322 55.4	312 33.2	2 51.0	75 43.0	-21 14.7
10	329 56.9	9 38.1	353 .3	342 32.4	2 53.5	105 47.7	-21 14.9
12	359 57.2	9 39.9	23 5.2	12 31.7	2 55.9	135 52.5	-21 15.1
14	29 57.5	9 41.6	53 10.1	42 30.9	2 58.4	165 57.3	-21 15.3
16	59 57.8	9 43.4	83 15.1	72 30.2	3 .8	196 2.0	-21 15.4
18	89 58.1	9 45.2	113 20.0	102 29.4	3 3.2	226 6.8	-21 15.6
20	119 58.4	9 47.0	143 24.9	132 28.7	3 5.7	256 11.6	-21 15.8
22	149 58.7	9 48.8	173 29.9	162 28.0	3 8.1	286 16.4	-21 16.0
Δ	2	9		-4	12	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 45	19 17	0 46	3 15	10 24	2.9	2 15	1.4
55	4 58	19 3	0 39	2 27	10 48	2.7	1 50	1.5
50	5 9	18 53	0 34	2 3	11 6	2.6	1 32	1.7
45	5 17	18 45	0 31	1 48	11 20	2.5	1 17	1.7
40	5 23	18 38	0 28	1 37	11 31	2.4	1 5	1.8
35	5 29	18 32	0 26	1 29	11 41	2.4	0 55	1.9
30	5 34	18 27	0 25	1 23	11 50	2.3	0 45	1.9
20	5 43	18 18	0 22	1 15	12 5	2.2	0 30	2.0
10	5 50	18 11	0 21	1 11	12 18	2.1	0 16	2.1
0	5 57	18 4	0 21	1 10	12 30	2.1	0 3	2.1
10	6 4	17 57	0 21	1 10	12 42	2.0	...	.0
20	6 11	17 49	0 22	1 14	12 55	1.9	...	.0
30	6 19	17 41	0 24	1 20	13 10	1.8	...	.0
35	6 23	17 37	0 26	1 24	13 19	1.8	...	.0
40	6 28	17 31	0 27	1 30	13 29	1.7	23 59	2.4
45	6 34	17 25	0 30	1 38	13 40	1.6	23 48	2.5
50	6 41	17 18	0 33	1 48	13 54	1.5	23 35	2.6
55	6 50	17 9	0 37	2 1	14 12	1.4	23 18	2.8
60	7 1	16 58	0 42	2 19	14 35	1.2	22 56	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	89 6.7	94 17	8.9	-38	36 33.7	7 31.9	307 30.5	-20 55.9
2	118 3.5	95 17	1.4	-40	66 39.0	7 32.0	337 35.6	-20 55.9
4	147 .6	97 16	53.4	-41	96 44.3	7 32.2	7 40.7	-20 55.9
6	175 58.0	98 16	45.2	-43	126 49.5	7 32.3	37 45.8	-20 55.8
8	204 55.6	99 16	36.6	-45	156 54.8	7 32.4	67 50.9	-20 55.8
10	233 53.5	101 16	27.6	-46	187 .1	7 32.6	97 56.0	-20 55.8
12	262 51.6	102 16	18.4	-48	217 5.4	7 32.7	128 1.1	-20 55.8
14	291 50.0	103 16	8.8	-50	247 10.7	7 32.8	158 6.2	-20 55.7
16	320 48.7	105 15	58.8	-51	277 15.9	7 33.0	188 11.3	-20 55.7
18	349 47.6	106 15	48.6	-53	307 21.2	7 33.1	218 16.4	-20 55.7
20	18 46.8	107 15	38.1	-54	337 26.5	7 33.2	248 21.5	-20 55.7
22	47 46.3	109 15	27.2	-56	7 31.8	7 33.3	278 26.6	-20 55.6
Δ					26	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 18.6	.6	16.0	T _m	18 42	2.0	57.1 15.6		
12	- 0 11.2	T _{m☉}	12 h .2 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	'	°	
♁	11 10	.1	350	-2.9	♄	21 30	.0	194	-1.9
♂	2 58	.1	113	-1.2	♅	3 29	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 59.0	9 50.6	203 34.8	192 27.2	3 10.5	316 21.2	-21 16.2
2	209 59.3	9 52.4	233 39.7	222 26.5	3 13.0	346 26.0	-21 16.3
4	239 59.6	9 54.1	263 44.6	252 25.7	3 15.4	16 30.8	-21 16.5
6	269 59.9	9 55.9	293 49.6	282 25.0	3 17.8	46 35.6	-21 16.7
8	300 .2	9 57.7	323 54.5	312 24.2	3 20.3	76 40.4	-21 16.9
10	330 .5	9 59.5	353 59.4	342 23.5	3 22.7	106 45.2	-21 17.0
12	0 .8	10 1.3	24 4.4	12 22.7	3 25.1	136 50.0	-21 17.2
14	30 1.1	10 3.0	54 9.3	42 22.0	3 27.6	166 54.9	-21 17.4
16	60 1.4	10 4.8	84 14.2	72 21.2	3 30.0	196 59.7	-21 17.6
18	90 1.7	10 6.6	114 19.1	102 20.5	3 32.4	227 4.5	-21 17.7
20	120 2.0	10 8.4	144 24.1	132 19.7	3 34.9	257 9.4	-21 17.9
22	150 2.3	10 10.1	174 29.0	162 19.0	3 37.3	287 14.2	-21 18.1
Δ	1	9		-4	12	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 42	19 19	0 47	3 20	11 34	3.0	2 48	1.1
55	4 56	19 5	0 39	2 29	11 53	2.8	2 27	1.3
50	5 6	18 54	0 34	2 4	12 8	2.6	2 11	1.4
45	5 15	18 46	0 31	1 48	12 20	2.5	1 59	1.5
40	5 22	18 39	0 28	1 37	12 30	2.4	1 48	1.6
35	5 28	18 33	0 26	1 29	12 38	2.3	1 39	1.7
30	5 33	18 27	0 25	1 23	12 46	2.3	1 31	1.7
20	5 42	18 18	0 22	1 16	12 58	2.2	1 18	1.8
10	5 49	18 11	0 21	1 11	13 9	2.1	1 6	1.9
0	5 57	18 3	0 21	1 10	13 20	2.0	0 54	2.0
10	6 4	17 56	0 21	1 11	13 30	1.9	0 43	2.1
20	6 11	17 49	0 22	1 14	13 41	1.8	0 31	2.2
30	6 19	17 40	0 24	1 20	13 54	1.6	0 17	2.3
35	6 24	17 35	0 26	1 24	14 1	1.6	0 9	2.4
40	6 29	17 30	0 27	1 30	14 9	1.5	...	.0
45	6 36	17 24	0 30	1 38	14 19	1.4	...	.0
50	6 43	17 16	0 33	1 48	14 30	1.3	...	.0
55	6 52	17 7	0 37	2 1	14 45	1.1	...	.0
60	7 4	16 55	0 43	2 19	15 4	1.0	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	76 46.0	110 15	16.1	-57	37 37.0	7 33.5	308 31.7	-20 55.6
2	105 45.9	111 15	4.7	-59	67 42.3	7 33.6	338 36.8	-20 55.6
4	134 46.2	112 14	52.9	-60	97 47.6	7 33.7	8 41.9	-20 55.6
6	163 46.6	114 14	41.0	-61	127 52.8	7 33.9	38 47.0	-20 55.5
8	192 47.4	115 14	28.7	-63	157 58.1	7 34.0	68 52.1	-20 55.5
10	221 48.3	116 14	16.2	-64	188 3.4	7 34.1	98 57.2	-20 55.5
12	250 49.6	117 14	3.4	-65	218 8.6	7 34.2	129 2.3	-20 55.5
14	279 51.1	119 13	50.4	-66	248 13.9	7 34.4	159 7.4	-20 55.4
16	308 52.8	120 13	37.1	-68	278 19.2	7 34.5	189 12.5	-20 55.4
18	337 54.7	121 13	23.6	-69	308 24.4	7 34.6	219 17.6	-20 55.4
20	6 56.9	122 13	9.8	-70	338 29.7	7 34.7	249 22.7	-20 55.4
22	35 59.3	123 12	55.9	-71	8 34.9	7 34.9	279 27.8	-20 55.3
Δ					26	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 3.9	.6	16.0	T _m	19 31	2.0	56.3 15.3		
12	0 3.3	T _{m☉}	11 h 59.9 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	'	°	
♁	11 10	.1	349	-2.9	♄	21 26	.0	194	-1.9
♂	2 54	.1	113	-1.2	♅	3 25	.0	105	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	180	2.6	10	11.9	204	33.9	192	18.2	3	39.7	317	19.1 -21 18.3	
2	210	2.9	10	13.7	234	38.9	222	17.5	3	42.2	347	23.9 -21 18.4	
4	240	3.2	10	15.4	264	43.8	252	16.7	3	44.6	17	28.8 -21 18.6	
6	270	3.5	10	17.2	294	48.7	282	16.0	3	47.0	47	33.7 -21 18.8	
8	300	3.8	10	19.0	324	53.6	312	15.2	3	49.5	77	38.6 -21 19.0	
10	330	4.1	10	20.7	354	58.6	342	14.5	3	51.9	107	43.4 -21 19.1	
12	0	4.4	10	22.5	25	3.5	12	13.7	3	54.3	137	48.3 -21 19.3	
14	30	4.7	10	24.3	55	8.4	42	13.0	3	56.8	167	53.2 -21 19.5	
16	60	4.9	10	26.0	85	13.4	72	12.2	3	59.2	197	58.1 -21 19.6	
18	90	5.2	10	27.8	115	18.3	102	11.5	4	1.6	228	3.0 -21 19.8	
20	120	5.5	10	29.6	145	23.2	132	10.7	4	4.0	258	7.9 -21 20.0	
22	150	5.8	10	31.3	175	28.1	162	10.0	4	6.5	288	12.9 -21 20.1	
Δ		1		9			-4		12		24		-1

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	65	2.0	124	12 41.7	-72	38	40.2	7	35.0	309	32.9	-20 55.3	
2	94	4.9	126	12 27.2	-73	68	45.5	7	35.1	339	38.1	-20 55.3	
4	123	8.0	127	12 12.6	-74	98	50.7	7	35.2	9	43.2	-20 55.3	
6	152	11.3	128	11 57.8	-75	128	56.0	7	35.4	39	48.3	-20 55.2	
8	181	14.9	129	11 42.8	-76	159	1.2	7	35.5	69	53.4	-20 55.2	
10	210	18.6	130	11 27.5	-77	189	6.5	7	35.6	99	58.5	-20 55.2	
12	239	22.6	131	11 12.1	-78	219	11.7	7	35.7	130	3.6	-20 55.2	
14	268	26.7	132	10 56.5	-79	249	17.0	7	35.8	160	8.7	-20 55.1	
16	297	31.1	133	10 40.8	-80	279	22.2	7	36.0	190	13.9	-20 55.1	
18	326	35.7	134	10 24.8	-81	309	27.5	7	36.1	220	19.0	-20 55.1	
20	355	40.4	135	10 8.7	-81	339	32.7	7	36.2	250	24.1	-20 55.1	
22	24	45.4	136	9 52.5	-82	9	38.0	7	36.3	280	29.2	-20 55.0	
Δ						26		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 39	19 22	0 47	3 26	12 45	3.0	3 14	.9
55	4 54	19 7	0 39	2 30	13 0	2.8	2 58	1.1
50	5 4	18 56	0 34	2 5	13 12	2.6	2 45	1.2
45	5 13	18 47	0 31	1 49	13 21	2.5	2 35	1.3
40	5 20	18 40	0 28	1 38	13 28	2.4	2 26	1.4
35	5 26	18 34	0 26	1 30	13 35	2.3	2 19	1.5
30	5 32	18 28	0 25	1 24	13 40	2.2	2 13	1.6
20	5 41	18 19	0 23	1 16	13 50	2.1	2 2	1.7
10	5 49	18 11	0 21	1 11	13 59	2.0	1 52	1.8
0	5 56	18 3	0 21	1 10	14 7	1.9	1 43	1.9
10	6 4	17 56	0 21	1 11	14 15	1.8	1 33	2.0
20	6 11	17 48	0 22	1 14	14 23	1.7	1 23	2.1
30	6 20	17 39	0 24	1 20	14 33	1.5	1 12	2.3
35	6 25	17 34	0 26	1 24	14 39	1.4	1 6	2.3
40	6 30	17 29	0 27	1 30	14 45	1.4	0 58	2.4
45	6 37	17 22	0 30	1 38	14 53	1.3	0 49	2.5
50	6 44	17 14	0 33	1 48	15 1	1.1	0 39	2.6
55	6 54	17 5	0 37	2 1	15 12	1.0	0 25	2.8
60	7 6	16 52	0 43	2 19	15 27	.8	0 8	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	0 10.4	.6	16.0	T _m	20 18	1.8	55.6	15.2
12	0 17.4	T _{m☉}	11 h 59.7 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	'	°	
♀	11 11	.1	348	-2.9	♃	21 22	.0	194	-1.9
♂	2 50	.1	113	-1.2	♄	3 21	.0	105	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS				
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	180	6.1	10	33.1	205	33.1	192	9.2	4	8.9	318	17.8 -21 20.3	
2	210	6.4	10	34.8	235	38.0	222	8.5	4	11.3	348	22.7 -21 20.5	
4	240	6.7	10	36.6	265	42.9	252	7.7	4	13.7	18	27.6 -21 20.6	
6	270	7.0	10	38.3	295	47.9	282	6.9	4	16.2	48	32.6 -21 20.8	
8	300	7.2	10	40.1	325	52.8	312	6.2	4	18.6	78	37.5 -21 21.0	
10	330	7.5	10	41.8	355	57.7	342	5.4	4	21.0	108	42.5 -21 21.1	
12	0	7.8	10	43.6	26	2.6	12	4.7	4	23.4	138	47.4 -21 21.3	
14	30	8.1	10	45.3	56	7.6	42	3.9	4	25.8	168	52.4 -21 21.5	
16	60	8.4	10	47.1	86	12.5	72	3.2	4	28.3	198	57.3 -21 21.6	
18	90	8.7	10	48.8	116	17.4	102	2.4	4	30.7	229	2.3 -21 21.8	
20	120	8.9	10	50.6	146	22.3	132	1.6	4	33.1	259	7.3 -21 22.0	
22	150	9.2	10	52.3	176	27.3	162	.9	4	35.5	289	12.2 -21 22.1	
Δ		1		9			-4		12		25		-1

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	53	50.5	137	9 36.1	-83	39	43.2	7	36.4	310	34.3	-20 55.0	
2	82	55.8	137	9 19.5	-84	69	48.5	7	36.5	340	39.4	-20 55.0	
4	112	1.2	138	9 2.8	-84	99	53.7	7	36.7	10	44.6	-20 55.0	
6	141	6.9	139	8 45.9	-85	129	59.0	7	36.8	40	49.7	-20 54.9	
8	170	12.7	140	8 29.0	-86	160	4.2	7	36.9	70	54.8	-20 54.9	
10	199	18.7	141	8 11.9	-86	190	9.4	7	37.0	100	59.9	-20 54.9	
12	228	24.8	141	7 54.6	-87	220	14.7	7	37.1	131	5.0	-20 54.9	
14	257	31.1	142	7 37.3	-87	250	19.9	7	37.2	161	10.2	-20 54.8	
16	286	37.5	143	7 19.8	-88	280	25.2	7	37.4	191	15.3	-20 54.8	
18	315	44.1	143	7 2.3	-88	310	30.4	7	37.5	221	20.4	-20 54.8	
20	344	50.8	144	6 44.6	-89	340	35.6	7	37.6	251	25.5	-20 54.8	
22	13	57.6	145	6 26.8	-89	10	40.9	7	37.7	281	30.7	-20 54.7	
Δ						26		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 37	19 24	0 47	3 32	13 57	3.0	3 35	.7
55	4 51	19 9	0 40	2 32	14 7	2.8	3 23	.9
50	5 2	18 58	0 35	2 5	14 14	2.6	3 14	1.1
45	5 11	18 48	0 31	1 49	14 21	2.5	3 7	1.2
40	5 19	18 41	0 28	1 38	14 26	2.4	3 1	1.3
35	5 25	18 34	0 26	1 30	14 30	2.3	2 56	1.4
30	5 31	18 29	0 25	1 24	14 34	2.2	2 51	1.5
20	5 40	18 19	0 23	1 16	14 41	2.0	2 43	1.6
10	5 49	18 11	0 21	1 12	14 46	1.9	2 36	1.7
0	5 56	18 3	0 21	1 10	14 52	1.8	2 29	1.8
10	6 4	17 55	0 21	1 11	14 57	1.7	2 22	2.0
20	6 12	17 47	0 22	1 14	15 3	1.6	2 15	2.1
30	6 21	17 38	0 24	1 20	15 10	1.4	2 6	2.2
35	6 26	17 33	0 26	1 24	15 14	1.4	2 1	2.3
40	6 31	17 27	0 27	1 30	15 18	1.3	1 56	2.4
45	6 38	17 20	0 30	1 38	15 23	1.2	1 50	2.5
50	6 46	17 12	0 33	1 48	15 29	1.0	1 42	2.6
55	6 56	17 2	0 37	2 1	15 36	.9	1 32	2.8
60	7 8	16 49	0 43	2 19	15 46	.7	1 20	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	0 24.4	.6	16.0	T _m	21 2	1.8	55.0	15.0
12	0 31.2	T _{m☉}	11 h 59.5 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	'	°	
♀	11 12	.1	347	-2.9	♃	21 17	.0	194	-1.9
♂	2 46	.1	113	-1.2	♄	3 17	.0	105	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	9.5	10	54.0	206	32.2	192	.1	4	37.9	319	17.2 -21 22.3		
2	210	9.8	10	55.8	236	37.1	221	59.4	4	40.4	349	22.2 -21 22.4		
4	240	10.1	10	57.5	266	42.1	251	58.6	4	42.8	19	27.2 -21 22.6		
6	270	10.3	10	59.3	296	47.0	281	57.8	4	45.2	49	32.2 -21 22.8		
8	300	10.6	11	1.0	326	51.9	311	57.1	4	47.6	79	37.2 -21 22.9		
10	330	10.9	11	2.7	356	56.8	341	56.3	4	50.0	109	42.2 -21 23.1		
12	0	11.2	11	4.5	27	1.8	11	55.5	4	52.4	139	47.3 -21 23.2		
14	30	11.4	11	6.2	57	6.7	41	54.8	4	54.9	169	52.3 -21 23.4		
16	60	11.7	11	7.9	87	11.6	71	54.0	4	57.3	199	57.3 -21 23.6		
18	90	12.0	11	9.7	117	16.6	101	53.2	4	59.7	230	2.3 -21 23.7		
20	120	12.3	11	11.4	147	21.5	131	52.5	5	2.1	260	7.4 -21 23.9		
22	150	12.5	11	13.1	177	26.4	161	51.7	5	4.5	290	12.4 -21 24.0		
Δ		1		9				-4		12		25		-1

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	43	4.5	145	6	9.0	-90	40	46.1	7	37.8	311	35.8 -20 54.7		
2	72	11.6	146	5	51.0	-90	70	51.3	7	37.9	341	40.9 -20 54.7		
4	101	18.8	147	5	33.0	-91	100	56.6	7	38.0	11	46.0 -20 54.7		
6	130	26.1	147	5	14.9	-91	131	1.8	7	38.1	41	51.2 -20 54.6		
8	159	33.5	148	4	56.7	-91	161	7.0	7	38.3	71	56.3 -20 54.6		
10	188	41.0	148	4	38.5	-92	191	12.3	7	38.4	102	1.4 -20 54.6		
12	217	48.7	149	4	20.2	-92	221	17.5	7	38.5	132	6.6 -20 54.6		
14	246	56.4	149	4	1.8	-92	251	22.7	7	38.6	162	11.7 -20 54.5		
16	276	4.2	149	3	43.4	-92	281	27.9	7	38.7	192	16.8 -20 54.5		
18	305	12.0	150	3	24.9	-93	311	33.2	7	38.8	222	21.9 -20 54.5		
20	334	20.0	150	3	6.4	-93	341	38.4	7	38.9	252	27.1 -20 54.5		
22	3	28.0	150	2	47.9	-93	11	43.6	7	39.0	282	32.2 -20 54.4		
Δ								26		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 34	19 27	0 48	3 40	15 8	2.9	3 53	.7
55	4 49	19 11	0 40	2 34	15 13	2.7	3 46	.9
50	5 0	18 59	0 35	2 6	15 17	2.6	3 40	1.0
45	5 10	18 50	0 31	1 50	15 20	2.4	3 36	1.1
40	5 17	18 42	0 28	1 38	15 22	2.3	3 32	1.2
35	5 24	18 35	0 26	1 30	15 24	2.2	3 29	1.3
30	5 30	18 29	0 25	1 24	15 26	2.2	3 26	1.4
20	5 39	18 19	0 23	1 16	15 30	2.0	3 21	1.6
10	5 48	18 11	0 21	1 12	15 33	1.9	3 17	1.7
0	5 56	18 3	0 21	1 10	15 35	1.8	3 13	1.8
10	6 4	17 55	0 21	1 11	15 38	1.7	3 9	1.9
20	6 12	17 46	0 22	1 14	15 41	1.5	3 4	2.0
30	6 21	17 37	0 24	1 20	15 44	1.4	2 59	2.2
35	6 26	17 32	0 26	1 25	15 46	1.3	2 56	2.3
40	6 32	17 26	0 28	1 30	15 48	1.2	2 53	2.3
45	6 39	17 19	0 30	1 38	15 51	1.1	2 49	2.5
50	6 47	17 10	0 33	1 48	15 54	1.0	2 44	2.6
55	6 58	16 60	0 37	2 1	15 58	.9	2 39	2.7
60	7 11	16 47	0 43	2 19	16 2	.7	2 31	3.0
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	0 38.0	.6	16.0	T _m	21 46	1.8	54.6 14.9		
12	0 44.6	T _{m☉}	11 h 59.3 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	'	°	
♂	11 12	.1	345	-2.9	♄	21 13	.0	194	-1.9
	2 42	.1	113	-1.3	♅	3 13	.0	105	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	12.8	11	14.8	207	31.3	191	50.9	5	6.9	320	17.5 -21 24.2		
2	210	13.1	11	16.6	237	36.3	221	50.2	5	9.3	350	22.5 -21 24.3		
4	240	13.3	11	18.3	267	41.2	251	49.4	5	11.7	20	27.6 -21 24.5		
6	270	13.6	11	20.0	297	46.1	281	48.6	5	14.1	50	32.7 -21 24.7		
8	300	13.9	11	21.7	327	51.1	311	47.9	5	16.5	80	37.7 -21 24.8		
10	330	14.1	11	23.5	357	56.0	341	47.1	5	18.9	110	42.8 -21 25.0		
12	0	14.4	11	25.2	28	.9	11	46.3	5	21.4	140	47.9 -21 25.1		
14	30	14.7	11	26.9	58	5.8	41	45.6	5	23.8	170	53.0 -21 25.3		
16	60	14.9	11	28.6	88	10.8	71	44.8	5	26.2	200	58.1 -21 25.4		
18	90	15.2	11	30.3	118	15.7	101	44.0	5	28.6	231	3.2 -21 25.6		
20	120	15.5	11	32.0	148	20.6	131	43.2	5	31.0	261	8.3 -21 25.7		
22	150	15.7	11	33.7	178	25.6	161	42.5	5	33.4	291	13.4 -21 25.9		
Δ		1		9				-4		12		25		-1

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄					
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	32	36.1	151	2	29.3	-93	41	48.8	7	39.1	312	37.3 -20 54.4		
2	61	44.3	151	2	10.7	-93	71	54.0	7	39.2	342	42.5 -20 54.4		
4	90	52.5	151	1	52.0	-93	101	59.3	7	39.3	12	47.6 -20 54.3		
6	120	.8	152	1	33.4	-93	132	4.5	7	39.4	42	52.8 -20 54.3		
8	149	9.1	152	1	14.7	-93	162	9.7	7	39.5	72	57.9 -20 54.3		
10	178	17.4	152	0	56.0	-93	192	14.9	7	39.6	103	3.0 -20 54.3		
12	207	25.8	152	0	37.3	-93	222	20.1	7	39.7	133	8.2 -20 54.2		
14	236	34.3	152	0	18.6	-93	252	25.3	7	39.8	163	13.3 -20 54.2		
16	265	42.7	152	0	.1	93	282	30.5	7	40.0	193	18.4 -20 54.2		
18	294	51.2	153	0	18.7	93	312	35.8	7	40.1	223	23.6 -20 54.2		
20	323	59.8	153	0	37.4	93	342	41.0	7	40.2	253	28.7 -20 54.1		
22	353	8.3	153	0	56.1	93	12	46.2	7	40.3	283	33.9 -20 54.1		
Δ								26		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 31	19 29	0 48	3 51	16 18	.6	4 9	1.8
55	4 46	19 13	0 40	2 35	16 18	.8	4 7	1.8
50	4 58	19 1	0 35	2 7	16 18	1.0	4 5	1.8
45	5 8	18 51	0 31	1 50	16 18	1.1	4 4	1.8
40	5 16	18 43	0 28	1 39	16 18	1.2	4 2	1.8
35	5 23	18 36	0 26	1 30	16 18	1.3	4 1	1.8
30	5 29	18 30	0 25	1 24	16 18	1.4	4 0	1.8
20	5 39	18 20	0 23	1 16	16 18	1.5	3 59	1.8
10	5 48	18 11	0 21	1 12	16 18	1.6	3 57	1.8
0	5 56	18 2	0 21	1 10	16 18	1.8	3 56	1.8
10	6 4	17 54	0 21	1 11	16 18	1.9	3 55	1.8
20	6 12	17 46	0 22	1 14	16 18	2.0	3 53	1.8
30	6 22	17 36	0 24	1 20	16 18	2.2	3 52	1.8
35	6 27	17 30	0 26	1 25	16 18	2.2	3 51	1.8
40	6 33	17 24	0 28	1 30	16 18	2.3	3 49	1.8
45	6 40	17 17	0 30	1 38	16 18	2.4	3 48	1.8
50	6 49	17 8	0 33	1 48	16 18	2.6	3 47	1.8
55	6 60	16 58	0 37	2 1	16 18	2.7	3 45	1.8
60	7 13	16 44	0 43	2 20	16 18	2.9	3 42	1.8
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	0 51.2	.5	15.9	T _m	22 28	1.8	54.3 14.8		
12	0 57.6	T _{m☉}	11 h 59.0 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	'	°	
♂	11 13	.1	344	-2.9	♄	21 9	.0	194	-1.9
	2 38								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 16.0	11 35.5	208 30.5	191 41.7	5 35.8	321 18.5	-21 26.0
2	210 16.3	11 37.2	238 35.4	221 40.9	5 38.2	351 23.6	-21 26.2
4	240 16.5	11 38.9	268 40.3	251 40.1	5 40.6	21 28.8	-21 26.3
6	270 16.8	11 40.6	298 45.3	281 39.4	5 43.0	51 33.9	-21 26.5
8	300 17.0	11 42.3	328 50.2	311 38.6	5 45.4	81 39.0	-21 26.6
10	330 17.3	11 44.0	358 55.1	341 37.8	5 47.8	111 44.2	-21 26.8
12	0 17.6	11 45.7	29 .1	11 37.0	5 50.2	141 49.3	-21 26.9
14	30 17.8	11 47.4	59 5.0	41 36.2	5 52.6	171 54.5	-21 27.1
16	60 18.1	11 49.1	89 9.9	71 35.5	5 55.0	201 59.6	-21 27.2
18	90 18.3	11 50.8	119 14.8	101 34.7	5 57.3	232 4.8	-21 27.4
20	120 18.6	11 52.5	149 19.8	131 33.9	5 59.7	262 10.0	-21 27.5
22	150 18.8	11 54.2	179 24.7	161 33.1	6 2.1	292 15.2	-21 27.7
Δ	1	9		-4	12	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 28	19 31	0 48	4 11	16 34	.7	4 53	2.9
55	4 44	19 15	0 40	2 37	16 38	.9	4 50	2.7
50	4 56	19 2	0 35	2 8	16 42	1.0	4 48	2.6
45	5 6	18 52	0 31	1 51	16 45	1.1	4 47	2.4
40	5 14	18 44	0 29	1 39	16 47	1.3	4 45	2.3
35	5 21	18 37	0 26	1 31	16 49	1.3	4 44	2.2
30	5 28	18 31	0 25	1 24	16 51	1.4	4 43	2.1
20	5 38	18 20	0 23	1 16	16 55	1.5	4 41	2.0
10	5 47	18 11	0 22	1 12	16 58	1.7	4 40	1.9
0	5 55	18 2	0 21	1 10	17 0	1.8	4 38	1.8
10	6 4	17 54	0 21	1 11	17 3	1.9	4 37	1.7
20	6 13	17 45	0 22	1 14	17 6	2.0	4 36	1.5
30	6 22	17 35	0 24	1 20	17 10	2.1	4 34	1.4
35	6 28	17 29	0 26	1 25	17 12	2.2	4 33	1.3
40	6 34	17 23	0 28	1 31	17 14	2.3	4 32	1.2
45	6 42	17 15	0 30	1 38	17 17	2.4	4 30	1.1
50	6 51	17 6	0 33	1 48	17 20	2.5	4 29	1.0
55	7 1	16 55	0 37	2 1	17 24	2.7	4 27	.9
60	7 16	16 41	0 43	2 20	17 29	2.9	4 25	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	22 16.8	153	1 14.7	93	42 51.4	7 40.4	313 39.0	-20 54.1
2	51 25.4	153	1 33.3	93	72 56.6	7 40.5	343 44.1	-20 54.0
4	80 33.9	153	1 51.9	93	103 1.8	7 40.6	13 49.3	-20 54.0
6	109 42.5	153	2 10.4	93	133 7.0	7 40.7	43 54.4	-20 54.0
8	138 51.0	153	2 28.9	92	163 12.2	7 40.8	73 59.6	-20 54.0
10	167 59.5	153	2 47.4	92	193 17.4	7 40.9	104 4.7	-20 53.9
12	197 8.1	152	3 5.8	92	223 22.6	7 40.9	134 9.9	-20 53.9
14	226 16.5	152	3 24.2	92	253 27.8	7 41.0	164 15.0	-20 53.9
16	255 25.0	152	3 42.5	91	283 33.0	7 41.1	194 20.1	-20 53.9
18	284 33.5	152	4 .7	91	313 38.2	7 41.2	224 25.3	-20 53.8
20	313 41.9	152	4 18.9	91	343 43.4	7 41.3	254 30.4	-20 53.8
22	342 50.2	152	4 37.0	90	13 48.6	7 41.4	284 35.6	-20 53.8
Δ					26	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	1 4.0	.5	15.9	T _m	23 11	1.8	54.1 14.7
12	1 10.2	T _{m☉}	11 h 58.8 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	'	°	
♀	11 14	.1	343	-2.9	♃	21 5	.0	194	-1.9
♂	2 34	.1	113	-1.3	♄	3 5	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 19.1	11 55.9	209 29.6	191 32.3	6 4.5	322 20.3	-21 27.8
2	210 19.4	11 57.6	239 34.6	221 31.6	6 6.9	352 25.5	-21 28.0
4	240 19.6	11 59.3	269 39.5	251 30.8	6 9.3	22 30.7	-21 28.1
6	270 19.9	12 1.0	299 44.4	281 30.0	6 11.7	52 35.9	-21 28.2
8	300 20.1	12 2.6	329 49.3	311 29.2	6 14.1	82 41.1	-21 28.4
10	330 20.4	12 4.3	359 54.3	341 28.4	6 16.5	112 46.3	-21 28.5
12	0 20.6	12 6.0	29 59.2	11 27.6	6 18.8	142 51.6	-21 28.7
14	30 20.9	12 7.7	60 4.1	41 26.8	6 21.2	172 56.8	-21 28.8
16	60 21.1	12 9.4	90 9.0	71 26.0	6 23.6	203 2.0	-21 29.0
18	90 21.3	12 11.1	120 14.0	101 25.3	6 26.0	233 7.3	-21 29.1
20	120 21.6	12 12.7	150 18.9	131 24.5	6 28.4	263 12.5	-21 29.2
22	150 21.8	12 14.4	180 23.8	161 23.7	6 30.8	293 17.7	-21 29.4
Δ	1	8		-4	12	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 25	19 34	0 49	:::	16 50	.8	6 3	2.9
55	4 42	19 17	0 41	2 40	16 59	1.0	5 55	2.7
50	4 54	19 4	0 35	2 9	17 6	1.1	5 49	2.5
45	5 5	18 53	0 31	1 51	17 12	1.2	5 45	2.4
40	5 13	18 45	0 29	1 40	17 17	1.3	5 41	2.3
35	5 20	18 38	0 26	1 31	17 22	1.4	5 38	2.2
30	5 26	18 31	0 25	1 25	17 25	1.5	5 35	2.2
20	5 37	18 20	0 23	1 16	17 32	1.6	5 30	2.0
10	5 47	18 11	0 22	1 12	17 38	1.7	5 25	1.9
0	5 55	18 2	0 21	1 10	17 43	1.8	5 21	1.8
10	6 4	17 53	0 21	1 11	17 49	1.9	5 17	1.7
20	6 13	17 44	0 22	1 14	17 55	2.0	5 12	1.6
30	6 23	17 34	0 24	1 20	18 1	2.2	5 7	1.4
35	6 29	17 28	0 26	1 25	18 5	2.2	5 4	1.4
40	6 35	17 21	0 28	1 31	18 10	2.3	5 1	1.3
45	6 43	17 14	0 30	1 38	18 15	2.4	4 57	1.2
50	6 52	17 4	0 33	1 48	18 21	2.5	4 53	1.1
55	7 3	16 53	0 38	2 2	18 29	2.7	4 47	.9
60	7 18	16 38	0 44	2 20	18 39	2.9	4 40	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	11 58.6	151	4 55.0	90	43 53.8	7 41.5	314 40.7	-20 53.7
2	41 6.9	151	5 13.0	89	73 59.0	7 41.6	344 45.9	-20 53.7
4	70 15.1	151	5 30.8	89	104 4.2	7 41.7	14 51.0	-20 53.7
6	99 23.3	151	5 48.6	88	134 9.4	7 41.8	44 56.2	-20 53.7
8	128 31.4	150	6 6.3	88	164 14.6	7 41.9	75 1.3	-20 53.6
10	157 39.5	150	6 23.8	87	194 19.7	7 42.0	105 6.5	-20 53.6
12	186 47.5	150	6 41.3	87	224 24.9	7 42.1	135 11.6	-20 53.6
14	215 55.5	149	6 58.7	86	254 30.1	7 42.2	165 16.8	-20 53.6
16	245 3.3	149	7 15.9	86	284 35.3	7 42.3	195 21.9	-20 53.5
18	274 11.1	149	7 33.1	85	314 40.5	7 42.4	225 27.1	-20 53.5
20	303 18.8	148	7 50.1	84	344 45.7	7 42.4	255 32.2	-20 53.5
22	332 26.5	148	8 7.0	84	14 50.9	7 42.5	285 37.4	-20 53.4
Δ					26	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	1 16.4	.5	15.9	T _m	23 54	1.8	54.0 14.7
12	1 22.4	T _{m☉}	11 h 58.6 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	'	°	
♀	11 14	.1	342	-2.9	♃	21 1	.0	194	-1.9
♂	2 30	.1	113	-1.3	♄	3 1	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS											
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂										
h	°	'	°	'	°	'	°	'									
0	180	22.1	12	16.1	210	28.8	191	22.9	6	33.1	323	23.0	-21	29.5			
2	210	22.3	12	17.8	240	33.7	221	22.1	6	35.5	353	28.2	-21	29.7			
4	240	22.6	12	19.5	270	38.6	251	21.3	6	37.9	23	33.5	-21	29.8			
6	270	22.8	12	21.1	300	43.5	281	20.5	6	40.3	53	38.8	-21	29.9			
8	300	23.1	12	22.8	330	48.5	311	19.7	6	42.7	83	44.0	-21	30.1			
10	330	23.3	12	24.5	0	53.4	341	18.9	6	45.0	113	49.3	-21	30.2			
12	0	23.5	12	26.1	30	58.3	11	18.1	6	47.4	143	54.6	-21	30.3			
14	30	23.8	12	27.8	61	3.3	41	17.3	6	49.8	173	59.9	-21	30.5			
16	60	24.0	12	29.5	91	8.2	71	16.5	6	52.1	204	5.2	-21	30.6			
18	90	24.3	12	31.1	121	13.1	101	15.7	6	54.5	234	10.5	-21	30.8			
20	120	24.5	12	32.8	151	18.0	131	14.9	6	56.9	264	15.8	-21	30.9			
22	150	24.7	12	34.5	181	23.0	161	14.1	6	59.3	294	21.1	-21	31.0			
Δ		1		8				-4		12				26			-1

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	4 22	19 36	0 49	:	17 8	.9	7 12	2.9
55	4 39	19 19	0 41	2 42	17 22	1.1	6 60	2.7
50	4 53	19 5	0 35	2 10	17 33	1.2	6 50	2.5
45	5 3	18 55	0 31	1 52	17 42	1.3	6 43	2.4
40	5 12	18 46	0 29	1 40	17 49	1.4	6 36	2.3
35	5 19	18 38	0 27	1 31	17 55	1.5	6 31	2.2
30	5 25	18 32	0 25	1 25	18 1	1.6	6 26	2.2
20	5 37	18 21	0 23	1 17	18 10	1.7	6 18	2.0
10	5 46	18 11	0 22	1 12	18 19	1.8	6 11	1.9
0	5 55	18 2	0 21	1 10	18 27	1.9	6 4	1.8
10	6 4	17 53	0 21	1 11	18 35	2.0	5 57	1.7
20	6 13	17 43	0 22	1 14	18 43	2.1	5 50	1.6
30	6 24	17 33	0 24	1 20	18 53	2.2	5 42	1.5
35	6 30	17 27	0 26	1 25	18 59	2.2	5 37	1.4
40	6 36	17 20	0 28	1 31	19 5	2.3	5 32	1.4
45	6 44	17 12	0 30	1 38	19 13	2.4	5 26	1.3
50	6 54	17 3	0 33	1 48	19 22	2.5	5 18	1.2
55	7 5	16 51	0 38	2 2	19 33	2.7	5 9	1.0
60	7 20	16 35	0 44	2 20	19 48	2.9	4 58	.8

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	1	34.0	147	8	23.7	83	44	56.0	7	42.6	315	42.6	-20	53.4		
2	30	41.5	147	8	40.4	82	75	1.2	7	42.7	345	47.7	-20	53.4		
4	59	48.9	146	8	56.8	82	105	6.4	7	42.8	15	52.9	-20	53.4		
6	88	56.2	146	9	13.2	81	135	11.6	7	42.9	45	58.0	-20	53.3		
8	118	3.3	145	9	29.4	80	165	16.7	7	43.0	76	3.2	-20	53.3		
10	147	10.4	145	9	45.4	79	195	21.9	7	43.1	106	8.3	-20	53.3		
12	176	17.4	144	10	1.3	79	225	27.1	7	43.2	136	13.5	-20	53.2		
14	205	24.3	144	10	17.0	78	255	32.3	7	43.2	166	18.7	-20	53.2		
16	234	31.0	143	10	32.5	77	285	37.4	7	43.3	196	23.8	-20	53.2		
18	263	37.7	143	10	47.9	76	315	42.6	7	43.4	226	29.0	-20	53.2		
20	292	44.2	142	11	3.1	75	345	47.8	7	43.5	256	34.1	-20	53.1		
22	321	50.7	142	11	18.1	74	15	53.0	7	43.6	286	39.3	-20	53.1		
Δ								26		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	1 28.3	.5	15.9	T _m	1.0	54.0	14.7
12	1 34.1	T _{m☉}	11 h 58.4 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	'	°		
♀	11 15	.1	341	-2.9	♃	20 57	.0	194	-1.9
♂	2 26	.1	113	-1.3	♄	2 57	.0	105	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS										
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂									
h	°	'	°	'	°	'	°	'								
0	180	25.0	12	36.1	211	27.9	191	13.3	7	1.6	324	26.4	-21	31.2		
2	210	25.2	12	37.8	241	32.8	221	12.5	7	4.0	354	31.8	-21	31.3		
4	240	25.4	12	39.4	271	37.8	251	11.7	7	6.4	24	37.1	-21	31.4		
6	270	25.7	12	41.1	301	42.7	281	10.9	7	8.7	54	42.4	-21	31.6		
8	300	25.9	12	42.8	331	47.6	311	10.1	7	11.1	84	47.8	-21	31.7		
10	330	26.1	12	44.4	1	52.5	341	9.3	7	13.5	114	53.1	-21	31.8		
12	0	26.4	12	46.1	31	57.5	11	8.5	7	15.8	144	58.5	-21	31.9		
14	30	26.6	12	47.7	62	2.4	41	7.7	7	18.2	175	3.8	-21	32.1		
16	60	26.8	12	49.4	92	7.3	71	6.9	7	20.5	205	9.2	-21	32.2		
18	90	27.0	12	51.0	122	12.3	101	6.0	7	22.9	235	14.6	-21	32.3		
20	120	27.3	12	52.7	152	17.2	131	5.2	7	25.2	265	19.9	-21	32.5		
22	150	27.5	12	54.3	182	22.1	161	4.4	7	27.6	295	25.3	-21	32.6		
Δ		1		8				-4		12				27		-1

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	4 19	19 39	0 50	:	17 30	1.1	8 21	2.8
55	4 37	19 21	0 41	2 44	17 48	1.3	8 4	2.6
50	4 51	19 7	0 35	2 11	18 2	1.4	7 51	2.5
45	5 1	18 56	0 32	1 53	18 14	1.5	7 41	2.4
40	5 10	18 47	0 29	1 40	18 23	1.6	7 32	2.3
35	5 18	18 39	0 27	1 32	18 31	1.6	7 25	2.2
30	5 24	18 32	0 25	1 25	18 38	1.7	7 18	2.2
20	5 36	18 21	0 23	1 17	18 50	1.8	7 7	2.1
10	5 46	18 11	0 22	1 12	19 1	1.8	6 57	2.0
0	5 55	18 2	0 21	1 10	19 11	1.9	6 48	1.9
10	6 4	17 52	0 21	1 11	19 22	2.0	6 39	1.8
20	6 13	17 43	0 23	1 14	19 32	2.1	6 29	1.7
30	6 24	17 32	0 24	1 20	19 45	2.2	6 18	1.6
35	6 30	17 26	0 26	1 25	19 52	2.2	6 12	1.6
40	6 37	17 19	0 28	1 31	20 1	2.3	6 5	1.5
45	6 45	17 10	0 30	1 39	20 10	2.4	5 56	1.4
50	6 55	17 1	0 33	1 49	20 22	2.5	5 46	1.3
55	7 7	16 49	0 38	2 2	20 37	2.6	5 34	1.2
60	7 23	16 33	0 44	2 21	20 57	2.8	5 17	1.0

UT	MESEC				JUPITER		SATURN									
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄								
h	°	'	°	'	°	'	°	'								
0	350	57.0	141	11	32.9	73	45	58.1	7	43.7	316	44.5	-20	53.1		
2	20	3.2	140	11	47.6	72	76	3.3	7	43.7	346	49.6	-20	53.0		
4	49	9.2	140	12	2.0	71	106	8.4	7	43.8	16	54.8	-20	53.0		
6	78	15.2	139	12	16.2	70	136	13.6	7	43.9	46	60.0	-20	53.0		
8	107	21.0	138	12	30.3	69	166	18.8	7	44.0	77	5.1	-20	53.0		
10	136	26.7	138	12	44.1	68	196	23.9	7	44.1	107	10.3	-20	52.9		
12	165	32.2	137	12	57.7	67	226	29.1	7	44.1	137	15.5	-20	52.9		
14	194	37.6	136	13	11.1	66	256	34.3	7	44.2	167	20.6	-20	52.9		
16	223	42.9	136	13	24.3	65	286	39.4	7	44.3	197	25.8	-20	52.8		
18	252	48.1	135	13	37.2	64	316	44.6	7	44.4	227	31.0	-20	52.8		
20	281	53.1	134	13	49.9	62	346	49.7	7	44.5	257	36.1	-20	52.8		
22	310	58.0	134	14	2.4	61	16	54.9	7	44.5	287	41.3	-20	52.7		
Δ								26		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	1 39.8	.5	15.9	T _m	0 37	1.9	54.0	14.7
12	1 45.4	T _{m☉}	11 h 58.2 min	Starost	15.5 d	Faza	☉	

PLANETE							
Pl.	T _m	π	360				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	27.7	12	55.9	212	27.0	191	3.6	7	30.0	325	30.7	-21	32.7
2	210	27.9	12	57.6	242	32.0	221	2.8	7	32.3	355	36.1	-21	32.9
4	240	28.2	12	59.2	272	36.9	251	2.0	7	34.7	25	41.5	-21	33.0
6	270	28.4	13	59.9	302	41.8	281	1.2	7	37.0	55	46.9	-21	33.1
8	300	28.6	13	2.5	332	46.8	311	.3	7	39.4	85	52.3	-21	33.2
10	330	28.8	13	4.1	2	51.7	340	59.5	7	41.7	115	57.7	-21	33.4
12	0	29.1	13	5.8	32	56.6	10	58.7	7	44.1	146	3.1	-21	33.5
14	30	29.3	13	7.4	63	1.5	40	57.9	7	46.4	176	8.6	-21	33.6
16	60	29.5	13	9.0	93	6.5	70	57.1	7	48.8	206	14.0	-21	33.7
18	90	29.7	13	10.7	123	11.4	100	56.2	7	51.1	236	19.4	-21	33.9
20	120	29.9	13	12.3	153	16.3	130	55.4	7	53.4	266	24.9	-21	34.0
22	150	30.1	13	13.9	183	21.2	160	54.6	7	55.8	296	30.3	-21	34.1
Δ		1		8				-4		12		27		-1

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	4 16	19 41	0 50	:	17 56	1.4	9 28	2.7
55	4 35	19 23	0 41	2 47	18 19	1.5	9 7	2.5
50	4 49	19 8	0 36	2 12	18 36	1.6	8 51	2.4
45	4 60	18 57	0 32	1 53	18 49	1.7	8 38	2.3
40	5 9	18 48	0 29	1 41	19 0	1.7	8 27	2.3
35	5 17	18 40	0 27	1 32	19 10	1.8	8 18	2.2
30	5 23	18 33	0 25	1 25	19 18	1.8	8 10	2.2
20	5 35	18 21	0 23	1 17	19 33	1.9	7 57	2.1
10	5 45	18 11	0 22	1 12	19 45	1.9	7 45	2.0
0	5 55	18 1	0 21	1 11	19 57	2.0	7 33	2.0
10	6 4	17 52	0 22	1 11	20 9	2.0	7 22	1.9
20	6 14	17 42	0 23	1 14	20 22	2.1	7 10	1.8
30	6 25	17 31	0 25	1 21	20 37	2.2	6 57	1.7
35	6 31	17 25	0 26	1 25	20 46	2.2	6 49	1.7
40	6 38	17 17	0 28	1 31	20 56	2.2	6 40	1.6
45	6 47	17 9	0 30	1 39	21 7	2.3	6 30	1.6
50	6 57	16 59	0 34	1 49	21 21	2.4	6 17	1.5
55	7 9	16 46	0 38	2 2	21 39	2.4	6 1	1.4
60	7 25	16 30	0 44	2 21	22 3	2.6	5 41	1.2
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	340	2.7	133	14	14.7	60	47	.0	7	44.6	317	46.5	-20	52.7
2	9	7.3	132	14	26.7	59	77	5.2	7	44.7	347	51.6	-20	52.7
4	38	11.8	132	14	38.4	57	107	10.3	7	44.8	17	56.8	-20	52.7
6	67	16.1	131	14	49.9	56	137	15.5	7	44.8	48	2.0	-20	52.6
8	96	20.3	130	15	1.1	55	167	20.6	7	44.9	78	7.1	-20	52.6
10	125	24.4	130	15	12.1	54	197	25.8	7	45.0	108	12.3	-20	52.6
12	154	28.3	129	15	22.8	52	227	30.9	7	45.1	138	17.5	-20	52.5
14	183	32.0	128	15	33.2	51	257	36.1	7	45.1	168	22.7	-20	52.5
16	212	35.6	127	15	43.4	49	287	41.2	7	45.2	198	27.8	-20	52.5
18	241	39.1	127	15	53.3	48	317	46.4	7	45.3	228	33.0	-20	52.4
20	270	42.4	126	16	2.9	47	347	51.5	7	45.4	258	38.2	-20	52.4
22	299	45.6	125	16	12.2	45	17	56.7	7	45.4	288	43.4	-20	52.4
Δ								26		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	1 50.9	.4	15.9	T _m	1 22	2.0	54.2	14.8	
12	1 56.2	T _{m☉}	11 h 58.1 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	'	°	°
♂	11 16	.1	339	-2.9	♄	20 48	.0	195	-1.9
	2 18	.1	113	-1.4	♅	2 48	.0	105	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	30.4	13	15.5	213	26.2	190	53.8	7	58.1	326	35.8	-21	34.2
2	210	30.6	13	17.2	243	31.1	220	52.9	8	.5	356	41.2	-21	34.3
4	240	30.8	13	18.8	273	36.0	250	52.1	8	2.8	26	46.7	-21	34.5
6	270	31.0	13	20.4	303	41.0	280	51.3	8	5.2	56	52.2	-21	34.6
8	300	31.2	13	22.0	333	45.9	310	50.5	8	7.5	86	57.7	-21	34.7
10	330	31.4	13	23.7	3	50.8	340	49.6	8	9.8	117	3.1	-21	34.8
12	0	31.6	13	25.3	33	55.7	10	48.8	8	12.2	147	8.6	-21	34.9
14	30	31.8	13	26.9	64	.7	40	48.0	8	14.5	177	14.1	-21	35.1
16	60	32.0	13	28.5	94	5.6	70	47.1	8	16.8	207	19.6	-21	35.2
18	90	32.3	13	30.1	124	10.5	100	46.3	8	19.2	237	25.1	-21	35.3
20	120	32.5	13	31.7	154	15.5	130	45.5	8	21.5	267	30.6	-21	35.4
22	150	32.7	13	33.3	184	20.4	160	44.6	8	23.8	297	36.2	-21	35.5
Δ		1		8				-4		12		27		-1

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	4 14	19 44	0 51	:	18 29	1.7	10 32	2.4
55	4 33	19 25	0 42	2 49	18 55	1.8	10 7	2.4
50	4 47	19 10	0 36	2 13	19 14	1.8	9 48	2.3
45	4 58	18 58	0 32	1 54	19 29	1.9	9 34	2.2
40	5 7	18 49	0 29	1 41	19 42	1.9	9 22	2.2
35	5 15	18 41	0 27	1 32	19 52	1.9	9 11	2.2
30	5 22	18 34	0 25	1 26	20 2	2.0	9 2	2.1
20	5 34	18 22	0 23	1 17	20 18	2.0	8 47	2.1
10	5 45	18 11	0 22	1 12	20 32	2.0	8 33	2.1
0	5 55	18 1	0 21	1 11	20 45	2.0	8 20	2.0
10	6 4	17 52	0 22	1 11	20 58	2.1	8 8	2.0
20	6 14	17 41	0 23	1 14	21 13	2.1	7 54	1.9
30	6 25	17 30	0 25	1 21	21 29	2.1	7 39	1.9
35	6 32	17 23	0 26	1 25	21 38	2.1	7 30	1.8
40	6 39	17 16	0 28	1 31	21 49	2.2	7 19	1.8
45	6 48	17 7	0 30	1 39	22 2	2.2	7 7	1.8
50	6 58	16 57	0 34	1 49	22 18	2.2	6 53	1.7
55	7 11	16 44	0 38	2 2	22 38	2.3	6 34	1.6
60	7 28	16 27	0 44	2 21	23 5	2.3	6 10	1.5
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	328	48.7	125	16	21.3	44	48	1.8	7	45.5	318	48.5	-20	52.4
2	357	51.6	124	16	30.0	42	78	6.9	7	45.6	348	53.7	-20	52.3
4	26	54.3	123	16	38.4	41	108	12.1	7	45.6	18	58.9	-20	52.3
6	55	57.0	122	16	46.6	39	138	17.2	7	45.7	49	4.1	-20	52.3
8	84	59.5	122	16	54.4	38	168	22.3	7	45.8	79	9.2	-20	52.2
10	114	1.8	121	17	1.9	36	198	27.5	7	45.9	109	14.4	-20	52.2
12	143	4.0	120	17	9.1	34	228	32.6	7	45.9	139	19.6	-20	52.2
14	172	6.1	120	17	16.0	33	258	37.7	7	46.0	169	24.8	-20	52.1
16	201	8.0	119	17	22.6	31	288	42.9	7	46.1	199	30.0	-20	52.1
18	230	9.8	118	17	28.9	30	318	48.0	7	46.1	229	35.1	-20	52.1
20	259	11.5	118	17	34.8	28	348	53.1	7	46.2	259	40.3	-20	52.1
22	288	13.0	117	17	40.4	26	18	58.3	7	46.3	289	45.5	-20	52.0
Δ								26		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	2 1.4	.4	15.9	T _m	2 9	2.0	54.4	14.8
12	2 6.5	T _{m☉}	11 h 57.9 min	Starost	17.5 d	Faza	☉	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 32.9	13 34.9	214 25.3	190 43.8	8 26.1	327 41.7	-21 35.6
2	210 33.1	13 36.5	244 30.2	220 42.9	8 28.5	357 47.2	-21 35.8
4	240 33.3	13 38.1	274 35.2	250 42.1	8 30.8	27 52.7	-21 35.9
6	270 33.5	13 39.7	304 40.1	280 41.3	8 33.1	57 58.3	-21 36.0
8	300 33.7	13 41.3	334 45.0	310 40.4	8 35.4	88 3.8	-21 36.1
10	330 33.9	13 42.9	4 50.0	340 39.6	8 37.7	118 9.4	-21 36.2
12	0 34.1	13 44.5	34 54.9	10 38.7	8 40.1	148 14.9	-21 36.3
14	30 34.3	13 46.1	64 59.8	40 37.9	8 42.4	178 20.5	-21 36.4
16	60 34.5	13 47.7	95 4.7	70 37.0	8 44.7	208 26.1	-21 36.5
18	90 34.7	13 49.3	125 9.7	100 36.2	8 47.0	238 31.7	-21 36.7
20	120 34.9	13 50.9	155 14.6	130 35.3	8 49.3	268 37.2	-21 36.8
22	150 35.1	13 52.5	185 19.5	160 34.5	8 51.6	298 42.8	-21 36.9
Δ	1	8		-4	12	28	-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 11	19 46	0 51	:	19 10	2.1	11 31	2.1
55	4 30	19 27	0 42	2 52	19 38	2.1	11 4	2.1
50	4 45	19 12	0 36	2 15	19 58	2.1	10 43	2.1
45	4 57	18 60	0 32	1 55	20 14	2.1	10 27	2.1
40	5 6	18 50	0 29	1 42	20 27	2.1	10 14	2.1
35	5 14	18 42	0 27	1 33	20 39	2.1	10 3	2.1
30	5 22	18 34	0 25	1 26	20 49	2.1	9 54	2.1
20	5 34	18 22	0 23	1 17	21 5	2.1	9 37	2.1
10	5 44	18 11	0 22	1 13	21 20	2.1	9 22	2.1
0	5 54	18 1	0 21	1 11	21 34	2.1	9 9	2.1
10	6 4	17 51	0 22	1 11	21 48	2.1	8 55	2.1
20	6 14	17 41	0 23	1 15	22 3	2.1	8 40	2.0
30	6 26	17 29	0 25	1 21	22 20	2.1	8 24	2.0
35	6 33	17 22	0 26	1 25	22 30	2.1	8 14	2.0
40	6 40	17 15	0 28	1 31	22 41	2.0	8 3	2.0
45	6 49	17 6	0 30	1 39	22 54	2.0	7 50	2.0
50	6 60	16 55	0 34	1 49	23 11	2.1	7 34	2.0
55	7 13	16 42	0 38	2 3	23 32	2.1	7 14	2.0
60	7 30	16 25	0 45	2 22	23 60	2.1	6 46	1.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	317 14.5	116	17 45.6	25	49 3.4	7 46.3	319 50.7	-20 52.0
2	346 15.7	116	17 50.6	23	79 8.5	7 46.4	349 55.9	-20 52.0
4	15 16.9	115	17 55.2	21	109 13.6	7 46.5	20 1.1	-20 51.9
6	44 17.9	115	17 59.4	20	139 18.8	7 46.5	50 6.2	-20 51.9
8	73 18.8	114	18 3.3	18	169 23.9	7 46.6	80 11.4	-20 51.9
10	102 19.6	113	18 6.9	16	199 29.0	7 46.6	110 16.6	-20 51.8
12	131 20.3	113	18 10.1	14	229 34.1	7 46.7	140 21.8	-20 51.8
14	160 20.9	112	18 13.0	13	259 39.2	7 46.8	170 27.0	-20 51.8
16	189 21.3	112	18 15.5	11	289 44.4	7 46.8	200 32.2	-20 51.7
18	218 21.7	111	18 17.6	9	319 49.5	7 46.9	230 37.4	-20 51.7
20	247 21.9	111	18 19.4	7	349 54.6	7 47.0	260 42.6	-20 51.7
22	276 22.0	110	18 20.8	5	19 59.7	7 47.0	290 47.7	-20 51.7
Δ					26	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	2 11.5	.4	15.9	T _m	2 57	2.0	54.8 14.9		
12	2 16.3	T _{m☉}	11 h 57.7 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	'	°	
♁	11 17	.1	336	-2.8	♄	20 40	.0	195	-1.9
♂	2 9	.1	113	-1.4	♅	2 40	.0	105	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 35.3	13 54.1	215 24.5	190 33.6	8 53.9	328 48.4	-21 37.0
2	210 35.5	13 55.7	245 29.4	220 32.8	8 56.3	358 54.0	-21 37.1
4	240 35.6	13 57.3	275 34.3	250 31.9	8 58.6	28 59.6	-21 37.2
6	270 35.8	13 58.9	305 39.2	280 31.1	9 .9	59 5.2	-21 37.3
8	300 36.0	14 .4	335 44.2	310 30.2	9 3.2	89 10.8	-21 37.4
10	330 36.2	14 2.0	5 49.1	340 29.4	9 5.5	119 16.5	-21 37.5
12	0 36.4	14 3.6	35 54.0	10 28.5	9 7.8	149 22.1	-21 37.6
14	30 36.6	14 5.2	65 59.0	40 27.7	9 10.1	179 27.7	-21 37.7
16	60 36.8	14 6.7	96 3.9	70 26.8	9 12.4	209 33.4	-21 37.8
18	90 37.0	14 8.3	126 8.8	100 25.9	9 14.7	239 39.0	-21 37.9
20	120 37.2	14 9.9	156 13.7	130 25.1	9 17.0	269 44.6	-21 38.0
22	150 37.3	14 11.5	186 18.7	160 24.2	9 19.3	299 50.3	-21 38.1
Δ	1	8		-4	12	28	-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 8	19 49	0 52	:	20 1	2.5	12 23	1.8
55	4 28	19 28	0 42	2 55	20 29	2.5	11 55	1.9
50	4 43	19 13	0 36	2 16	20 49	2.4	11 34	1.9
45	4 55	19 1	0 32	1 55	21 5	2.3	11 18	2.0
40	5 5	18 51	0 29	1 42	21 18	2.3	11 5	2.0
35	5 13	18 42	0 27	1 33	21 29	2.3	10 54	2.0
30	5 21	18 35	0 25	1 26	21 39	2.2	10 44	2.0
20	5 33	18 22	0 23	1 17	21 56	2.2	10 27	2.1
10	5 44	18 11	0 22	1 13	22 10	2.2	10 12	2.1
0	5 54	18 1	0 21	1 11	22 24	2.1	9 58	2.1
10	6 4	17 51	0 22	1 12	22 38	2.1	9 44	2.1
20	6 15	17 40	0 23	1 15	22 53	2.0	9 29	2.1
30	6 27	17 28	0 25	1 21	23 9	2.0	9 12	2.2
35	6 34	17 21	0 26	1 25	23 19	2.1	9 2	2.2
40	6 41	17 13	0 28	1 31	23 30	2.1	8 51	2.2
45	6 50	17 4	0 30	1 39	23 43	2.1	8 38	2.2
50	7 1	16 53	0 34	1 49	...	.0	8 21	2.3
55	7 15	16 40	0 38	2 3	...	.0	8 0	2.3
60	7 32	16 22	0 45	2 22	...	.0	7 32	2.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	305 22.0	110	18 21.9	4	50 4.8	7 47.1	320 52.9	-20 51.6
2	334 21.9	109	18 22.6	2	80 9.9	7 47.1	350 58.1	-20 51.6
4	3 21.8	109	18 22.9	0	110 15.0	7 47.2	21 3.3	-20 51.6
6	32 21.5	108	18 22.9	-2	140 20.1	7 47.3	51 8.5	-20 51.5
8	61 21.1	108	18 22.5	-4	170 25.3	7 47.3	81 13.7	-20 51.5
10	90 20.6	107	18 21.7	-6	200 30.4	7 47.4	111 18.9	-20 51.5
12	119 20.1	107	18 20.6	-8	230 35.5	7 47.4	141 24.1	-20 51.4
14	148 19.5	106	18 19.1	-9	260 40.6	7 47.5	171 29.3	-20 51.4
16	177 18.7	106	18 17.2	-11	290 45.7	7 47.5	201 34.5	-20 51.4
18	206 17.9	106	18 14.9	-13	320 50.8	7 47.6	231 39.7	-20 51.3
20	235 17.1	105	18 12.2	-15	350 55.9	7 47.6	261 44.9	-20 51.3
22	264 16.1	105	18 9.2	-17	21 1.0	7 47.7	291 50.1	-20 51.3
Δ					26	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	2 21.0	.4	15.9	T _m	3 46	2.1	55.3 15.1		
12	2 25.6	T _{m☉}	11 h 57.6 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	'	°	
♁	11 18	.1	335	-2.8	♄	20 36	.0	195	-1.9
♂	2 4	.1	113	-1.5	♅	2 36	.0	105	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	37.5	14	13.0	216	23.6	190	23.3	9	21.6	329	56.0	-21	38.2	
2	210	37.7	14	14.6	246	28.5	220	22.5	9	23.9	0	1.6	-21	38.3	
4	240	37.9	14	16.2	276	33.5	250	21.6	9	26.1	30	7.3	-21	38.4	
6	270	38.1	14	17.7	306	38.4	280	20.7	9	28.4	60	13.0	-21	38.5	
8	300	38.2	14	19.3	336	43.3	310	19.9	9	30.7	90	18.7	-21	38.6	
10	330	38.4	14	20.9	6	48.2	340	19.0	9	33.0	120	24.4	-21	38.7	
12	0	38.6	14	22.4	36	53.2	10	18.1	9	35.3	150	30.0	-21	38.8	
14	30	38.8	14	24.0	66	58.1	40	17.3	9	37.6	180	35.7	-21	38.9	
16	60	39.0	14	25.5	97	3.0	70	16.4	9	39.9	210	41.5	-21	39.0	
18	90	39.1	14	27.1	127	7.9	100	15.5	9	42.1	240	47.2	-21	39.1	
20	120	39.3	14	28.6	157	12.9	130	14.6	9	44.4	270	52.9	-21	39.2	
22	150	39.5	14	30.2	187	17.8	160	13.7	9	46.7	300	58.6	-21	39.3	
Δ		1		8				-4		11			28		0

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	4 5	19 51	0 52	:	21 2	2.9	13 6	1.5
55	4 26	19 30	0 42	2 58	21 28	2.7	12 40	1.6
50	4 41	19 15	0 36	2 17	21 46	2.6	12 20	1.7
45	4 53	19 2	0 32	1 56	22 1	2.5	12 5	1.8
40	5 4	18 52	0 29	1 43	22 13	2.5	11 52	1.9
35	5 12	18 43	0 27	1 33	22 24	2.4	11 42	1.9
30	5 20	18 36	0 25	1 26	22 33	2.4	11 32	1.9
20	5 33	18 23	0 23	1 18	22 49	2.3	11 16	2.0
10	5 44	18 11	0 22	1 13	23 2	2.2	11 2	2.1
0	5 54	18 1	0 21	1 11	23 15	2.1	10 49	2.1
10	6 4	17 50	0 22	1 12	23 28	2.1	10 35	2.2
20	6 15	17 40	0 23	1 15	23 41	2.1	10 21	2.2
30	6 27	17 27	0 25	1 21	23 57	2.1	10 5	2.3
35	6 34	17 20	0 26	1 26	...	0	9 55	2.3
40	6 42	17 12	0 28	1 32	...	0	9 44	2.4
45	6 52	17 3	0 31	1 39	...	0	9 31	2.4
50	7 3	16 52	0 34	1 49	0 -1	1.8	9 15	2.5
55	7 17	16 38	0 38	2 3	0 20	1.7	8 55	2.6
60	7 35	16 19	0 45	2 22	0 47	1.6	8 28	2.7
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	293	15.1	105	18	5.8	-19	51	6.1	7	47.8	321	55.2	-20	51.2	
2	322	14.0	104	18	2.0	-21	81	11.2	7	47.8	352	.4	-20	51.2	
4	351	12.8	104	17	57.8	-23	111	16.3	7	47.9	22	5.6	-20	51.2	
6	20	11.6	104	17	53.3	-25	141	21.4	7	47.9	52	10.8	-20	51.2	
8	49	10.3	103	17	48.4	-27	171	26.5	7	48.0	82	16.0	-20	51.1	
10	78	9.0	103	17	43.0	-28	201	31.6	7	48.0	112	21.2	-20	51.1	
12	107	7.6	103	17	37.3	-30	231	36.6	7	48.1	142	26.4	-20	51.1	
14	136	6.1	102	17	31.3	-32	261	41.7	7	48.1	172	31.6	-20	51.0	
16	165	4.6	102	17	24.8	-34	291	46.8	7	48.2	202	36.8	-20	51.0	
18	194	3.0	102	17	18.0	-36	321	51.9	7	48.2	232	42.0	-20	51.0	
20	223	1.4	102	17	10.8	-38	351	57.0	7	48.3	262	47.2	-20	50.9	
22	251	59.8	101	17	3.2	-40	22	2.1	7	48.3	292	52.4	-20	50.9	
Δ								25		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	2 30.1	.4	15.9	T _m	4 36	2.1	55.8	15.2	
12	2 34.3	T _{m☉}	11 h 57.4 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	'	°	°
♂	11 19	.1	334	-2.8	♄	20 32	.0	195	-1.8
♂	1 60	.1	114	-1.5	♃	2 32	.0	106	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	39.6	14	31.7	217	22.7	190	12.9	9	49.0	331	4.3	-21	39.4	
2	210	39.8	14	33.3	247	27.7	220	12.0	9	51.2	1	10.1	-21	39.5	
4	240	40.0	14	34.8	277	32.6	250	11.1	9	53.5	31	15.8	-21	39.6	
6	270	40.2	14	36.4	307	37.5	280	10.2	9	55.8	61	21.6	-21	39.7	
8	300	40.3	14	37.9	337	42.4	310	9.3	9	58.1	91	27.3	-21	39.8	
10	330	40.5	14	39.5	7	47.4	340	8.4	10	.3	121	33.1	-21	39.9	
12	0	40.7	14	41.0	37	52.3	10	7.6	10	2.6	151	38.8	-21	40.0	
14	30	40.8	14	42.5	67	57.2	40	6.7	10	4.9	181	44.6	-21	40.1	
16	60	41.0	14	44.1	98	2.2	70	5.8	10	7.1	211	50.4	-21	40.2	
18	90	41.1	14	45.6	128	7.1	100	4.9	10	9.4	241	56.2	-21	40.3	
20	120	41.3	14	47.1	158	12.0	130	4.0	10	11.6	272	1.9	-21	40.3	
22	150	41.5	14	48.7	188	16.9	160	3.1	10	13.9	302	7.7	-21	40.4	
Δ		1		8				-4		11			29		0

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	4 2	19 54	0 53	:	22 12	3.2	13 41	1.2
55	4 24	19 32	0 43	3 2	22 34	3.0	13 18	1.4
50	4 39	19 16	0 36	2 18	22 50	2.8	13 2	1.5
45	4 52	19 3	0 32	1 57	23 2	2.2	12 48	1.6
40	5 2	18 53	0 29	1 43	23 13	2.2	12 37	1.7
35	5 11	18 44	0 27	1 34	23 22	2.2	12 27	1.8
30	5 19	18 36	0 25	1 27	23 30	2.2	12 19	1.9
20	5 32	18 23	0 23	1 18	23 43	2.2	12 4	2.0
10	5 43	18 11	0 22	1 13	23 55	2.2	11 52	2.1
0	5 54	18 1	0 21	1 11	...	0	11 40	2.1
10	6 4	17 50	0 22	1 12	...	0	11 28	2.2
20	6 15	17 39	0 23	1 15	...	0	11 15	2.3
30	6 28	17 26	0 25	1 21	...	0	10 60	2.4
35	6 35	17 19	0 26	1 26	0 6	1.9	10 51	2.5
40	6 43	17 11	0 28	1 32	0 16	1.8	10 41	2.6
45	6 53	17 1	0 31	1 39	0 29	1.7	10 30	2.6
50	7 4	16 50	0 34	1 50	0 43	1.6	10 16	2.7
55	7 18	16 35	0 39	2 3	1 2	1.5	9 58	2.9
60	7 37	16 17	0 45	2 23	1 27	1.3	9 34	3.1
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	280	58.1	101	16	55.2	-42	52	7.2	7	48.4	322	57.6	-20	50.9	
2	309	56.3	101	16	46.9	-44	82	12.3	7	48.4	353	2.8	-20	50.8	
4	338	54.5	101	16	38.2	-45	112	17.3	7	48.5	23	8.1	-20	50.8	
6	7	52.7	101	16	29.1	-47	142	22.4	7	48.5	53	13.3	-20	50.8	
8	36	50.9	100	16	19.6	-49	172	27.5	7	48.5	83	18.5	-20	50.7	
10	65	49.0	100	16	9.8	-51	202	32.6	7	48.6	113	23.7	-20	50.7	
12	94	47.0	100	15	59.6	-53	232	37.7	7	48.6	143	28.9	-20	50.7	
14	123	45.0	100	15	49.0	-55	262	42.7	7	48.7	173	34.1	-20	50.6	
16	152	43.0	100	15	38.0	-57	292	47.8	7	48.7	203	39.3	-20	50.6	
18	181	41.0	100	15	26.7	-58	322	52.9	7	48.8	233	44.5	-20	50.6	
20	210	38.9	100	15	15.1	-60	352	58.0	7	48.8	263	49.7	-20	50.5	
22	239	36.8	99	15	3.0	-62	23	3.0	7	48.8	293	54.9	-20	50.5	
Δ								25		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	2 38.6	.3	15.9	T _m	5 27	2.2	56.5	15.4
12	2 42.6	T _{m☉}	11 h 57.3 min	Starost	21.5 d	Faza	☉	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 41.6	14 50.2	218 21.9	190 2.2	10 16.2	332 13.5	-21 40.5
2	210 41.8	14 51.7	248 26.8	220 1.3	10 18.4	2 19.3	-21 40.6
4	240 42.0	14 53.3	278 31.7	250 .4	10 20.7	32 25.1	-21 40.7
6	270 42.1	14 54.8	308 36.7	279 59.5	10 22.9	62 31.0	-21 40.8
8	300 42.3	14 56.3	338 41.6	309 58.6	10 25.2	92 36.8	-21 40.9
10	330 42.4	14 57.8	8 46.5	339 57.7	10 27.4	122 42.6	-21 41.0
12	0 42.6	14 59.3	38 51.4	9 56.8	10 29.7	152 48.4	-21 41.0
14	30 42.7	15 .9	68 56.4	39 55.9	10 31.9	182 54.3	-21 41.1
16	60 42.9	15 2.4	99 1.3	69 55.0	10 34.2	213 .1	-21 41.2
18	90 43.0	15 3.9	129 6.2	99 54.1	10 36.4	243 6.0	-21 41.3
20	120 43.2	15 5.4	159 11.2	129 53.2	10 38.6	273 11.8	-21 41.4
22	150 43.3	15 6.9	189 16.1	159 52.3	10 40.9	303 17.7	-21 41.5
Δ	1	8		-5	11	29	0

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	3 60	19 56	0 53	: : :	23 29	2.2	14 10	1.0
55	4 21	19 34	0 43	3 6	23 45	2.2	13 52	1.2
50	4 38	19 18	0 37	2 20	23 58	2.2	13 38	1.4
45	4 50	19 5	0 32	1 57	23 55	2.7	13 28	1.5
40	5 1	18 54	0 29	1 44	.. . .	.0	13 18	1.6
35	5 10	18 45	0 27	1 34	.. . .	.0	13 11	1.7
30	5 18	18 37	0 25	1 27	.. . .	.0	13 4	1.8
20	5 31	18 23	0 23	1 18	.. . .	.0	12 52	1.9
10	5 43	18 12	0 22	1 13	.. . .	.0	12 41	2.0
0	5 54	18 1	0 21	1 11	0 6	2.2	12 31	2.2
10	6 4	17 50	0 22	1 12	0 18	2.1	12 21	2.3
20	6 16	17 38	0 23	1 15	0 29	2.0	12 10	2.4
30	6 29	17 25	0 25	1 21	0 43	1.8	11 58	2.5
35	6 36	17 18	0 26	1 26	0 51	1.8	11 51	2.6
40	6 44	17 10	0 28	1 32	0 59	1.7	11 43	2.7
45	6 54	16 60	0 31	1 40	1 10	1.6	11 33	2.8
50	7 6	16 48	0 34	1 50	1 22	1.5	11 22	2.9
55	7 20	16 33	0 39	2 4	1 38	1.3	11 7	3.1
60	7 40	16 14	0 45	2 23	1 59	1.1	10 48	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	268 34.7	99	14 50.7	-64	53 8.1	7 48.9	324 .1	-20 50.5
2	297 32.6	99	14 37.9	-65	83 13.2	7 48.9	354 5.3	-20 50.4
4	326 30.4	99	14 24.8	-67	113 18.2	7 49.0	24 10.5	-20 50.4
6	355 28.2	99	14 11.4	-69	143 23.3	7 49.0	54 15.7	-20 50.4
8	24 25.9	99	13 57.6	-71	173 28.4	7 49.1	84 21.0	-20 50.3
10	53 23.6	98	13 43.5	-72	203 33.4	7 49.1	114 26.2	-20 50.3
12	82 21.3	98	13 29.1	-74	233 38.5	7 49.1	144 31.4	-20 50.3
14	111 19.0	98	13 14.3	-76	263 43.6	7 49.2	174 36.6	-20 50.3
16	140 16.6	98	12 59.1	-77	293 48.6	7 49.2	204 41.8	-20 50.2
18	169 14.2	98	12 43.7	-79	323 53.7	7 49.2	234 47.0	-20 50.2
20	198 11.8	98	12 27.9	-80	353 58.7	7 49.3	264 52.2	-20 50.2
22	227 9.4	98	12 11.8	-82	24 3.8	7 49.3	294 57.4	-20 50.1
Δ					25	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	2 46.5	.3	15.9	T _m	6 19	2.2	57.3	15.6	
12	2 50.2	T _{m☉}	11 h 57.2 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	'	°	°
♂	11 20	.1	332	-2.8	♄	20 24	.0	195	-1.8
	1 51	.1	114	-1.5	♅	2 24	.0	106	.4

1. MAJ

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 43.5	15 8.4	219 21.0	189 51.4	10 43.1	333 23.5	-21 41.5
2	210 43.6	15 9.9	249 25.9	219 50.5	10 45.3	3 29.4	-21 41.6
4	240 43.8	15 11.4	279 30.9	249 49.5	10 47.6	33 35.3	-21 41.7
6	270 43.9	15 12.9	309 35.8	279 48.6	10 49.8	63 41.2	-21 41.8
8	300 44.1	15 14.4	339 40.7	309 47.7	10 52.0	93 47.1	-21 41.9
10	330 44.2	15 15.9	9 45.7	339 46.8	10 54.3	123 52.9	-21 41.9
12	0 44.4	15 17.4	39 50.6	9 45.9	10 56.5	153 58.8	-21 42.0
14	30 44.5	15 18.9	69 55.5	39 44.9	10 58.7	184 4.7	-21 42.1
16	60 44.6	15 20.4	100 .4	69 44.0	11 .9	214 10.7	-21 42.2
18	90 44.8	15 21.9	130 5.4	99 43.1	11 3.2	244 16.6	-21 42.2
20	120 44.9	15 23.4	160 10.3	129 42.2	11 5.4	274 22.5	-21 42.3
22	150 45.1	15 24.9	190 15.2	159 41.2	11 7.6	304 28.4	-21 42.4
Δ	1	7		-5	11	30	0

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	3 57	19 59	0 54	: : :	.. . .	.0	14 34	.9
55	4 19	19 36	0 43	3 10	.. . .	.0	14 22	1.1
50	4 36	19 19	0 37	2 21	.. . .	.0	14 12	1.3
45	4 49	19 6	0 33	1 58	.. . .	.0	14 4	1.4
40	4 60	18 55	0 29	1 44	0 16	2.8	13 58	1.6
35	5 9	18 46	0 27	1 34	0 23	2.7	13 52	1.7
30	5 17	18 38	0 25	1 27	0 29	2.6	13 47	1.8
20	5 31	18 24	0 23	1 18	0 40	2.4	13 38	1.9
10	5 43	18 12	0 22	1 13	0 49	2.3	13 30	2.1
0	5 54	18 0	0 21	1 11	0 58	2.2	13 23	2.2
10	6 5	17 49	0 22	1 12	1 7	2.1	13 16	2.3
20	6 16	17 38	0 23	1 15	1 16	1.9	13 8	2.4
30	6 29	17 25	0 25	1 21	1 27	1.8	12 59	2.6
35	6 37	17 17	0 26	1 26	1 33	1.7	12 53	2.7
40	6 45	17 8	0 28	1 32	1 40	1.6	12 47	2.8
45	6 55	16 58	0 31	1 40	1 48	1.5	12 40	2.9
50	7 7	16 46	0 34	1 50	1 58	1.3	12 32	3.1
55	7 22	16 31	0 39	2 4	2 10	1.2	12 21	3.3
60	7 42	16 11	0 46	2 24	2 25	.9	12 7	3.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	256 6.9	97	11 55.4	-84	54 8.9	7 49.4	325 2.7	-20 50.1
2	285 4.3	97	11 38.7	-85	84 13.9	7 49.4	355 7.9	-20 50.1
4	314 1.8	97	11 21.7	-87	114 19.0	7 49.4	25 13.1	-20 50.0
6	342 59.2	97	11 4.3	-88	144 24.0	7 49.5	55 18.3	-20 50.0
8	11 56.5	97	10 46.7	-90	174 29.1	7 49.5	85 23.5	-20 50.0
10	40 53.8	96	10 28.8	-91	204 34.1	7 49.5	115 28.7	-20 49.9
12	69 51.1	96	10 10.6	-92	234 39.2	7 49.6	145 34.0	-20 49.9
14	98 48.3	96	9 52.1	-94	264 44.2	7 49.6	175 39.2	-20 49.9
16	127 45.5	96	9 33.4	-95	294 49.3	7 49.6	205 44.4	-20 49.8
18	156 42.6	95	9 14.4	-96	324 54.3	7 49.7	235 49.6	-20 49.8
20	185 39.7	95	8 55.1	-98	354 59.4	7 49.7	265 54.8	-20 49.8
22	214 36.8	95	8 35.6	-99	25 4.4	7 49.7	296 .1	-20 49.7
Δ					25	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	2 53.9	.3	15.9	T _m	7 11	2.2	58.1	15.8	
12	2 57.4	T _{m☉}	11 h 57.0 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	'	°	°
♂	11 21	.1	330	-2.8	♄	20 20	.0	195	-1.8
	1 46	.1	114	-1.5	♅	2 19	.0	106	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 45.2	15 26.4	220 20.1	189 40.3	11 9.8	334 34.4	-21 42.5
2	210 45.3	15 27.9	250 25.1	219 39.4	11 12.0	4 40.3	-21 42.5
4	240 45.5	15 29.4	280 30.0	249 38.5	11 14.2	4 46.2	-21 42.6
6	270 45.6	15 30.8	310 34.9	279 37.5	11 16.5	64 52.2	-21 42.7
8	300 45.7	15 32.3	340 39.9	309 36.6	11 18.7	94 58.1	-21 42.7
10	330 45.9	15 33.8	10 44.8	339 35.7	11 20.9	125 4.1	-21 42.8
12	0 46.0	15 35.3	40 49.7	9 34.7	11 23.1	155 10.1	-21 42.9
14	30 46.1	15 36.8	70 54.6	39 33.8	11 25.3	185 16.0	-21 43.0
16	60 46.3	15 38.2	100 59.6	69 32.8	11 27.5	215 22.0	-21 43.0
18	90 46.4	15 39.7	131 4.5	99 31.9	11 29.7	245 28.0	-21 43.1
20	120 46.5	15 41.2	161 9.4	129 31.0	11 31.9	275 34.0	-21 43.2
22	150 46.7	15 42.6	191 14.4	159 30.0	11 34.1	305 40.0	-21 43.2
Δ	1	7		-5	11	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	3 54	20 1	0 55	:	0 52	3.6	14 56	.8
55	4 17	19 38	0 44	3 15	1 2	3.3	14 49	1.1
50	4 34	19 21	0 37	2 22	1 10	3.1	14 43	1.3
45	4 47	19 7	0 33	1 59	1 17	3.0	14 39	1.4
40	4 58	18 56	0 30	1 44	1 22	2.9	14 35	1.5
35	5 8	18 47	0 27	1 35	1 27	2.7	14 32	1.7
30	5 16	18 38	0 25	1 27	1 31	2.6	14 29	1.8
20	5 30	18 24	0 23	1 18	1 38	2.5	14 24	1.9
10	5 42	18 12	0 22	1 13	1 44	2.3	14 19	2.1
0	5 54	18 0	0 21	1 11	1 50	2.2	14 15	2.2
10	6 5	17 49	0 22	1 12	1 56	2.1	14 11	2.4
20	6 16	17 37	0 23	1 15	2 2	1.9	14 6	2.5
30	6 30	17 24	0 25	1 21	2 9	1.8	14 1	2.7
35	6 38	17 16	0 26	1 26	2 13	1.7	13 58	2.8
40	6 46	17 7	0 28	1 32	2 18	1.6	13 55	2.9
45	6 56	16 57	0 31	1 40	2 23	1.4	13 50	3.0
50	7 9	16 45	0 34	1 50	2 30	1.3	13 46	3.2
55	7 24	16 29	0 39	2 4	2 38	1.1	13 39	3.4
60	7 44	16 9	0 46	2 24	2 48	.9	13 32	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	243 33.7	95	8 15.8	-100	55 9.5	7 49.7	326 5.3	-20 49.7
2	272 30.6	94	7 55.8	-101	85 14.5	7 49.8	356 10.5	-20 49.7
4	301 27.5	94	7 35.5	-102	115 19.5	7 49.8	26 15.7	-20 49.6
6	330 24.3	94	7 15.0	-104	145 24.6	7 49.8	56 21.0	-20 49.6
8	359 21.0	93	6 54.3	-105	175 29.6	7 49.9	86 26.2	-20 49.6
10	28 17.6	93	6 33.4	-106	205 34.6	7 49.9	116 31.4	-20 49.5
12	57 14.2	92	6 12.2	-107	235 39.7	7 49.9	146 36.6	-20 49.5
14	86 10.7	92	5 50.9	-108	265 44.7	7 49.9	176 41.8	-20 49.5
16	115 7.1	92	5 29.4	-109	295 49.8	7 50.0	206 47.1	-20 49.4
18	144 3.4	91	5 7.7	-109	325 54.8	7 50.0	236 52.3	-20 49.4
20	172 59.7	91	4 45.8	-110	355 59.8	7 50.0	266 57.5	-20 49.3
22	201 55.8	90	4 23.7	-111	26 4.8	7 50.0	297 2.8	-20 49.3
Δ					25	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	3 .8	.3	15.9	T _m	8 3	2.2	59.0 16.1		
12	3 4.0	T _{m☉}	11 h 56.9 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	'	°	°
♂	11 22	.1	329	-2.8	♃	20 16	.0	195	-1.8
♂	1 41	.1	114	-1.6	♄	2 15	.0	106	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 46.8	15 44.1	221 19.3	189 29.1	11 36.3	335 46.0	-21 43.3
2	210 46.9	15 45.6	251 24.2	219 28.1	11 38.5	5 52.0	-21 43.4
4	240 47.0	15 47.0	281 29.1	249 27.2	11 40.6	35 58.0	-21 43.4
6	270 47.1	15 48.5	311 34.1	279 26.2	11 42.8	66 4.0	-21 43.5
8	300 47.3	15 50.0	341 39.0	309 25.3	11 45.0	96 10.0	-21 43.5
10	330 47.4	15 51.4	11 43.9	339 24.3	11 47.2	126 16.0	-21 43.6
12	0 47.5	15 52.9	41 48.9	9 23.4	11 49.4	156 22.1	-21 43.7
14	30 47.6	15 54.3	71 53.8	39 22.4	11 51.6	186 28.1	-21 43.7
16	60 47.7	15 55.8	101 58.7	69 21.5	11 53.7	216 34.1	-21 43.8
18	90 47.9	15 57.2	132 3.6	99 20.5	11 55.9	246 40.2	-21 43.8
20	120 48.0	15 58.7	162 8.6	129 19.5	11 58.1	276 46.2	-21 43.9
22	150 48.1	16 .1	192 13.5	159 18.6	12 .3	306 52.3	-21 44.0
Δ	1	7		-5	11	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	3 52	20 4	0 55	:	2 18	3.0	15 16	3.1
55	4 15	19 40	0 44	3 21	2 22	2.8	15 15	2.9
50	4 32	19 22	0 37	2 24	2 26	2.7	15 14	2.8
45	4 46	19 8	0 33	1 60	2 29	2.6	15 13	2.7
40	4 57	18 57	0 30	1 45	2 31	2.6	15 12	2.6
35	5 7	18 47	0 27	1 35	2 33	2.5	15 12	2.6
30	5 15	18 39	0 26	1 28	2 35	2.5	15 11	2.5
20	5 29	18 24	0 23	1 18	2 38	2.4	15 10	2.4
10	5 42	18 12	0 22	1 13	2 40	2.3	15 9	2.3
0	5 53	18 0	0 21	1 12	2 43	2.2	15 8	2.3
10	6 5	17 49	0 22	1 12	2 46	2.2	15 8	2.2
20	6 17	17 37	0 23	1 15	2 48	2.1	15 7	2.1
30	6 30	17 23	0 25	1 21	2 51	2.0	15 6	2.0
35	6 38	17 15	0 26	1 26	2 53	2.0	15 5	2.0
40	6 47	17 6	0 28	1 32	2 55	1.9	15 4	1.9
45	6 58	16 56	0 31	1 40	2 58	1.9	15 3	1.8
50	7 10	16 43	0 34	1 51	3 1	1.8	15 2	1.8
55	7 26	16 27	0 39	2 5	3 4	1.7	15 1	1.7
60	7 47	16 6	0 46	2 25	3 9	1.6	14 59	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	230 51.9	90	4 1.5	-112	56 9.9	7 50.1	327 8.0	-20 49.3
2	259 47.8	89	3 39.2	-112	86 14.9	7 50.1	357 13.2	-20 49.2
4	288 43.7	89	3 16.7	-113	116 19.9	7 50.1	27 18.4	-20 49.2
6	317 39.4	88	2 54.0	-114	146 25.0	7 50.1	57 23.7	-20 49.2
8	346 35.1	88	2 31.3	-114	176 30.0	7 50.2	87 28.9	-20 49.1
10	15 30.6	87	2 8.4	-115	206 35.0	7 50.2	117 34.1	-20 49.1
12	44 26.0	87	1 45.4	-115	236 40.0	7 50.2	147 39.4	-20 49.1
14	73 21.3	86	1 22.4	-116	266 45.0	7 50.2	177 44.6	-20 49.0
16	102 16.5	85	0 59.2	-116	296 50.1	7 50.2	207 49.8	-20 49.0
18	131 11.6	85	0 36.0	-116	326 55.1	7 50.3	237 55.0	-20 49.0
20	160 6.5	84	0 12.7	-11	357 .1	7 50.3	268 .3	-20 48.9
22	189 1.3	83	0 10.6	117	27 5.1	7 50.3	298 5.5	-20 48.9
Δ					25	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	3 7.1	.2	15.9	T _m	8 56	2.2	59.8 16.3		
12	3 10.0	T _{m☉}	11 h 56.8 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	'	°	°
♂	11 22	.1	328	-2.8	♃	20 12	.0	195	-1.8
♂	1 37	.1	114	-1.6	♄	2 11	.0	106	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	48.2	16	1.6	222	18.4	189	17.6	12	2.4	336	58.4	-21	44.0
2	210	48.3	16	3.0	252	23.4	219	16.7	12	4.6	7	4.4	-21	44.1
4	240	48.4	16	4.4	282	28.3	249	15.7	12	6.8	37	10.5	-21	44.1
6	270	48.5	16	5.9	312	33.2	279	14.7	12	8.9	67	16.6	-21	44.2
8	300	48.7	16	7.3	342	38.1	309	13.8	12	11.1	97	22.7	-21	44.2
10	330	48.8	16	8.8	12	43.1	339	12.8	12	13.3	127	28.8	-21	44.3
12	0	48.9	16	10.2	42	48.0	9	11.8	12	15.4	157	34.9	-21	44.4
14	30	49.0	16	11.6	72	52.9	39	10.8	12	17.6	187	41.0	-21	44.4
16	60	49.1	16	13.0	102	57.9	69	9.9	12	19.7	217	47.1	-21	44.5
18	90	49.2	16	14.5	133	2.8	99	8.9	12	21.9	247	53.2	-21	44.5
20	120	49.3	16	15.9	163	7.7	129	7.9	12	24.0	277	59.3	-21	44.6
22	150	49.4	16	17.3	193	12.6	159	6.9	12	26.2	308	5.4	-21	44.6
Δ		1		7				-5		11		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	3 49	20 6	0 56	:	3 29	.9	16 29	3.8
55	4 13	19 42	0 44	3 28	3 30	1.1	16 25	3.5
50	4 31	19 24	0 37	2 25	3 31	1.3	16 21	3.3
45	4 45	19 10	0 33	2 0	3 32	1.5	16 18	3.2
40	4 56	18 58	0 30	1 45	3 33	1.6	16 16	3.0
35	5 6	18 48	0 27	1 35	3 33	1.7	16 14	2.9
30	5 14	18 40	0 26	1 28	3 34	1.8	16 12	2.8
20	5 29	18 25	0 23	1 19	3 35	2.0	16 8	2.6
10	5 42	18 12	0 22	1 14	3 36	2.2	16 6	2.5
0	5 53	18 0	0 22	1 12	3 37	2.3	16 3	2.3
10	6 5	17 48	0 22	1 12	3 38	2.5	16 0	2.2
20	6 17	17 36	0 23	1 15	3 39	2.6	15 57	2.0
30	6 31	17 22	0 25	1 22	3 40	2.8	15 54	1.9
35	6 39	17 14	0 26	1 26	3 41	2.9	15 52	1.8
40	6 48	17 5	0 28	1 32	3 42	3.0	15 50	1.7
45	6 59	16 54	0 31	1 40	3 43	3.2	15 47	1.5
50	7 12	16 41	0 35	1 51	3 44	3.3	15 44	1.4
55	7 28	16 25	0 39	2 5	3 45	3.5	15 41	1.2
60	7 49	16 4	0 46	2 25	3 47	3.8	15 36	.9
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	217	55.9	83	0 34.0	117	57	10.1	7 50.3	328	10.7	-20	48.9
2	246	50.5	82	0 57.4	117	87	15.1	7 50.3	358	16.0	-20	48.8
4	275	44.8	81	1 20.8	117	117	20.1	7 50.3	28	21.2	-20	48.8
6	304	39.1	80	1 44.2	117	147	25.2	7 50.4	58	26.4	-20	48.8
8	333	33.2	80	2 7.6	117	177	30.2	7 50.4	88	31.7	-20	48.7
10	2	27.1	79	2 31.0	117	207	35.2	7 50.4	118	36.9	-20	48.7
12	31	20.9	78	2 54.4	117	237	40.2	7 50.4	148	42.2	-20	48.7
14	60	14.5	77	3 17.7	116	267	45.2	7 50.4	178	47.4	-20	48.6
16	89	8.0	77	3 41.0	116	297	50.2	7 50.4	208	52.6	-20	48.6
18	118	1.3	76	4 4.3	116	327	55.2	7 50.4	238	57.9	-20	48.6
20	146	54.4	75	4 27.4	115	358	.2	7 50.5	269	3.1	-20	48.5
22	175	47.4	74	4 50.5	115	28	5.2	7 50.5	299	8.3	-20	48.5
Δ						25		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	3 12.8	.2	15.9	T _m	9 50	2.3	60.6	16.5	
12	3 15.4	T _{m☉}	11 h 56.7 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	'	°	°
♂	11 23	.1	327	-2.8	♄	20 8	.0	195	-1.8
	1 32	.1	115	-1.6	♅	2 7	.0	106	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	49.5	16	18.8	223	17.6	189	5.9	12	28.3	338	11.5	-21	44.7
2	210	49.6	16	20.2	253	22.5	219	5.0	12	30.5	8	17.7	-21	44.7
4	240	49.7	16	21.6	283	27.4	249	4.0	12	32.6	38	23.8	-21	44.8
6	270	49.8	16	23.0	313	32.4	279	3.0	12	34.8	68	29.9	-21	44.8
8	300	49.9	16	24.4	343	37.3	309	2.0	12	36.9	98	36.1	-21	44.8
10	330	50.0	16	25.8	13	42.2	339	1.0	12	39.0	128	42.2	-21	44.9
12	0	50.1	16	27.2	43	47.1	9	.0	12	41.2	158	48.4	-21	44.9
14	30	50.2	16	28.7	73	52.1	38	59.0	12	43.3	188	54.6	-21	45.0
16	60	50.3	16	30.1	103	57.0	68	58.0	12	45.4	219	.7	-21	45.0
18	90	50.4	16	31.5	134	1.9	98	57.0	12	47.6	249	6.9	-21	45.1
20	120	50.5	16	32.9	164	6.8	128	56.0	12	49.7	279	13.1	-21	45.1
22	150	50.6	16	34.3	194	11.8	158	55.0	12	51.8	309	19.3	-21	45.2
Δ		0		7				-5		11		31		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 46	20 9	0 57	:	3 50	1.0	18 1	3.8
55	4 11	19 44	0 45	3 37	3 57	1.2	17 50	3.5
50	4 29	19 25	0 38	2 27	4 3	1.4	17 41	3.3
45	4 43	19 11	0 33	2 1	4 7	1.6	17 34	3.2
40	4 55	18 59	0 30	1 46	4 11	1.7	17 29	3.1
35	5 5	18 49	0 27	1 36	4 15	1.8	17 24	2.9
30	5 14	18 40	0 26	1 28	4 18	1.9	17 19	2.9
20	5 28	18 25	0 23	1 19	4 23	2.1	17 12	2.7
10	5 41	18 12	0 22	1 14	4 28	2.2	17 5	2.5
0	5 53	18 0	0 22	1 12	4 32	2.4	16 59	2.4
10	6 5	17 48	0 22	1 12	4 37	2.5	16 53	2.3
20	6 18	17 36	0 23	1 15	4 42	2.7	16 46	2.1
30	6 32	17 21	0 25	1 22	4 47	2.8	16 39	2.0
35	6 40	17 13	0 26	1 26	4 50	2.9	16 35	1.9
40	6 49	17 4	0 28	1 32	4 54	3.1	16 30	1.8
45	7 0	16 53	0 31	1 40	4 58	3.2	16 24	1.7
50	7 13	16 40	0 35	1 51	5 4	3.4	16 17	1.5
55	7 29	16 23	0 40	2 5	5 10	3.6	16 9	1.3
60	7 51	16 1	0 47	2 25	5 18	3.8	15 58	1.1
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	204	40.2	73	5 13.5	114	58	10.2	7 50.5	329	13.6	-20	48.5
2	233	32.9	72	5 36.3	114	88	15.2	7 50.5	359	18.8	-20	48.4
4	262	25.4	72	5 59.1	113	118	20.2	7 50.5	29	24.1	-20	48.4
6	291	17.7	71	6 21.7	112	148	25.2	7 50.5	59	29.3	-20	48.3
8	320	9.8	70	6 44.1	111	178	30.2	7 50.5	89	34.5	-20	48.3
10	349	1.8	69	7 6.4	111	208	35.2	7 50.5	119	39.8	-20	48.3
12	17	53.6	68	7 28.5	110	238	40.2	7 50.5	149	45.0	-20	48.2
14	46	45.2	67	7 50.5	109	268	45.2	7 50.6	179	50.3	-20	48.2
16	75	36.6	66	8 12.2	108	298	50.2	7 50.6	209	55.5	-20	48.2
18	104	27.9	66	8 33.7	107	328	55.2	7 50.6	240	.7	-20	48.1
20	133	19.0	65	8 55.0	105	359	.1	7 50.6	270	6.0	-20	48.1
22	162	10.0	64	9 16.1	104	29	5.1	7 50.6	300	11.2	-20	48.1
Δ						25		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	3 18.0	.2	15.9	T _m	10 46	2.4	61.0	16.6	
12	3 20.3	T _{m☉}	11 h 56.7 min	Starost	27.5 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 50.6	16 35.7	224 16.7	188 54.0	12 53.9	339 25.5	-21 45.2
2	210 50.7	16 37.1	254 21.6	218 53.0	12 56.1	9 31.7	-21 45.2
4	240 50.8	16 38.5	284 26.6	248 52.0	12 58.2	39 37.8	-21 45.3
6	270 50.9	16 39.9	314 31.5	278 51.0	13 .3	69 44.1	-21 45.3
8	300 51.0	16 41.2	344 36.4	308 50.0	13 2.4	99 50.3	-21 45.4
10	330 51.1	16 42.6	14 41.3	338 49.0	13 4.5	129 56.5	-21 45.4
12	0 51.2	16 44.0	44 46.3	8 48.0	13 6.6	160 2.7	-21 45.4
14	30 51.2	16 45.4	74 51.2	38 47.0	13 8.7	190 8.9	-21 45.5
16	60 51.3	16 46.8	104 56.1	68 46.0	13 10.8	220 15.1	-21 45.5
18	90 51.4	16 48.2	135 1.1	98 45.0	13 12.9	250 21.4	-21 45.5
20	120 51.5	16 49.6	165 6.0	128 43.9	13 15.0	280 27.6	-21 45.6
22	150 51.6	16 50.9	195 10.9	158 42.9	13 17.1	310 33.9	-21 45.6
Δ	0	7		-5	11	31	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 44	20 11	0 57	:::	4 14	1.2	19 32	3.6
55	4 9	19 46	0 45	3 50	4 27	1.4	19 15	3.4
50	4 27	19 27	0 38	2 28	4 37	1.6	19 1	3.2
45	4 42	19 12	0 33	2 2	4 46	1.8	18 51	3.1
40	4 54	19 0	0 30	1 46	4 53	1.9	18 42	3.0
35	5 4	18 50	0 27	1 36	4 59	2.0	18 34	2.9
30	5 13	18 41	0 26	1 28	5 4	2.1	18 28	2.8
20	5 28	18 26	0 23	1 19	5 13	2.2	18 16	2.7
10	5 41	18 12	0 22	1 14	5 22	2.3	18 6	2.6
0	5 53	18 0	0 22	1 12	5 29	2.5	17 57	2.5
10	6 5	17 48	0 22	1 12	5 37	2.6	17 48	2.4
20	6 18	17 35	0 23	1 16	5 46	2.7	17 38	2.3
30	6 32	17 21	0 25	1 22	5 55	2.8	17 27	2.1
35	6 41	17 12	0 27	1 27	6 1	2.9	17 20	2.1
40	6 50	17 3	0 29	1 33	6 7	3.0	17 13	2.0
45	7 1	16 51	0 31	1 41	6 15	3.1	17 4	1.9
50	7 15	16 38	0 35	1 51	6 24	3.3	16 54	1.7
55	7 31	16 21	0 40	2 6	6 35	3.5	16 41	1.6
60	7 54	15 59	0 47	2 26	6 50	3.7	16 24	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	191 .7	63	9 36.9	103	59 10.1	7 50.6	330 16.5	-20 48.0
2	219 51.4	62	9 57.5	101	89 15.1	7 50.6	0 21.7	-20 48.0
4	248 41.8	61	10 17.8	100	119 20.1	7 50.6	30 27.0	-20 48.0
6	277 32.1	61	10 37.8	99	149 25.1	7 50.6	60 32.2	-20 47.9
8	306 22.2	60	10 57.5	97	179 30.0	7 50.6	90 37.5	-20 47.9
10	335 12.2	59	11 17.0	96	209 35.0	7 50.6	120 42.7	-20 47.9
12	4 2.0	58	11 36.1	94	239 40.0	7 50.6	150 47.9	-20 47.8
14	32 51.6	58	11 54.8	92	269 45.0	7 50.6	180 53.2	-20 47.8
16	61 41.1	57	12 13.3	90	299 50.0	7 50.6	210 58.4	-20 47.7
18	90 30.5	56	12 31.3	89	329 54.9	7 50.6	241 3.7	-20 47.7
20	119 19.7	56	12 49.1	87	359 59.9	7 50.6	271 8.9	-20 47.7
22	148 8.8	55	13 6.4	85	30 4.9	7 50.6	301 14.2	-20 47.6
Δ					25	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	3 22.6	.2	15.9	T _m	11 43	2.5	61.3
12	3 24.6	T _{m☉}	11 h 56.6 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	'	°	
♂	11 25	.1	325	-2.8	♄	20 0	.0	195	-1.8
♂	1 22	.1	115	-1.6	♂	1 59	.0	106	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 51.6	16 52.3	225 15.8	188 41.9	13 19.2	340 40.1	-21 45.6
2	210 51.7	16 53.7	255 20.8	218 40.9	13 21.3	10 46.4	-21 45.7
4	240 51.8	16 55.1	285 25.7	248 39.9	13 23.4	40 52.6	-21 45.7
6	270 51.9	16 56.4	315 30.6	278 38.8	13 25.5	70 58.9	-21 45.7
8	300 52.0	16 57.8	345 35.6	308 37.8	13 27.6	101 5.2	-21 45.8
10	330 52.0	16 59.2	15 40.5	338 36.8	13 29.7	131 11.4	-21 45.8
12	0 52.1	17 .5	45 45.4	8 35.8	13 31.8	161 17.7	-21 45.8
14	30 52.2	17 1.9	75 50.3	38 34.7	13 33.8	191 24.0	-21 45.8
16	60 52.2	17 3.3	105 55.3	68 33.7	13 35.9	221 30.3	-21 45.9
18	90 52.3	17 4.6	136 .2	98 32.7	13 38.0	251 36.6	-21 45.9
20	120 52.4	17 6.0	166 5.1	128 31.6	13 40.1	281 42.9	-21 45.9
22	150 52.4	17 7.3	196 10.1	158 30.6	13 42.1	311 49.2	-21 45.9
Δ	0	7		-5	10	31	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 41	20 14	0 58	:::	4 42	1.5	20 59	3.2
55	4 7	19 48	0 45	:::	5 2	1.7	20 36	3.1
50	4 26	19 28	0 38	2 30	5 16	1.9	20 19	3.0
45	4 40	19 13	0 33	2 3	5 28	2.0	20 5	2.9
40	4 53	19 1	0 30	1 47	5 38	2.1	19 54	2.8
35	5 3	18 51	0 28	1 36	5 46	2.1	19 44	2.8
30	5 12	18 41	0 26	1 29	5 53	2.2	19 36	2.7
20	5 27	18 26	0 23	1 19	6 6	2.3	19 21	2.6
10	5 41	18 12	0 22	1 14	6 18	2.4	19 8	2.6
0	5 53	17 60	0 22	1 12	6 28	2.5	18 57	2.5
10	6 5	17 48	0 22	1 12	6 39	2.6	18 45	2.4
20	6 18	17 35	0 23	1 16	6 50	2.7	18 32	2.4
30	6 33	17 20	0 25	1 22	7 4	2.8	18 18	2.3
35	6 41	17 11	0 27	1 27	7 11	2.8	18 9	2.2
40	6 51	17 2	0 29	1 33	7 20	2.9	17 60	2.2
45	7 2	16 50	0 31	1 41	7 31	3.0	17 49	2.1
50	7 16	16 37	0 35	1 51	7 43	3.1	17 35	2.0
55	7 33	16 19	0 40	2 6	7 59	3.3	17 18	1.9
60	7 56	15 56	0 47	2 26	8 20	3.5	16 56	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 57.8	54	13 23.4	83	60 9.8	7 50.6	331 19.4	-20 47.6
2	205 46.7	54	13 40.0	81	90 14.8	7 50.6	1 24.7	-20 47.6
4	234 35.4	53	13 56.2	79	120 19.8	7 50.6	31 29.9	-20 47.5
6	263 24.1	53	14 12.0	77	150 24.8	7 50.6	61 35.2	-20 47.5
8	292 12.6	52	14 27.3	75	180 29.7	7 50.6	91 40.4	-20 47.5
10	321 1.1	52	14 42.3	73	210 34.7	7 50.6	121 45.7	-20 47.4
12	349 49.4	51	14 56.8	70	240 39.7	7 50.6	151 50.9	-20 47.4
14	18 37.7	51	15 10.8	68	270 44.6	7 50.6	181 56.2	-20 47.4
16	47 25.9	51	15 24.4	66	300 49.6	7 50.6	212 1.4	-20 47.3
18	76 14.1	50	15 37.6	63	330 54.5	7 50.6	242 6.7	-20 47.3
20	105 2.2	50	15 50.3	61	0 59.5	7 50.6	272 11.9	-20 47.2
22	133 50.2	50	16 2.5	59	31 4.5	7 50.6	302 17.2	-20 47.2
Δ					25	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	3 26.6	.1	15.9	T _m	12 42	2.5	61.2
12	3 28.3	T _{m☉}	11 h 56.5 min	Starost	.2 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	11 26	.1	323	-2.8	♄	19 56	.0	195	-1.8
♂	1 17	.1	115	-1.7	♂	1 54	.0	106	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	52.5	17	8.7	226	15.0	188	29.5	13	44.2	341	55.5	-21	46.0	
2	210	52.6	17	10.0	256	19.9	218	28.5	13	46.3	12	1.8	-21	46.0	
4	240	52.6	17	11.4	286	24.8	248	27.5	13	48.3	42	8.1	-21	46.0	
6	270	52.7	17	12.7	316	29.8	278	26.4	13	50.4	72	14.4	-21	46.0	
8	300	52.8	17	14.1	346	34.7	308	25.4	13	52.5	102	20.7	-21	46.1	
10	330	52.8	17	15.4	16	39.6	338	24.3	13	54.5	132	27.1	-21	46.1	
12	0	52.9	17	16.8	46	44.6	8	23.3	13	56.6	162	33.4	-21	46.1	
14	30	52.9	17	18.1	76	49.5	38	22.2	13	58.6	192	39.7	-21	46.1	
16	60	53.0	17	19.4	106	54.4	68	21.2	14	.7	222	46.1	-21	46.1	
18	90	53.1	17	20.8	136	59.3	98	20.1	14	2.7	252	52.4	-21	46.1	
20	120	53.1	17	22.1	167	4.3	128	19.0	14	4.8	282	58.8	-21	46.2	
22	150	53.2	17	23.4	197	9.2	158	18.0	14	6.8	313	5.1	-21	46.2	
Δ		0		7				-5		10		32			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 39	20 16	0 59	:	5 19	1.9	22 17	2.7
55	4 5	19 49	0 46	:	5 43	2.0	21 50	2.7
50	4 24	19 30	0 38	2 32	6 1	2.1	21 30	2.6
45	4 39	19 15	0 33	2 4	6 15	2.2	21 14	2.6
40	4 52	19 2	0 30	1 47	6 27	2.3	21 1	2.6
35	5 2	18 51	0 28	1 37	6 37	2.3	20 50	2.6
30	5 11	18 42	0 26	1 29	6 46	2.3	20 41	2.5
20	5 27	18 26	0 23	1 19	7 2	2.4	20 24	2.5
10	5 40	18 13	0 22	1 14	7 15	2.4	20 10	2.5
0	5 53	17 60	0 22	1 12	7 28	2.5	19 57	2.5
10	6 5	17 47	0 22	1 13	7 41	2.5	19 43	2.4
20	6 19	17 34	0 23	1 16	7 55	2.6	19 29	2.4
30	6 34	17 19	0 25	1 22	8 10	2.6	19 12	2.4
35	6 42	17 10	0 27	1 27	8 20	2.7	19 3	2.4
40	6 52	17 0	0 29	1 33	8 30	2.7	18 52	2.3
45	7 4	16 49	0 31	1 41	8 43	2.7	18 39	2.3
50	7 17	16 35	0 35	1 52	8 58	2.8	18 23	2.3
55	7 35	16 17	0 40	2 6	9 17	2.9	18 3	2.2
60	7 58	15 54	0 48	2 27	9 43	3.0	17 37	2.1
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	162	38.2	50	16	14.3	56	61	9.4	7	50.6	332	22.5	-20	47.2	
2	191	26.2	50	16	25.6	54	91	14.4	7	50.6	2	27.7	-20	47.1	
4	220	14.2	50	16	36.3	52	121	19.3	7	50.6	32	33.0	-20	47.1	
6	249	2.2	50	16	46.6	49	151	24.3	7	50.6	62	38.2	-20	47.1	
8	277	50.2	50	16	56.5	47	181	29.2	7	50.5	92	43.5	-20	47.0	
10	306	38.2	50	17	5.8	44	211	34.2	7	50.5	122	48.7	-20	47.0	
12	335	26.2	50	17	14.6	42	241	39.1	7	50.5	152	54.0	-20	47.0	
14	4	14.2	50	17	22.9	39	271	44.1	7	50.5	182	59.2	-20	46.9	
16	33	2.3	51	17	30.7	36	301	49.0	7	50.5	213	4.5	-20	46.9	
18	61	50.5	51	17	38.0	34	331	54.0	7	50.5	243	9.8	-20	46.8	
20	90	38.7	51	17	44.8	31	1	58.9	7	50.5	273	15.0	-20	46.8	
22	119	27.0	52	17	51.1	29	32	3.9	7	50.5	303	20.3	-20	46.8	
Δ								25		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	3 30.0	.1	15.9	T _m	13 42	2.5	60.7	16.6	
12	3 31.5	T _{m☉}	11 h 56.5 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	'	°	
♂	11 26	.1	322	-2.8	♄	19 52	.0	195	-1.8
	1 12	.1	116	-1.7	♂	1 50	.0	106	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	53.2	17	24.8	227	14.1	188	16.9	14	8.9	343	11.5	-21	46.2	
2	210	53.3	17	26.1	257	19.0	218	15.9	14	10.9	13	17.9	-21	46.2	
4	240	53.3	17	27.4	287	24.0	248	14.8	14	12.9	43	24.2	-21	46.2	
6	270	53.4	17	28.7	317	28.9	278	13.7	14	15.0	73	30.6	-21	46.2	
8	300	53.4	17	30.0	347	33.8	308	12.7	14	17.0	103	37.0	-21	46.2	
10	330	53.5	17	31.4	17	38.8	338	11.6	14	19.0	133	43.4	-21	46.3	
12	0	53.5	17	32.7	47	43.7	8	10.5	14	21.1	163	49.8	-21	46.3	
14	30	53.6	17	34.0	77	48.6	38	9.5	14	23.1	193	56.2	-21	46.3	
16	60	53.6	17	35.3	107	53.5	68	8.4	14	25.1	224	2.6	-21	46.3	
18	90	53.7	17	36.6	137	58.5	98	7.3	14	27.1	254	9.0	-21	46.3	
20	120	53.7	17	37.9	168	3.4	128	6.2	14	29.1	284	15.4	-21	46.3	
22	150	53.8	17	39.2	198	8.3	158	5.2	14	31.1	314	21.8	-21	46.3	
Δ		0		7				-5		10		32			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 36	20 19	0 59	:	6 4	2.4	23 22	2.1
55	4 3	19 51	0 46	:	6 32	2.4	22 53	2.2
50	4 22	19 31	0 38	2 34	6 52	2.4	22 33	2.2
45	4 38	19 16	0 34	2 5	7 8	2.4	22 16	2.2
40	4 50	19 3	0 30	1 48	7 21	2.4	22 3	2.3
35	5 1	18 52	0 28	1 37	7 32	2.4	21 52	2.3
30	5 10	18 43	0 26	1 29	7 42	2.4	21 42	2.3
20	5 26	18 27	0 23	1 19	7 59	2.4	21 25	2.3
10	5 40	18 13	0 22	1 14	8 14	2.4	21 10	2.4
0	5 53	17 60	0 22	1 12	8 28	2.4	20 56	2.4
10	6 6	17 47	0 22	1 13	8 42	2.4	20 42	2.4
20	6 19	17 34	0 23	1 16	8 57	2.4	20 27	2.4
30	6 34	17 18	0 25	1 22	9 14	2.4	20 9	2.4
35	6 43	17 9	0 27	1 27	9 24	2.4	19 59	2.5
40	6 53	16 59	0 29	1 33	9 35	2.4	19 48	2.5
45	7 5	16 48	0 31	1 41	9 49	2.4	19 34	2.5
50	7 19	16 33	0 35	1 52	10 5	2.4	19 18	2.5
55	7 37	16 16	0 40	2 7	10 26	2.4	18 57	2.5
60	8 1	15 52	0 48	2 28	10 55	2.4	18 28	2.6
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	148	15.4	52	17	56.8	26	62	8.8	7	50.5	333	25.5	-20	46.7	
2	177	3.9	53	18	2.1	24	92	13.7	7	50.5	3	30.8	-20	46.7	
4	205	52.4	54	18	6.9	21	122	18.7	7	50.4	33	36.1	-20	46.7	
6	234	41.1	54	18	11.1	19	152	23.6	7	50.4	63	41.3	-20	46.6	
8	263	30.0	55	18	14.8	16	182	28.6	7	50.4	93	46.6	-20	46.6	
10	292	18.9	56	18	18.1	14	212	33.5	7	50.4	123	51.8	-20	46.6	
12	321	8.1	56	18	20.8	11	242	38.4	7	50.4	153	57.1	-20	46.5	
14	349	57.3	57	18	23.0	9	272	43.4	7	50.4	184	2.4	-20	46.5	
16	18	46.8	58	18	24.7	6	302	48.3	7	50.3	214	7.6	-20	46.4	
18	47	36.4	59	18	25.9	4	332	53.2	7	50.3	244	12.9	-20	46.4	
20	76	26.2	60	18	26.6	1	2	58.2	7	50.3	274	18.1	-20	46.4	
22	105	16.2	61	18	26.9	-1	33	3.1	7	50.3	304	23.4	-20	46.3	
Δ								25		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	3 32.9	.1	15.9	T _m	14 42	2.4	60.1	16.4
12								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.8	17 40.5	228 13.3	188 4.1	14 33.2	344 28.2	-21 46.3
2	210 53.9	17 41.8	258 18.2	218 3.0	14 35.2	14 34.6	-21 46.3
4	240 53.9	17 43.1	288 23.1	248 1.9	14 37.2	44 41.0	-21 46.3
6	270 53.9	17 44.4	318 28.0	278 .8	14 39.2	74 47.5	-21 46.3
8	300 54.0	17 45.7	348 33.0	307 59.7	14 41.2	104 53.9	-21 46.3
10	330 54.0	17 47.0	18 37.9	337 58.6	14 43.2	135 .3	-21 46.3
12	0 54.0	17 48.3	48 42.8	7 57.6	14 45.2	165 6.8	-21 46.3
14	30 54.1	17 49.6	78 47.8	37 56.5	14 47.2	195 13.2	-21 46.3
16	60 54.1	17 50.9	108 52.7	67 55.4	14 49.2	225 19.7	-21 46.3
18	90 54.2	17 52.2	138 57.6	97 54.3	14 51.1	255 26.1	-21 46.3
20	120 54.2	17 53.5	169 2.5	127 53.2	14 53.1	285 32.6	-21 46.3
22	150 54.2	17 54.8	199 7.5	157 52.1	14 55.1	315 39.0	-21 46.3
Δ	0	6		-5	10	32	0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	134 6.4	62	18 26.6	-4	63 8.0	7 50.3	334 28.7	-20 46.3
2	162 56.8	63	18 25.9	-6	93 12.9	7 50.3	4 33.9	-20 46.3
4	191 47.4	64	18 24.7	-8	123 17.9	7 50.2	34 39.2	-20 46.2
6	220 38.3	65	18 23.0	-11	153 22.8	7 50.2	64 44.5	-20 46.2
8	249 29.4	67	18 20.8	-13	183 27.7	7 50.2	94 49.7	-20 46.1
10	278 20.7	68	18 18.2	-15	213 32.6	7 50.2	124 55.0	-20 46.1
12	307 12.3	69	18 15.1	-18	243 37.6	7 50.2	155 .3	-20 46.1
14	336 4.1	70	18 11.5	-20	273 42.5	7 50.1	185 5.5	-20 46.0
16	4 56.2	72	18 7.5	-22	303 47.4	7 50.1	215 10.8	-20 46.0
18	33 48.6	73	18 3.1	-24	333 52.3	7 50.1	245 16.1	-20 46.0
20	62 41.2	75	17 58.2	-26	3 57.2	7 50.1	275 21.3	-20 45.9
22	91 34.1	76	17 53.0	-29	34 2.2	7 50.0	305 26.6	-20 45.9
Δ					25	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 34	20 21	1 0	: : :	7 1	2.7	. . .	.0
55	4 1	19 53	0 46	: : :	7 29	2.6	23 46	1.7
50	4 21	19 33	0 39	2 35	7 50	2.6	23 26	1.8
45	4 37	19 17	0 34	2 5	8 6	2.5	23 10	1.9
40	4 49	19 4	0 30	1 49	8 19	2.5	22 58	2.0
35	5 0	18 53	0 28	1 37	8 30	2.5	22 47	2.0
30	5 10	18 43	0 26	1 30	8 40	2.4	22 37	2.1
20	5 26	18 27	0 23	1 20	8 57	2.4	22 21	2.1
10	5 40	18 13	0 22	1 14	9 12	2.4	22 6	2.2
0	5 53	17 60	0 22	1 12	9 26	2.3	21 53	2.3
10	6 6	17 47	0 22	1 13	9 40	2.3	21 39	2.3
20	6 19	17 33	0 23	1 16	9 55	2.2	21 25	2.4
30	6 35	17 18	0 25	1 22	10 12	2.2	21 8	2.4
35	6 44	17 9	0 27	1 27	10 22	2.2	20 58	2.5
40	6 54	16 58	0 29	1 33	10 33	2.1	20 47	2.5
45	7 6	16 46	0 32	1 41	10 47	2.1	20 34	2.6
50	7 20	16 32	0 35	1 52	11 3	2.0	20 18	2.7
55	7 38	16 14	0 40	2 7	11 24	1.9	19 58	2.7
60	8 3	15 49	0 48	2 28	11 52	1.8	19 30	2.9
S								

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min s	s	'	h min	min	'	'	
00	3 35.2	.1	15.9	T _m	15 39	2.3	59.2	16.1
12	3 36.1	T _{m☉}	11 h 56.4 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	'	°	
♀	11 28	.1	320	-2.8	♃	19 44	.0	195	-1.8
♂	1 2	.1	116	-1.7	♄	1 42	.0	106	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.3	17 56.0	229 12.4	187 51.0	14 57.1	345 45.5	-21 46.3
2	210 54.3	17 57.3	259 17.3	217 49.9	14 59.1	15 52.0	-21 46.3
4	240 54.3	17 58.6	289 22.3	247 48.8	15 1.1	45 58.4	-21 46.3
6	270 54.3	17 59.9	319 27.2	277 47.7	15 3.0	76 4.9	-21 46.3
8	300 54.4	18 1.1	349 32.1	307 46.5	15 5.0	106 11.4	-21 46.3
10	330 54.4	18 2.4	19 37.0	337 45.4	15 7.0	136 17.9	-21 46.3
12	0 54.4	18 3.7	49 42.0	7 44.3	15 8.9	166 24.4	-21 46.3
14	30 54.4	18 4.9	79 46.9	37 43.2	15 10.9	196 30.9	-21 46.3
16	60 54.5	18 6.2	109 51.8	67 42.1	15 12.9	226 37.4	-21 46.3
18	90 54.5	18 7.4	139 56.8	97 41.0	15 14.8	256 43.9	-21 46.3
20	120 54.5	18 8.7	170 1.7	127 39.9	15 16.8	286 50.4	-21 46.3
22	150 54.5	18 10.0	200 6.6	157 38.7	15 18.7	316 56.9	-21 46.3
Δ	0	6		-6	10	32	0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	120 27.3	77	17 47.2	-31	64 7.1	7 50.0	335 31.9	-20 45.8
2	149 20.8	79	17 41.1	-33	94 12.0	7 50.0	5 37.1	-20 45.8
4	178 14.5	80	17 34.6	-35	124 16.9	7 50.0	35 42.4	-20 45.8
6	207 8.6	82	17 27.6	-37	154 21.8	7 49.9	65 47.7	-20 45.7
8	236 2.9	83	17 20.3	-39	184 26.7	7 49.9	95 52.9	-20 45.7
10	264 57.6	85	17 12.5	-41	214 31.6	7 49.9	125 58.2	-20 45.7
12	293 52.5	86	17 4.4	-42	244 36.5	7 49.9	156 3.5	-20 45.6
14	322 47.8	88	16 56.0	-44	274 41.4	7 49.8	186 8.7	-20 45.6
16	351 43.4	89	16 47.1	-46	304 46.3	7 49.8	216 14.0	-20 45.5
18	20 39.2	91	16 37.9	-48	334 51.2	7 49.8	246 19.3	-20 45.5
20	49 35.4	92	16 28.3	-50	4 56.1	7 49.8	276 24.6	-20 45.5
22	78 31.9	94	16 18.4	-51	35 1.0	7 49.7	306 29.8	-20 45.4
Δ					25	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 23	1 1	: : :	8 7	3.0	0 12	1.6
55	3 59	19 55	0 47	: : :	8 32	2.8	. . .	.0
50	4 19	19 34	0 39	2 37	8 52	2.7	. . .	.0
45	4 35	19 18	0 34	2 6	9 7	2.6	23 56	1.6
40	4 48	19 5	0 30	1 49	9 19	2.5	23 45	1.7
35	4 59	18 54	0 28	1 38	9 30	2.5	23 35	1.8
30	5 9	18 44	0 26	1 30	9 39	2.4	23 27	1.8
20	5 25	18 28	0 24	1 20	9 55	2.3	23 12	1.9
10	5 40	18 13	0 22	1 15	10 9	2.3	22 59	2.0
0	5 53	17 60	0 22	1 12	10 22	2.2	22 47	2.1
10	6 6	17 47	0 22	1 13	10 34	2.1	22 35	2.2
20	6 20	17 33	0 23	1 16	10 48	2.0	22 22	2.3
30	6 36	17 17	0 25	1 22	11 4	1.9	22 7	2.4
35	6 45	17 8	0 27	1 27	11 13	1.9	21 58	2.5
40	6 55	16 57	0 29	1 33	11 24	1.8	21 48	2.5
45	7 7	16 45	0 32	1 42	11 36	1.8	21 36	2.6
50	7 22	16 31	0 35	1 52	11 51	1.7	21 22	2.7
55	7 40	16 12	0 41	2 7	12 10	1.5	21 3	2.8
60	8 5	15 47	0 48	2 29	12 35	1.4	20 39	3.0
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 37.0	.1	15.9	T _m	16 34	2.2	58.3	15.9
12	3 37.6	T _{m☉}	11 h 56.4 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	'	°	
♀	11 29	.1	319	-2.8	♃	19 40	.0	195	-1.8
♂	0 57	.1	117	-1.7	♄	1 38	.0	106	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.6	18 11.2	230 11.5	187 37.6	15 20.7	347 3.4	-21 46.2
2	210 54.6	18 12.5	260 16.5	217 36.5	15 22.6	17 9.9	-21 46.2
4	240 54.6	18 13.7	290 21.4	247 35.4	15 24.6	47 16.4	-21 46.2
6	270 54.6	18 15.0	320 26.3	277 34.2	15 26.5	77 23.0	-21 46.2
8	300 54.6	18 16.2	350 31.3	307 33.1	15 28.5	107 29.5	-21 46.2
10	330 54.6	18 17.5	20 36.2	337 32.0	15 30.4	137 36.0	-21 46.2
12	0 54.7	18 18.7	50 41.1	7 30.8	15 32.3	167 42.6	-21 46.2
14	30 54.7	18 19.9	80 46.0	37 29.7	15 34.3	197 49.1	-21 46.1
16	60 54.7	18 21.2	110 51.0	67 28.6	15 36.2	227 55.6	-21 46.1
18	90 54.7	18 22.4	140 55.9	97 27.4	15 38.1	258 2.2	-21 46.1
20	120 54.7	18 23.6	171 .8	127 26.3	15 40.0	288 8.7	-21 46.1
22	150 54.7	18 24.9	201 5.7	157 25.1	15 42.0	318 15.3	-21 46.1
Δ	0	6		-6	10	33	0

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	3 29	20 26	1 2	:::	9 18	3.1	0 50	1.2
55	3 57	19 57	0 47	:::	9 40	2.8	0 27	1.4
50	4 18	19 36	0 39	2 39	9 56	2.7	0 10	1.5
45	4 34	19 19	0 34	2 7	10 9	2.6	...	.0
40	4 47	19 6	0 30	1 50	10 20	2.5	...	.0
35	4 59	18 55	0 28	1 38	10 29	2.4	...	.0
30	5 8	18 45	0 26	1 30	10 37	2.4	...	.0
20	5 25	18 28	0 24	1 20	10 51	2.2	23 59	1.8
10	5 39	18 13	0 22	1 15	11 3	2.1	23 48	1.9
0	5 53	17 60	0 22	1 13	11 14	2.0	23 38	2.0
10	6 6	17 46	0 22	1 13	11 25	2.0	23 28	2.1
20	6 20	17 32	0 23	1 16	11 37	1.9	23 17	2.2
30	6 36	17 16	0 25	1 23	11 51	1.7	23 4	2.3
35	6 45	17 7	0 27	1 27	11 59	1.7	22 57	2.4
40	6 56	16 56	0 29	1 34	12 8	1.6	22 48	2.5
45	7 8	16 44	0 32	1 42	12 18	1.5	22 38	2.6
50	7 23	16 29	0 35	1 53	12 31	1.4	22 27	2.7
55	7 42	16 10	0 41	2 8	12 47	1.3	22 12	2.9
60	8 7	15 45	0 49	2 29	13 8	1.0	21 52	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	107 28.7	95 16	8.2	-53	65 5.9	7 49.7	336 35.1	-20 45.4
2	136 25.8	97 15	57.6	-54	95 10.8	7 49.7	6 40.4	-20 45.4
4	165 23.2	99 15	46.7	-56	125 15.7	7 49.6	36 45.7	-20 45.3
6	194 20.9	100 15	35.5	-58	155 20.6	7 49.6	66 50.9	-20 45.3
8	223 18.9	102 15	24.0	-59	185 25.5	7 49.6	96 56.2	-20 45.2
10	252 17.3	103 15	12.2	-61	215 30.4	7 49.5	127 1.5	-20 45.2
12	281 15.9	105 15	.1	-62	245 35.3	7 49.5	157 6.8	-20 45.2
14	310 14.8	106 14	47.7	-63	275 40.2	7 49.5	187 12.0	-20 45.1
16	339 14.1	108 14	35.0	-65	305 45.1	7 49.4	217 17.3	-20 45.1
18	8 13.6	109 14	22.1	-66	335 50.0	7 49.4	247 22.6	-20 45.1
20	37 13.4	111 14	8.9	-67	5 54.9	7 49.4	277 27.9	-20 45.0
22	66 13.5	112 13	55.4	-69	35 59.8	7 49.3	307 33.1	-20 45.0
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	min	'	'		
00	3 38.2	.0	15.9	T _m	17 26	2.0	57.3 15.6		
12	3 38.5	T _{m☉}	11 h 56.4 min	Starost	5.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 30	.1	317	-2.8	♃	19 36	.0	195	-1.8
♂	0 52	.1	117	-1.7	♄	1 33	.0	106	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.7	18 26.1	231 10.7	187 24.0	15 43.9	348 21.8	-21 46.0
2	210 54.7	18 27.3	261 15.6	217 22.8	15 45.8	18 28.4	-21 46.0
4	240 54.7	18 28.5	291 20.5	247 21.7	15 47.7	48 35.0	-21 46.0
6	270 54.7	18 29.8	321 25.5	277 20.5	15 49.6	78 41.5	-21 46.0
8	300 54.7	18 31.0	351 30.4	307 19.4	15 51.5	108 48.1	-21 46.0
10	330 54.7	18 32.2	21 35.3	337 18.2	15 53.4	138 54.7	-21 45.9
12	0 54.8	18 33.4	51 40.2	7 17.1	15 55.3	169 1.3	-21 45.9
14	30 54.8	18 34.6	81 45.2	37 15.9	15 57.2	199 7.9	-21 45.9
16	60 54.8	18 35.8	111 50.1	67 14.8	15 59.1	229 14.4	-21 45.9
18	90 54.8	18 37.1	141 55.0	97 13.6	16 1.0	259 21.0	-21 45.8
20	120 54.8	18 38.3	172 .0	127 12.4	16 2.9	289 27.6	-21 45.8
22	150 54.8	18 39.5	202 4.9	157 11.3	16 4.8	319 34.2	-21 45.8
Δ	0	6		-6	10	33	0

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	3 26	20 28	1 3	:::	10 31	3.0	1 19	.9
55	3 55	19 58	0 47	:::	10 48	2.8	1 1	1.2
50	4 16	19 37	0 39	2 41	11 1	2.7	0 47	1.3
45	4 33	19 20	0 34	2 8	11 11	2.5	0 36	1.4
40	4 46	19 7	0 31	1 50	11 20	2.4	0 26	1.5
35	4 58	18 55	0 28	1 38	11 27	2.4	0 18	1.6
30	5 8	18 45	0 26	1 30	11 33	2.3	0 11	1.7
20	5 25	18 28	0 24	1 20	11 44	2.2	...	.0
10	5 39	18 14	0 22	1 15	11 54	2.0	...	.0
0	5 53	17 60	0 22	1 13	12 3	1.9	...	.0
10	6 6	17 46	0 22	1 13	12 12	1.8	...	.0
20	6 21	17 32	0 23	1 16	12 22	1.7	...	.0
30	6 37	17 16	0 25	1 23	12 33	1.6	23 60	2.3
35	6 46	17 6	0 27	1 27	12 39	1.5	23 54	2.3
40	6 57	16 55	0 29	1 34	12 46	1.4	23 48	2.4
45	7 9	16 43	0 32	1 42	12 55	1.3	23 40	2.5
50	7 24	16 28	0 36	1 53	13 5	1.2	23 31	2.7
55	7 44	16 8	0 41	2 8	13 17	1.1	23 20	2.8
60	8 10	15 42	0 49	2 30	13 33	.8	23 5	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	95 13.9	113 13	41.7	-70	66 4.7	7 49.3	337 38.4	-20 44.9
2	124 14.6	115 13	27.8	-71	96 9.5	7 49.3	7 43.7	-20 44.9
4	153 15.6	116 13	13.6	-72	126 14.4	7 49.2	37 49.0	-20 44.9
6	182 16.9	118 12	59.2	-73	156 19.3	7 49.2	67 54.2	-20 44.8
8	211 18.4	119 12	44.5	-74	186 24.2	7 49.1	97 59.5	-20 44.8
10	240 20.2	120 12	29.7	-75	216 29.1	7 49.1	128 4.8	-20 44.8
12	269 22.3	122 12	14.6	-76	246 33.9	7 49.1	158 10.1	-20 44.7
14	298 24.6	123 11	59.4	-77	276 38.8	7 49.0	188 15.4	-20 44.7
16	327 27.2	124 11	43.9	-78	306 43.7	7 49.0	218 20.6	-20 44.6
18	356 30.1	126 11	28.2	-79	336 48.6	7 49.0	248 25.9	-20 44.6
20	25 33.2	127 11	12.4	-80	6 53.4	7 48.9	278 31.2	-20 44.6
22	54 36.6	128 10	56.4	-81	36 58.3	7 48.9	308 36.5	-20 44.5
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	3 38.9	.0	15.9	T _m	18 14	1.9	56.4 15.4		
12	3 38.9	T _{m☉}	11 h 56.3 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	'	°	°
♂	11 31	.1	316	-2.8	♃	19 33	.0	195	-1.8
♂	0 46	.1	117	-1.8	♄	1 29	.0	106	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.7	18 40.7	232 9.8	187 10.1	16 6.7	349 40.8	-21 45.7
2	210 54.7	18 41.9	262 14.7	217 8.9	16 8.6	19 47.4	-21 45.7
4	240 54.7	18 43.1	292 19.7	247 7.8	16 10.4	49 54.0	-21 45.7
6	270 54.7	18 44.3	322 24.6	277 6.6	16 12.3	80 .6	-21 45.6
8	300 54.7	18 45.5	352 29.5	307 5.4	16 14.2	110 7.2	-21 45.6
10	330 54.7	18 46.6	22 34.5	337 4.2	16 16.1	140 13.9	-21 45.6
12	0 54.7	18 47.8	52 39.4	7 3.1	16 17.9	170 20.5	-21 45.5
14	30 54.7	18 49.0	82 44.3	37 1.9	16 19.8	200 27.1	-21 45.5
16	60 54.7	18 50.2	112 49.2	67 .7	16 21.6	230 33.7	-21 45.5
18	90 54.7	18 51.4	142 54.2	96 59.5	16 23.5	260 40.4	-21 45.4
20	120 54.7	18 52.6	172 59.1	126 58.3	16 25.4	290 47.0	-21 45.4
22	150 54.7	18 53.7	203 4.0	156 57.1	16 27.2	320 53.6	-21 45.4
Δ	0	6		-6	9	33	0

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	3 24	20 31	1 4	:::	11 44	3.0	1 42	.8
55	3 54	20 0	0 48	:::	11 56	2.8	1 29	1.0
50	4 15	19 39	0 39	2 43	12 5	2.6	1 18	1.1
45	4 32	19 22	0 34	2 9	12 12	2.5	1 10	1.3
40	4 45	19 8	0 31	1 51	12 18	2.4	1 3	1.4
35	4 57	18 56	0 28	1 39	12 24	2.3	0 57	1.5
30	5 7	18 46	0 26	1 31	12 28	2.2	0 51	1.5
20	5 24	18 29	0 24	1 20	12 36	2.1	0 42	1.7
10	5 39	18 14	0 22	1 15	12 43	2.0	0 33	1.8
0	5 53	17 60	0 22	1 13	12 50	1.8	0 26	1.9
10	6 6	17 46	0 22	1 13	12 56	1.7	0 18	2.0
20	6 21	17 32	0 23	1 16	13 3	1.6	0 9	2.1
30	6 37	17 15	0 25	1 23	13 11	1.5	...	.0
35	6 47	17 5	0 27	1 28	13 15	1.4	...	.0
40	6 58	16 55	0 29	1 34	13 20	1.3	...	.0
45	7 10	16 42	0 32	1 42	13 26	1.2	...	.0
50	7 26	16 26	0 36	1 53	13 33	1.1	...	.0
55	7 45	16 7	0 41	2 8	13 42	.9	...	.0
60	8 12	15 40	0 49	2 30	13 54	.7	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	83 40.2	129	10 40.2	-82	67 3.2	7 48.8	338 41.8	-20 44.5
2	112 44.0	130	10 23.9	-83	97 8.1	7 48.8	8 47.0	-20 44.5
4	141 48.0	131	10 7.4	-83	127 12.9	7 48.7	38 52.3	-20 44.4
6	170 52.3	133	9 50.7	-84	157 17.8	7 48.7	68 57.6	-20 44.4
8	199 56.8	134	9 33.9	-85	187 22.7	7 48.7	99 2.9	-20 44.3
10	229 1.6	135	9 17.0	-85	217 27.5	7 48.6	129 8.2	-20 44.3
12	258 6.5	136	8 59.9	-86	247 32.4	7 48.6	159 13.4	-20 44.3
14	287 11.6	137	8 42.7	-87	277 37.3	7 48.5	189 18.7	-20 44.2
16	316 17.0	138	8 25.3	-87	307 42.1	7 48.5	219 24.0	-20 44.2
18	345 22.5	139	8 7.9	-88	337 47.0	7 48.4	249 29.3	-20 44.1
20	14 28.2	139	7 50.3	-88	7 51.8	7 48.4	279 34.6	-20 44.1
22	43 34.1	140	7 32.6	-89	37 56.7	7 48.3	309 39.9	-20 44.1
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	3 39.0	.0	15.9	T _m 19 0	1.8	55.7	15.2		
12	3 38.8	T _m 11 h 56.4 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	'	°	
♂	11 32	.1	315	-2.8	♄	19 29	.0	195	-1.7
♂	0 41	.1	118	-1.8	♂	1 25	.0	107	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.6	18 54.9	233 9.0	186 56.0	16 29.1	351 .3	-21 45.3
2	210 54.6	18 56.1	263 13.9	216 54.8	16 30.9	21 6.9	-21 45.3
4	240 54.6	18 57.3	293 18.8	246 53.6	16 32.8	51 13.6	-21 45.3
6	270 54.6	18 58.4	323 23.7	276 52.4	16 34.6	81 20.2	-21 45.2
8	300 54.6	18 59.6	353 28.7	306 51.2	16 36.4	111 26.9	-21 45.2
10	330 54.6	19 .8	23 33.6	336 50.0	16 38.3	141 33.5	-21 45.1
12	0 54.5	19 1.9	53 38.5	6 48.8	16 40.1	171 40.2	-21 45.1
14	30 54.5	19 3.1	83 43.5	36 47.6	16 41.9	201 46.8	-21 45.0
16	60 54.5	19 4.2	113 48.4	66 46.4	16 43.8	231 53.5	-21 45.0
18	90 54.5	19 5.4	143 53.3	96 45.2	16 45.6	262 .2	-21 45.0
20	120 54.4	19 6.5	173 58.2	126 44.0	16 47.4	292 6.8	-21 44.9
22	150 54.4	19 7.7	204 3.2	156 42.7	16 49.2	322 13.5	-21 44.9
Δ	0	6		-6	9	33	0

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	3 22	20 33	1 5	:::	12 56	3.0	2 1	.7
55	3 52	20 2	0 48	:::	13 3	2.8	1 52	.9
50	4 14	19 40	0 40	2 45	13 8	2.6	1 46	1.0
45	4 31	19 23	0 34	2 10	13 12	2.5	1 40	1.2
40	4 45	19 9	0 31	1 51	13 16	2.4	1 35	1.3
35	4 56	18 57	0 28	1 39	13 19	2.3	1 31	1.4
30	5 6	18 47	0 26	1 31	13 21	2.2	1 28	1.4
20	5 24	18 29	0 24	1 20	13 26	2.0	1 22	1.6
10	5 39	18 14	0 22	1 15	13 30	1.9	1 16	1.7
0	5 53	17 60	0 22	1 13	13 34	1.8	1 11	1.8
10	6 7	17 46	0 22	1 13	13 38	1.7	1 6	1.9
20	6 21	17 31	0 23	1 16	13 42	1.5	1 0	2.1
30	6 38	17 14	0 25	1 23	13 46	1.4	0 54	2.2
35	6 48	17 5	0 27	1 28	13 49	1.3	0 50	2.3
40	6 59	16 54	0 29	1 34	13 52	1.2	0 46	2.4
45	7 12	16 41	0 32	1 42	13 55	1.1	0 41	2.5
50	7 27	16 25	0 36	1 53	13 59	1.0	0 35	2.6
55	7 47	16 5	0 41	2 9	14 4	.9	0 28	2.8
60	8 14	15 38	0 50	2 31	14 11	.7	0 19	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	72 40.2	141	7 14.9	-89	68 1.6	7 48.3	339 45.1	-20 44.0
2	101 46.4	142	6 57.0	-90	98 6.4	7 48.2	9 50.4	-20 44.0
4	130 52.8	143	6 39.0	-90	128 11.3	7 48.2	39 55.7	-20 44.0
6	159 59.4	144	6 21.0	-91	158 16.1	7 48.1	70 1.0	-20 43.9
8	189 6.1	144	6 2.8	-91	188 21.0	7 48.1	100 6.3	-20 43.9
10	218 13.0	145	5 44.6	-91	218 25.8	7 48.0	130 11.6	-20 43.8
12	247 20.0	146	5 26.3	-92	248 30.7	7 48.0	160 16.9	-20 43.8
14	276 27.1	146	5 7.9	-92	278 35.5	7 47.9	190 22.2	-20 43.8
16	305 34.4	147	4 49.5	-92	308 40.4	7 47.9	220 27.4	-20 43.7
18	334 41.8	148	4 31.0	-93	338 45.2	7 47.8	250 32.7	-20 43.7
20	3 49.3	148	4 12.5	-93	8 50.1	7 47.8	280 38.0	-20 43.6
22	32 57.0	149	3 53.9	-93	38 54.9	7 47.7	310 43.3	-20 43.6
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	3 38.6	.0	15.8	T _m 19 44	1.8	55.0	15.0		
12	3 38.1	T _m 11 h 56.4 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	'	°	
♂	11 33	.1	314	-2.8	♄	19 25	.0	195	-1.7
♂	0 36	.1	118	-1.8	♂	1 21	.0	107	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.4 19 8.8		234 8.1	186 41.5 16 51.0	352 20.2 -21 44.8		
2	210 54.4 19 10.0		264 13.0	216 40.3 16 52.9	22 26.8 -21 44.8		
4	240 54.3 19 11.1		294 17.9	246 39.1 16 54.7	52 33.5 -21 44.7		
6	270 54.3 19 12.3		324 22.9	276 37.9 16 56.5	82 40.2 -21 44.7		
8	300 54.3 19 13.4		354 27.8	306 36.7 16 58.3	112 46.9 -21 44.6		
10	330 54.3 19 14.6		24 32.7	336 35.4 17 .1	142 53.6 -21 44.6		
12	0 54.2 19 15.7		54 37.7	6 34.2 17 1.9	173 .3 -21 44.5		
14	30 54.2 19 16.8		84 42.6	36 33.0 17 3.7	203 7.0 -21 44.5		
16	60 54.2 19 18.0		114 47.5	66 31.8 17 5.5	233 13.7 -21 44.4		
18	90 54.1 19 19.1		144 52.4	96 30.5 17 7.3	263 20.4 -21 44.4		
20	120 54.1 19 20.2		174 57.4	126 29.3 17 9.0	293 27.1 -21 44.3		
22	150 54.0 19 21.3		205 2.3	156 28.1 17 10.8	323 33.8 -21 44.3		
Δ	0	6		-6	9	33	0

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	3 19	20 35	1 6	:::	14 7	1.4	2 18	1.0
55	3 50	20 4	0 48	:::	14 9	1.5	2 14	1.1
50	4 12	19 41	0 40	2 48	14 10	1.5	2 10	1.2
45	4 30	19 24	0 35	2 11	14 11	1.6	2 8	1.3
40	4 44	19 10	0 31	1 52	14 12	1.6	2 6	1.4
35	4 55	18 58	0 28	1 40	14 13	1.6	2 4	1.5
30	5 6	18 47	0 26	1 31	14 14	1.7	2 2	1.5
20	5 23	18 30	0 24	1 21	14 15	1.7	1 60	1.6
10	5 39	18 14	0 22	1 15	14 16	1.7	1 57	1.7
0	5 53	17 60	0 22	1 13	14 17	1.8	1 55	1.8
10	6 7	17 46	0 22	1 13	14 18	1.8	1 52	1.9
20	6 22	17 31	0 23	1 17	14 19	1.8	1 50	1.9
30	6 39	17 14	0 25	1 23	14 20	1.9	1 47	2.0
35	6 48	17 4	0 27	1 28	14 21	1.9	1 45	2.1
40	6 60	16 53	0 29	1 34	14 22	1.9	1 43	2.2
45	7 13	16 40	0 32	1 43	14 22	2.0	1 41	2.2
50	7 29	16 24	0 36	1 54	14 24	2.0	1 38	2.3
55	7 49	16 3	0 41	2 9	14 25	2.1	1 35	2.5
60	8 16	15 36	0 50	2 31	14 27	2.1	1 30	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	62 4.7 149	3 35.3	-93		68 59.8	7 47.7	340 48.6	-20 43.6
2	91 12.5 150	3 16.6	-94		99 4.6	7 47.6	10 53.9	-20 43.5
4	120 20.5 150	2 57.9	-94		129 9.5	7 47.6	40 59.2	-20 43.5
6	149 28.5 151	2 39.2	-94		159 14.3	7 47.5	71 4.5	-20 43.4
8	178 36.6 151	2 20.4	-94		189 19.1	7 47.5	101 9.7	-20 43.4
10	207 44.8 151	2 1.6	-94		219 24.0	7 47.4	131 15.0	-20 43.4
12	236 53.0 152	1 42.8	-94		249 28.8	7 47.4	161 20.3	-20 43.3
14	266 1.4 152	1 24.0	-94		279 33.6	7 47.3	191 25.6	-20 43.3
16	295 9.7 152	1 5.2	-94		309 38.5	7 47.2	221 30.9	-20 43.3
18	324 18.2 152	0 46.4	-94		339 43.3	7 47.2	251 36.2	-20 43.2
20	353 26.7 153	0 27.5	-94		9 48.1	7 47.1	281 41.5	-20 43.2
22	22 35.2 153	0 8.7	7		39 53.0	7 47.1	311 46.8	-20 43.1
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	3 37.6	.1	15.8	T _m	20 27	1.7	54.6 14.9		
12	3 36.8	T _{m☉}	11 h 56.4 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	'	°	°
♂	11 34	.1	313	-2.8	♄	19 21	.0	195	-1.7
♂	0 31	.1	118	-1.8	♃	1 17	.0	107	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 54.0 19 22.5		235 7.2	186 26.8 17 12.6	353 40.5 -21 44.2		
2	210 54.0 19 23.6		265 12.2	216 25.6 17 14.4	23 47.2 -21 44.1		
4	240 53.9 19 24.7		295 17.1	246 24.4 17 16.1	53 53.9 -21 44.1		
6	270 53.9 19 25.8		325 22.0	276 23.1 17 17.9	84 .6 -21 44.0		
8	300 53.9 19 26.9		355 26.9	306 21.9 17 19.7	114 7.3 -21 44.0		
10	330 53.8 19 28.0		25 31.9	336 20.6 17 21.4	144 14.0 -21 43.9		
12	0 53.8 19 29.1		55 36.8	6 19.4 17 23.2	174 20.8 -21 43.8		
14	30 53.7 19 30.2		85 41.7	36 18.1 17 25.0	204 27.5 -21 43.8		
16	60 53.7 19 31.3		115 46.7	66 16.9 17 26.7	234 34.2 -21 43.7		
18	90 53.6 19 32.4		145 51.6	96 15.6 17 28.5	264 40.9 -21 43.7		
20	120 53.6 19 33.5		175 56.5	126 14.4 17 30.2	294 47.7 -21 43.6		
22	150 53.5 19 34.6		206 1.4	156 13.1 17 32.0	324 54.4 -21 43.5		
Δ	0	6		-6	9	34	0

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	3 17	20 38	1 7	:::	14 42	.7	2 41	2.9
55	3 48	20 6	0 49	:::	14 45	.9	2 41	2.7
50	4 11	19 43	0 40	2 50	14 47	1.0	2 40	2.6
45	4 28	19 25	0 35	2 12	14 49	1.1	2 40	2.4
40	4 43	19 11	0 31	1 52	14 51	1.2	2 39	2.3
35	4 55	18 58	0 28	1 40	14 52	1.3	2 39	2.2
30	5 5	18 48	0 26	1 31	14 53	1.4	2 39	2.1
20	5 23	18 30	0 24	1 21	14 55	1.5	2 38	2.0
10	5 39	18 14	0 22	1 15	14 57	1.7	2 38	1.9
0	5 53	17 60	0 22	1 13	14 59	1.8	2 37	1.8
10	6 7	17 46	0 22	1 13	15 1	1.9	2 37	1.6
20	6 22	17 31	0 23	1 17	15 3	2.0	2 36	1.5
30	6 39	17 13	0 25	1 23	15 5	2.1	2 36	1.4
35	6 49	17 3	0 27	1 28	15 6	2.2	2 36	1.3
40	7 0	16 52	0 29	1 34	15 8	2.3	2 35	1.2
45	7 14	16 39	0 32	1 43	15 10	2.4	2 35	1.1
50	7 30	16 22	0 36	1 54	15 12	2.6	2 34	1.0
55	7 50	16 2	0 42	2 9	15 14	2.7	2 34	.8
60	8 18	15 34	0 50	2 32	15 18	2.9	2 33	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♄	Δ	δ _♄	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	51 43.8 153	0 10.1	94		69 57.8	7 47.0	341 52.1	-20 43.1
2	80 52.4 153	0 28.9	94		100 2.6	7 46.9	11 57.4	-20 43.1
4	110 1.0 153	0 47.7	94		130 7.5	7 46.9	42 2.7	-20 43.0
6	139 9.6 153	1 6.4	94		160 12.3	7 46.8	72 7.9	-20 43.0
8	168 18.3 153	1 25.2	94		190 17.1	7 46.8	102 13.2	-20 42.9
10	197 27.0 153	1 43.9	93		220 21.9	7 46.7	132 18.5	-20 42.9
12	226 35.6 153	2 2.6	93		250 26.8	7 46.6	162 23.8	-20 42.9
14	255 44.3 153	2 21.2	93		280 31.6	7 46.6	192 29.1	-20 42.8
16	284 53.0 153	2 39.8	93		310 36.4	7 46.5	222 34.4	-20 42.8
18	314 1.6 153	2 58.3	92		340 41.2	7 46.5	252 39.7	-20 42.7
20	343 10.3 153	3 16.8	92		10 46.0	7 46.4	282 45.0	-20 42.7
22	12 18.9 153	3 35.2	92		40 50.9	7 46.3	312 50.3	-20 42.7
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	3 36.1	.1	15.8	T _m	21 9	1.8	54.2 14.8		
12	3 35.0	T _{m☉}	11 h 56.4 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	'	°	°
♂	11 35	.1	311	-2.8	♄	19 17	.0	195	-1.7
♂	0 25	.1	119	-1.8	♃	1 12	.0	107	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 53.5	19 35.7	236 6.4	186 11.9	17 33.7	355 1.1	-21 43.5
2	210 53.4	19 36.8	266 11.3	216 10.6	17 35.4	25 7.9	-21 43.4
4	240 53.4	19 37.9	296 16.2	246 9.4	17 37.2	55 14.6	-21 43.3
6	270 53.3	19 39.0	326 21.2	276 8.1	17 38.9	85 21.4	-21 43.3
8	300 53.3	19 40.1	356 26.1	306 6.8	17 40.6	115 28.1	-21 43.2
10	330 53.2	19 41.2	26 31.0	336 5.6	17 42.4	145 34.8	-21 43.1
12	0 53.2	19 42.2	56 35.9	6 4.3	17 44.1	175 41.6	-21 43.1
14	30 53.1	19 43.3	86 40.9	36 3.0	17 45.8	205 48.3	-21 43.0
16	60 53.1	19 44.4	116 45.8	66 1.7	17 47.5	235 55.1	-21 42.9
18	90 53.0	19 45.5	146 50.7	96 .5	17 49.2	266 1.8	-21 42.9
20	120 53.0	19 46.5	176 55.7	125 59.2	17 51.0	296 8.6	-21 42.8
22	150 52.9	19 47.6	207 .6	155 57.9	17 52.7	326 15.4	-21 42.7
Δ	0	5		-6	9	34	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 15	20 40	1 8	: : :	14 58	.7	3 51	2.9
55	3 47	20 7	0 49	: : :	15 5	.9	3 46	2.7
50	4 10	19 44	0 40	2 53	15 11	1.1	3 41	2.5
45	4 27	19 26	0 35	2 12	15 16	1.2	3 38	2.4
40	4 42	19 12	0 31	1 53	15 20	1.3	3 35	2.3
35	4 54	18 59	0 28	1 40	15 24	1.4	3 32	2.2
30	5 5	18 49	0 26	1 32	15 27	1.4	3 30	2.1
20	5 23	18 30	0 24	1 21	15 32	1.6	3 26	2.0
10	5 38	18 15	0 22	1 15	15 37	1.7	3 23	1.9
0	5 53	18 0	0 22	1 13	15 42	1.8	3 20	1.8
10	6 7	17 46	0 22	1 14	15 46	1.9	3 16	1.7
20	6 23	17 30	0 23	1 17	15 51	2.0	3 13	1.5
30	6 40	17 13	0 26	1 23	15 57	2.2	3 9	1.4
35	6 50	17 3	0 27	1 28	16 0	2.2	3 7	1.3
40	7 1	16 51	0 29	1 35	16 4	2.3	3 4	1.2
45	7 15	16 38	0 32	1 43	16 8	2.4	3 1	1.1
50	7 31	16 21	0 36	1 54	16 13	2.5	2 58	1.0
55	7 52	16 0	0 42	2 10	16 19	2.7	2 54	.9
60	8 21	15 32	0 51	2 33	16 28	2.9	2 48	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	41 27.5	153	3 53.6	92	70 55.7	7 46.3	342 55.6	-20 42.6
2	70 36.1	153	4 11.9	91	101 .5	7 46.2	13 .9	-20 42.6
4	99 44.6	152	4 30.2	91	131 5.3	7 46.1	43 6.2	-20 42.6
6	128 53.1	152	4 48.3	90	161 10.1	7 46.1	73 11.5	-20 42.5
8	158 1.5	152	5 6.4	90	191 14.9	7 46.0	103 16.8	-20 42.5
10	187 9.9	152	5 24.4	90	221 19.7	7 45.9	133 22.1	-20 42.4
12	216 18.3	151	5 42.4	89	251 24.5	7 45.9	163 27.4	-20 42.4
14	245 26.6	151	6 .2	89	281 29.4	7 45.8	193 32.7	-20 42.4
16	274 34.8	151	6 17.9	88	311 34.2	7 45.7	223 38.0	-20 42.3
18	303 42.9	150	6 35.6	88	341 39.0	7 45.7	253 43.3	-20 42.3
20	332 51.0	150	6 53.1	87	11 43.8	7 45.6	283 48.6	-20 42.2
22	1 59.0	150	7 10.5	87	41 48.6	7 45.5	313 53.9	-20 42.2
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	3 34.0	-.1	15.8	T _m	21 52	1.8	54.1 14.7
12	3 32.7			T _{m☉}	11 h 56.5 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	'	°	
♃	11 36	.1	310	-2.8	♄	19 13	.0	195	-1.7
♅	0 20	.1	119	-1.8	♁	1 8	.0	107	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 52.8	19 48.7	237 5.5	185 56.6	17 54.4	356 22.1	-21 42.7
2	210 52.8	19 49.7	267 10.4	215 55.3	17 56.1	26 28.9	-21 42.6
4	240 52.7	19 50.8	297 15.4	245 54.1	17 57.8	56 35.6	-21 42.5
6	270 52.7	19 51.9	327 20.3	275 52.8	17 59.5	86 42.4	-21 42.4
8	300 52.6	19 52.9	357 25.2	305 51.5	18 1.1	116 49.2	-21 42.4
10	330 52.5	19 54.0	27 30.2	335 50.2	18 2.8	146 56.0	-21 42.3
12	0 52.5	19 55.0	57 35.1	5 48.9	18 4.5	177 2.7	-21 42.2
14	30 52.4	19 56.1	87 40.0	35 47.6	18 6.2	207 9.5	-21 42.1
16	60 52.3	19 57.1	117 44.9	65 46.3	18 7.9	237 16.3	-21 42.0
18	90 52.3	19 58.2	147 49.9	95 45.0	18 9.6	267 23.0	-21 42.0
20	120 52.2	19 59.2	177 54.8	125 43.7	18 11.2	297 29.8	-21 41.9
22	150 52.1	20 .2	207 59.7	155 42.4	18 12.9	327 36.6	-21 41.8
Δ	0	5		-6	8	34	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 42	1 9	: : :	15 15	.8	5 1	2.9
55	3 45	20 9	0 50	: : :	15 27	1.0	4 51	2.7
50	4 8	19 45	0 40	2 55	15 37	1.2	4 42	2.5
45	4 26	19 27	0 35	2 13	15 44	1.3	4 36	2.4
40	4 41	19 12	0 31	1 53	15 51	1.4	4 30	2.3
35	4 53	18 60	0 28	1 41	15 56	1.5	4 26	2.2
30	5 4	18 49	0 26	1 32	16 1	1.5	4 22	2.2
20	5 22	18 31	0 24	1 21	16 10	1.6	4 14	2.0
10	5 38	18 15	0 22	1 16	16 17	1.7	4 8	1.9
0	5 53	18 0	0 22	1 13	16 25	1.8	4 2	1.8
10	6 7	17 45	0 22	1 14	16 32	1.9	3 56	1.7
20	6 23	17 30	0 23	1 17	16 39	2.0	3 50	1.6
30	6 40	17 12	0 26	1 23	16 48	2.2	3 43	1.5
35	6 51	17 2	0 27	1 28	16 53	2.2	3 39	1.4
40	7 2	16 50	0 29	1 35	16 59	2.3	3 34	1.3
45	7 16	16 37	0 32	1 43	17 6	2.4	3 29	1.2
50	7 33	16 20	0 36	1 54	17 14	2.5	3 23	1.1
55	7 54	15 59	0 42	2 10	17 24	2.7	3 15	1.0
60	8 23	15 30	0 51	2 33	17 38	2.9	3 5	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	31 6.9	149	7 27.8	86	71 53.4	7 45.4	343 59.2	-20 42.2
2	60 14.8	149	7 45.0	85	101 58.2	7 45.4	14 4.5	-20 42.1
4	89 22.5	148	8 2.1	85	132 3.0	7 45.3	44 9.8	-20 42.1
6	118 30.2	148	8 19.0	84	162 7.8	7 45.2	74 15.0	-20 42.0
8	147 37.7	147	8 35.9	83	192 12.6	7 45.2	104 20.3	-20 42.0
10	176 45.2	147	8 52.5	83	222 17.4	7 45.1	134 25.6	-20 42.0
12	205 52.5	146	9 9.1	82	252 22.2	7 45.0	164 30.9	-20 41.9
14	234 59.8	146	9 25.5	81	282 27.0	7 44.9	194 36.2	-20 41.9
16	264 6.9	145	9 41.7	80	312 31.8	7 44.9	224 41.5	-20 41.8
18	293 14.0	145	9 57.8	80	342 36.5	7 44.8	254 46.8	-20 41.8
20	322 20.9	144	10 13.7	79	12 41.3	7 44.7	284 52.1	-20 41.8
22	351 27.6	143	10 29.5	78	42 46.1	7 44.6	314 57.4	-20 41.7
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	3 31.4	-.1	15.8	T _m	22 35	1.9	54.0 14.7
12	3 29.8			T _{m☉}	11 h 56.5 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	'	°	
♃	11 37	.1	309	-2.8	♄	19 9	.0	195	-1.7
♅	0 14	.1	119	-1.8	♁	1 4	.0	107	.3

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS					
	S _☉		δ _☉		S _♈		S _♀	δ _♀	S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	52.1	20	1.3	238	4.6	185	41.1	18	14.6	357	43.4	-21	41.7
2	210	52.0	20	2.3	268	9.6	215	39.8	18	16.2	27	50.2	-21	41.7
4	240	51.9	20	3.3	298	14.5	245	38.5	18	17.9	57	57.0	-21	41.6
6	270	51.8	20	4.4	328	19.4	275	37.2	18	19.5	88	3.7	-21	41.5
8	300	51.8	20	5.4	358	24.4	305	35.9	18	21.2	118	10.5	-21	41.4
10	330	51.7	20	6.4	28	29.3	335	34.6	18	22.8	148	17.3	-21	41.3
12	0	51.6	20	7.4	58	34.2	5	33.2	18	24.5	178	24.1	-21	41.2
14	30	51.5	20	8.5	88	39.1	35	31.9	18	26.1	208	30.9	-21	41.2
16	60	51.5	20	9.5	118	44.1	65	30.6	18	27.8	238	37.7	-21	41.1
18	90	51.4	20	10.5	148	49.0	95	29.3	18	29.4	268	44.5	-21	41.0
20	120	51.3	20	11.5	178	53.9	125	28.0	18	31.0	298	51.3	-21	40.9
22	150	51.2	20	12.5	208	58.9	155	26.6	18	32.6	328	58.1	-21	40.8
Δ		0		5				-7		8		34		0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	20	34.3	143	10	45.1	77	72	50.9	7	44.6	345	2.7	-20	41.7
2	49	40.8	142	11	.5	76	102	55.7	7	44.5	15	8.1	-20	41.6
4	78	47.2	141	11	15.8	75	133	.5	7	44.4	45	13.4	-20	41.6
6	107	53.5	141	11	30.8	74	163	5.3	7	44.3	75	18.7	-20	41.6
8	136	59.6	140	11	45.7	73	193	10.1	7	44.3	105	24.0	-20	41.5
10	166	5.6	139	12	.4	72	223	14.8	7	44.2	135	29.3	-20	41.5
12	195	11.5	139	12	14.9	71	253	19.6	7	44.1	165	34.6	-20	41.4
14	224	17.2	138	12	29.2	70	283	24.4	7	44.0	195	39.9	-20	41.4
16	253	22.8	137	12	43.3	69	313	29.2	7	43.9	225	45.2	-20	41.4
18	282	28.2	136	12	57.1	68	343	34.0	7	43.9	255	50.5	-20	41.3
20	311	33.5	136	13	10.8	67	373	38.7	7	43.8	285	55.8	-20	41.3
22	340	38.7	135	13	24.2	66	403	43.5	7	43.7	316	1.1	-20	41.2
Δ								24		0		27		0

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	3 10	20 44	1 10	: : :	15 35	1.0	6 11	2.9
55	3 44	20 11	0 50	: : :	15 52	1.2	5 55	2.7
50	4 7	19 47	0 41	2 58	16 5	1.3	5 43	2.5
45	4 25	19 28	0 35	2 14	16 15	1.4	5 34	2.4
40	4 40	19 13	0 31	1 54	16 24	1.5	5 26	2.3
35	4 53	19 1	0 29	1 41	16 31	1.6	5 19	2.2
30	5 4	18 50	0 27	1 32	16 38	1.6	5 13	2.2
20	5 22	18 31	0 24	1 21	16 49	1.7	5 3	2.1
10	5 38	18 15	0 23	1 16	16 59	1.8	4 54	2.0
0	5 53	18 0	0 22	1 13	17 9	1.9	4 46	1.9
10	6 8	17 45	0 22	1 14	17 18	2.0	4 37	1.8
20	6 23	17 30	0 23	1 17	17 29	2.1	4 29	1.7
30	6 41	17 12	0 26	1 23	17 40	2.2	4 18	1.6
35	6 51	17 1	0 27	1 28	17 47	2.2	4 13	1.5
40	7 3	16 50	0 29	1 35	17 55	2.3	4 6	1.4
45	7 17	16 36	0 32	1 43	18 4	2.4	3 58	1.3
50	7 34	16 19	0 36	1 55	18 15	2.5	3 49	1.2
55	7 55	15 57	0 42	2 11	18 29	2.6	3 38	1.1
60	8 25	15 28	0 51	2 34	18 47	2.8	3 23	.9

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	s	h min	min	'	'	
00	3 28.2	-.2	15.8	T _m	23 20	1.9	54.1	14.7
12	3 26.4	T _{m☉}	11 h 56.6 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	'	°	
♂	11 38	.1	308	-2.8	♄	19 6	.0	195	-1.7
♂	0 9	.1	120	-1.8	♅	0 60	.0	107	.3

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS					
	S _☉		δ _☉		S _♈		S _♀	δ _♀	S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	51.1	20	13.5	239	3.8	185	25.3	18	34.3	359	4.9	-21	40.7
2	210	51.1	20	14.5	269	8.7	215	24.0	18	35.9	29	11.7	-21	40.6
4	240	51.0	20	15.5	299	13.6	245	22.6	18	37.5	59	18.5	-21	40.5
6	270	50.9	20	16.5	329	18.6	275	21.3	18	39.1	89	25.3	-21	40.5
8	300	50.8	20	17.5	359	23.5	305	20.0	18	40.7	119	32.1	-21	40.4
10	330	50.7	20	18.5	29	28.4	335	18.6	18	42.3	149	38.9	-21	40.3
12	0	50.6	20	19.5	59	33.4	5	17.3	18	43.9	179	45.7	-21	40.2
14	30	50.5	20	20.5	89	38.3	35	16.0	18	45.5	209	52.5	-21	40.1
16	60	50.5	20	21.5	119	43.2	65	14.6	18	47.1	239	59.3	-21	40.0
18	90	50.4	20	22.5	149	48.1	95	13.3	18	48.7	270	6.1	-21	39.9
20	120	50.3	20	23.5	179	53.1	125	11.9	18	50.3	300	12.9	-21	39.8
22	150	50.2	20	24.5	209	58.0	155	10.6	18	51.9	330	19.8	-21	39.7
Δ		0		5				-7		8		34		0

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	9	43.6	134	13	37.5	65	73	48.3	7	43.6	346	6.4	-20	41.2
2	38	48.5	133	13	50.4	64	103	53.1	7	43.5	16	11.7	-20	41.2
4	67	53.2	133	14	3.2	63	133	57.8	7	43.5	46	17.0	-20	41.1
6	96	57.7	132	14	15.7	61	164	2.6	7	43.4	76	22.3	-20	41.1
8	126	2.1	131	14	28.0	60	194	7.4	7	43.3	106	27.6	-20	41.0
10	155	6.3	130	14	40.0	59	224	12.1	7	43.2	136	32.9	-20	41.0
12	184	10.4	130	14	51.8	58	254	16.9	7	43.1	166	38.2	-20	41.0
14	213	14.3	129	15	3.3	56	284	21.7	7	43.0	196	43.5	-20	40.9
16	242	18.0	128	15	14.5	55	314	26.5	7	42.9	226	48.8	-20	40.9
18	271	21.6	127	15	25.5	54	344	31.2	7	42.9	256	54.1	-20	40.8
20	300	25.0	126	15	36.2	52	374	36.0	7	42.8	286	59.4	-20	40.8
22	329	28.3	126	15	46.7	51	404	40.7	7	42.7	317	4.7	-20	40.8
Δ								24		0		27		0

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	3 8	20 46	1 11	: : :	15 59	1.3	7 19	2.8
55	3 42	20 12	0 50	: : :	16 20	1.4	6 59	2.6
50	4 6	19 48	0 41	3 1	16 36	1.5	6 44	2.5
45	4 25	19 29	0 35	2 15	16 49	1.6	6 32	2.4
40	4 40	19 14	0 31	1 54	16 60	1.7	6 22	2.3
35	4 52	19 1	0 29	1 41	17 9	1.7	6 13	2.2
30	5 3	18 50	0 27	1 32	17 17	1.8	6 6	2.2
20	5 22	18 32	0 24	1 21	17 31	1.8	5 53	2.1
10	5 38	18 15	0 23	1 16	17 43	1.9	5 41	2.0
0	5 53	18 0	0 22	1 13	17 55	2.0	5 31	1.9
10	6 8	17 45	0 22	1 14	18 6	2.0	5 20	1.9
20	6 24	17 29	0 23	1 17	18 19	2.1	5 9	1.8
30	6 42	17 11	0 26	1 24	18 33	2.2	4 56	1.7
35	6 52	17 1	0 27	1 29	18 41	2.2	4 49	1.6
40	7 4	16 49	0 30	1 35	18 50	2.3	4 40	1.6
45	7 18	16 35	0 32	1 44	19 2	2.3	4 31	1.5
50	7 35	16 18	0 36	1 55	19 15	2.4	4 19	1.4
55	7 57	15 56	0 42	2 11	19 32	2.5	4 4	1.3
60	8 27	15 26	0 52	2 34	19 55	2.7	3 45	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	3 24.6	-.2	15.8	T _m	...	1.0	54.2	14.8
12	3 22.4	T _{m☉}	11 h 56.6 min	Starost	14.2 d	Faza</		

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}		S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	180	50.1	20	25.5	240	2.9	185	9.2	18	53.5	0	26.6 -21 39.6
2	210	50.0	20	26.4	270	7.9	215	7.9	18	55.1	30	33.4 -21 39.5
4	240	49.9	20	27.4	300	12.8	245	6.5	18	56.7	60	40.2 -21 39.4
6	270	49.8	20	28.4	330	17.7	275	5.2	18	58.2	90	47.0 -21 39.3
8	300	49.7	20	29.3	0	22.6	305	3.8	18	59.8	120	53.8 -21 39.2
10	330	49.6	20	30.3	30	27.6	335	2.4	19	1.4	151	.7 -21 39.1
12	0	49.5	20	31.3	60	32.5	5	1.1	19	2.9	181	7.5 -21 39.0
14	30	49.4	20	32.2	90	37.4	34	59.7	19	4.5	211	14.3 -21 38.9
16	60	49.3	20	33.2	120	42.4	64	58.3	19	6.0	241	21.1 -21 38.8
18	90	49.2	20	34.2	150	47.3	94	57.0	19	7.6	271	27.9 -21 38.7
20	120	49.1	20	35.1	180	52.2	124	55.6	19	9.1	301	34.8 -21 38.6
22	150	49.0	20	36.1	210	57.1	154	54.2	19	10.7	331	41.6 -21 38.5
Δ	0	5					-7	8			34	0

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAD.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
N	h min	h min	h min	h min	h min	min	h min	min
60	3 6	20 49	1 12	:::	16 29	1.6	8 26	2.6
55	3 41	20 14	0 51	:::	16 54	1.7	8 1	2.4
50	4 5	19 49	0 41	3 4	17 13	1.8	7 43	2.4
45	4 24	19 30	0 35	2 16	17 28	1.8	7 29	2.3
40	4 39	19 15	0 31	1 55	17 40	1.9	7 17	2.2
35	4 52	19 2	0 29	1 42	17 50	1.9	7 7	2.2
30	5 3	18 51	0 27	1 33	17 60	1.9	6 58	2.2
20	5 22	18 32	0 24	1 22	18 15	2.0	6 43	2.1
10	5 38	18 16	0 23	1 16	18 29	2.0	6 30	2.1
0	5 53	18 0	0 22	1 14	18 42	2.0	6 18	2.0
10	6 8	17 45	0 22	1 14	18 55	2.1	6 5	2.0
20	6 24	17 29	0 24	1 17	19 9	2.1	5 52	1.9
30	6 42	17 11	0 26	1 24	19 25	2.2	5 37	1.8
35	6 53	17 0	0 27	1 29	19 35	2.2	5 28	1.8
40	7 5	16 48	0 30	1 35	19 45	2.2	5 18	1.8
45	7 19	16 34	0 33	1 44	19 58	2.2	5 7	1.7
50	7 36	16 17	0 37	1 55	20 13	2.3	4 53	1.6
55	7 58	15 54	0 42	2 11	20 33	2.4	4 35	1.5
60	8 29	15 24	0 52	2 35	20 59	2.4	4 11	1.4
S								

UT	MESEC				JUPITER		SATURN				
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jmath}	δ_{\jmath}	S_{h}	δ_{h}			
h	°	'	°	'	°	'	°	'			
0	358	31.5	125	15 56.8	49	74	45.5	7 42.6	347	10.0	-20 40.7
2	27	34.4	124	16 6.7	48	104	50.3	7 42.5	17	15.3	-20 40.7
4	56	37.2	123	16 16.3	46	134	55.0	7 42.4	47	20.6	-20 40.6
6	85	39.9	123	16 25.6	45	164	59.8	7 42.3	77	26.0	-20 40.6
8	114	42.4	122	16 34.6	43	195	4.5	7 42.2	107	31.3	-20 40.6
10	143	44.8	121	16 43.3	42	225	9.3	7 42.2	137	36.6	-20 40.5
12	172	47.0	120	16 51.7	40	255	14.0	7 42.1	167	41.9	-20 40.5
14	201	49.0	120	16 59.7	39	285	18.8	7 42.0	197	47.2	-20 40.4
16	230	50.9	119	17 7.5	37	315	23.6	7 41.9	227	52.5	-20 40.4
18	259	52.7	118	17 15.0	36	345	28.3	7 41.8	257	57.8	-20 40.4
20	288	54.3	117	17 22.1	34	375	33.1	7 41.7	288	3.1	-20 40.3
22	317	55.8	117	17 28.9	32	405	37.8	7 41.6	318	8.4	-20 40.3
Δ						24	0		27	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 20.3	- .2	15.8	T_m	0 6	2.0	54.5 14.8		
12	3 18.0	$T_{m\odot}$	11 h 56.7 min	Starost	15.2 d	Faza	☉		
PLANETE									
Pl.	T_m	π	$360 - \alpha$	Vel.	Pl.	T_m	π	$360 - \alpha$	Vel.
	h min	'	°			h min	'	°	
♀	11 40	.1	305	-2.8	♃	18 58	.0	195	-1.7
♁	23 53	.1	120	-1.9	♄	0 51	.0	107	.3

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}		S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	180	48.9	20	37.0	241	2.1	184	52.9	19	12.2	1	48.4 -21 38.4
2	210	48.8	20	38.0	271	7.0	214	51.5	19	13.8	31	55.2 -21 38.3
4	240	48.7	20	38.9	301	11.9	244	50.1	19	15.3	62	2.1 -21 38.2
6	270	48.6	20	39.9	331	16.9	274	48.7	19	16.8	92	8.9 -21 38.1
8	300	48.5	20	40.8	1	21.8	304	47.3	19	18.4	122	15.7 -21 38.0
10	330	48.4	20	41.7	31	26.7	334	46.0	19	19.9	152	22.5 -21 37.9
12	0	48.3	20	42.7	61	31.6	4	44.6	19	21.4	182	29.4 -21 37.8
14	30	48.2	20	43.6	91	36.6	34	43.2	19	22.9	212	36.2 -21 37.7
16	60	48.0	20	44.5	121	41.5	64	41.8	19	24.4	242	43.0 -21 37.6
18	90	47.9	20	45.5	151	46.4	94	40.4	19	25.9	272	49.8 -21 37.5
20	120	47.8	20	46.4	181	51.3	124	39.0	19	27.4	302	56.7 -21 37.4
22	150	47.7	20	47.3	211	56.3	154	37.6	19	29.0	333	3.5 -21 37.3
Δ	-1	5					-7	8			34	1

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

UT	MESEC				JUPITER		SATURN				
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{\jmath}	δ_{\jmath}	S_{h}	δ_{h}			
h	°	'	°	'	°	'	°	'			
0	346	57.1	116	17 35.4	31	75	42.6	7 41.5	348	13.7	-20 40.2
2	15	58.3	115	17 41.5	29	105	47.3	7 41.4	18	19.0	-20 40.2
4	44	59.4	115	17 47.3	27	135	52.0	7 41.3	48	24.3	-20 40.2
6	74	.3	114	17 52.8	26	165	56.8	7 41.2	78	29.6	-20 40.1
8	103	1.2	113	17 57.9	24	196	1.5	7 41.1	108	35.0	-20 40.1
10	132	1.8	113	18 2.7	22	226	6.3	7 41.0	138	40.3	-20 40.0
12	161	2.4	112	18 7.2	20	256	11.0	7 40.9	168	45.6	-20 40.0
14	190	2.8	112	18 11.3	19	286	15.8	7 40.9	198	50.9	-20 40.0
16	219	3.1	111	18 15.0	17	316	20.5	7 40.8	228	56.2	-20 39.9
18	248	3.3	110	18 18.4	15	346	25.2	7 40.7	259	1.5	-20 39.9
20	277	3.4	110	18 21.4	13	376	30.0	7 40.6	289	6.8	-20 39.8
22	306	3.4	109	18 24.0	11	406	34.7	7 40.5	319	12.1	-20 39.8
Δ						24	0		27	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 15.6	- .2	15.8	T_m	0 54	2.0	54.8 14.9		
12	3 13.0	$T_{m\odot}$	11 h 56.8 min	Starost	16.2 d	Faza	☉		
PLANETE									
Pl.	T_m	π	$360 - \alpha$	Vel.	Pl.	T_m	π	$360 - \alpha$	Vel.
	h min	'	°			h min	'	°	
♀	11 41	.1	304	-2.8	♃	18 54	.0	195	-1.7
♁	23 47	.1							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	47.6	20	48.2	242	1.2	184	36.2	19	30.4	3	10.3	-21	37.1
2	210	47.5	20	49.1	272	6.1	214	34.8	19	31.9	33	17.2	-21	37.0
4	240	47.4	20	50.1	302	11.1	244	33.4	19	33.4	63	24.0	-21	36.9
6	270	47.2	20	51.0	332	16.0	274	32.0	19	34.9	93	30.8	-21	36.8
8	300	47.1	20	51.9	2	20.9	304	30.6	19	36.4	123	37.7	-21	36.7
10	330	47.0	20	52.8	32	25.8	334	29.2	19	37.9	153	44.5	-21	36.6
12	0	46.9	20	53.7	62	30.8	4	27.8	19	39.4	183	51.3	-21	36.5
14	30	46.8	20	54.6	92	35.7	34	26.4	19	40.8	213	58.1	-21	36.4
16	60	46.6	20	55.5	122	40.6	64	25.0	19	42.3	244	5.0	-21	36.3
18	90	46.5	20	56.4	152	45.6	94	23.6	19	43.8	274	11.8	-21	36.1
20	120	46.4	20	57.3	182	50.5	124	22.1	19	45.2	304	18.6	-21	36.0
22	150	46.3	20	58.2	212	55.4	154	20.7	19	46.7	334	25.5	-21	35.9
Δ		-1		5				-7		7		34		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 2	20 53	1 14	:	17 55	2.4	10 22	1.9
55	3 38	20 17	0 52	:	18 24	2.4	9 53	2.0
50	4 3	19 52	0 41	:	18 44	2.3	9 32	2.0
45	4 22	19 32	0 36	2 18	19 1	2.3	9 16	2.0
40	4 37	19 17	0 32	1 56	19 14	2.2	9 3	2.0
35	4 50	19 4	0 29	1 42	19 25	2.2	8 51	2.1
30	5 2	18 52	0 27	1 33	19 35	2.2	8 41	2.1
20	5 21	18 33	0 24	1 22	19 52	2.2	8 24	2.1
10	5 38	18 16	0 23	1 16	20 7	2.1	8 9	2.1
0	5 53	18 0	0 22	1 14	20 21	2.1	7 55	2.1
10	6 9	17 45	0 22	1 14	20 35	2.1	7 41	2.1
20	6 25	17 29	0 24	1 17	20 50	2.1	7 26	2.1
30	6 43	17 10	0 26	1 24	21 7	2.0	7 9	2.1
35	6 54	16 59	0 27	1 29	21 17	2.0	6 59	2.1
40	7 7	16 47	0 30	1 35	21 29	2.0	6 48	2.2
45	7 21	16 32	0 33	1 44	21 42	1.9	6 34	2.2
50	7 39	16 15	0 37	1 56	21 59	1.9	6 18	2.2
55	8 1	15 52	0 43	2 12	22 20	1.8	5 57	2.2
60	8 33	15 20	0 52	2 36	22 48	1.7	5 28	2.2
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	335	3.3	109	18	26.3	10	76	39.4	7	40.4	349	17.4	-20	39.8
2	4	3.1	108	18	28.3	8	106	44.2	7	40.3	19	22.7	-20	39.7
4	33	2.7	108	18	29.8	6	136	48.9	7	40.2	49	28.1	-20	39.7
6	62	2.3	107	18	31.0	4	166	53.6	7	40.1	79	33.4	-20	39.6
8	91	1.8	107	18	31.8	2	196	58.4	7	40.0	109	38.7	-20	39.6
10	120	1.2	107	18	32.3	0	227	3.1	7	39.9	139	44.0	-20	39.6
12	149	.6	106	18	32.3	-2	257	7.8	7	39.8	169	49.3	-20	39.5
14	177	59.8	106	18	32.0	-3	287	12.6	7	39.7	199	54.6	-20	39.5
16	206	59.0	106	18	31.3	-5	317	17.3	7	39.6	229	59.9	-20	39.4
18	235	58.1	105	18	30.3	-7	347	22.0	7	39.5	260	5.2	-20	39.4
20	264	57.2	105	18	28.8	-9	17	26.7	7	39.4	290	10.6	-20	39.4
22	293	56.1	105	18	27.0	-11	47	31.5	7	39.3	320	15.9	-20	39.3
Δ								24		-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	3	10.4	-2	15.8	T _m	1 43	2.1	55.2	15.0
12	3	7.5	T _{m☉}	11 h 56.9 min	Starost	17.2 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	11 42	.1	303	-2.8	♃	18 50	.0	195	-1.7
♂	23 42	.1	121	-1.9	♄	0 43	.0	107	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	46.1	20	59.1	243	.3	184	19.3	19	48.1	4	32.3	-21	35.8
2	210	46.0	21	.0	273	5.3	214	17.9	19	49.6	34	39.1	-21	35.7
4	240	45.9	21	.9	303	10.2	244	16.5	19	51.0	64	46.0	-21	35.6
6	270	45.8	21	1.7	333	15.1	274	15.0	19	52.5	94	52.8	-21	35.5
8	300	45.6	21	2.6	3	20.1	304	13.6	19	53.9	124	59.6	-21	35.3
10	330	45.5	21	3.5	33	25.0	334	12.2	19	55.4	155	6.5	-21	35.2
12	0	45.4	21	4.4	63	29.9	4	10.7	19	56.8	185	13.3	-21	35.1
14	30	45.2	21	5.2	93	34.8	34	9.3	19	58.2	215	20.1	-21	35.0
16	60	45.1	21	6.1	123	39.8	64	7.9	19	59.7	245	27.0	-21	34.9
18	90	45.0	21	7.0	153	44.7	94	6.4	20	1.1	275	33.8	-21	34.7
20	120	44.9	21	7.8	183	49.6	124	5.0	20	2.5	305	40.6	-21	34.6
22	150	44.7	21	8.7	213	54.6	154	3.5	20	3.9	335	47.5	-21	34.5
Δ		-1		4				-7		7		34		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 0	20 55	1 16	:	18 53	2.8	11 8	1.6
55	3 36	20 19	0 52	:	19 20	2.6	10 41	1.7
50	4 2	19 53	0 42	3 14	19 40	2.5	10 20	1.8
45	4 21	19 33	0 36	2 19	19 55	2.5	10 5	1.8
40	4 37	19 18	0 32	1 56	20 8	2.4	9 52	1.9
35	4 50	19 4	0 29	1 43	20 19	2.4	9 41	1.9
30	5 1	18 53	0 27	1 33	20 28	2.3	9 31	2.0
20	5 21	18 33	0 24	1 22	20 45	2.2	9 14	2.0
10	5 38	18 16	0 23	1 16	20 59	2.2	8 59	2.1
0	5 53	18 1	0 22	1 14	21 12	2.1	8 46	2.1
10	6 9	17 45	0 22	1 14	21 25	2.1	8 32	2.2
20	6 25	17 29	0 24	1 17	21 40	2.0	8 17	2.2
30	6 44	17 10	0 26	1 24	21 56	1.9	8 0	2.3
35	6 55	16 59	0 28	1 29	22 5	1.9	7 50	2.3
40	7 7	16 46	0 30	1 36	22 16	1.8	7 39	2.3
45	7 22	16 32	0 33	1 44	22 29	1.8	7 26	2.4
50	7 40	16 14	0 37	1 56	22 44	1.7	7 10	2.4
55	8 3	15 51	0 43	2 12	23 4	1.6	6 49	2.5
60	8 35	15 19	0 53	2 37	23 30	2.1	6 21	2.6
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	322	55.1	104	18	24.8	-13	77	36.2	7	39.1	350	21.2	-20	39.3
2	351	53.9	104	18	22.2	-15	107	40.9	7	39.0	20	26.5	-20	39.2
4	20	52.7	104	18	19.3	-17	137	45.6	7	38.9	50	31.8	-20	39.2
6	49	51.5	104	18	15.9	-19	167	50.3	7	38.8	80	37.1	-20	39.2
8	78	50.2	103	18	12.2	-21	197	55.1	7	38.7	110	42.4	-20	39.1
10	107	48.9	103	18	8.1	-22	227	59.8	7	38.6	140	47.7	-20	39.1
12	136	47.6	103	18	3.6	-24	258	4.5	7	38.5	170	53.1	-20	39.0
14	165	46.2	103	17	58.7	-26	288	9.2	7	38.4	200	58.4	-20	39.0
16	194	44.8	103	17	53.4	-28	318	13.9	7	38.3	231	3.7	-20	39.0
18	223	43.4	103	17	47.8	-30	348	18.6	7	38.2	261	9.0	-20	38.9
20	252	41.9	103	17	41.7	-32	18	23.3	7	38.1	291	14.3	-20	38.9
22	281	40.4	103	17	35.3	-34	48	28.0	7	38.0	321	19.6	-20	38.8
Δ								24		-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	3	4.6	-.3	15.8	T _m	2 34	2.1	55.6	15.2
12	3	1.5	T _{m☉}	11 h 57.0 min	Starost	18.2 d	Faza	☉	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	44.6	21	9.6	243	59.5	184	2.1	20	5.3	5	54.3	-21	34.4	
2	210	44.4	21	10.4	274	4.4	214	.7	20	6.7	36	1.1	-21	34.3	
4	240	44.3	21	11.3	304	9.3	243	59.2	20	8.1	66	7.9	-21	34.1	
6	270	44.2	21	12.1	334	14.3	273	57.8	20	9.5	96	14.8	-21	34.0	
8	300	44.0	21	13.0	4	19.2	303	56.3	20	10.9	126	21.6	-21	33.9	
10	330	43.9	21	13.8	34	24.1	333	54.9	20	12.3	156	28.4	-21	33.8	
12	0	43.8	21	14.7	64	29.1	3	53.4	20	13.7	186	35.3	-21	33.6	
14	30	43.6	21	15.5	94	34.0	33	52.0	20	15.1	216	42.1	-21	33.5	
16	60	43.5	21	16.4	124	38.9	63	50.5	20	16.5	246	48.9	-21	33.4	
18	90	43.3	21	17.2	154	43.8	93	49.0	20	17.8	276	55.7	-21	33.3	
20	120	43.2	21	18.0	184	48.8	123	47.6	20	19.2	307	2.6	-21	33.1	
22	150	43.0	21	18.9	214	53.7	153	46.1	20	20.6	337	9.4	-21	33.0	
Δ		-1		4				-7		7			34		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 57	1 17	: : :	20 0	3.1	11 46	1.3
55	3 35	20 20	0 52	: : :	20 24	2.9	11 21	1.5
50	4 1	19 54	0 42	3 19	20 41	2.7	11 3	1.6
45	4 20	19 34	0 36	2 20	20 55	2.6	10 49	1.7
40	4 36	19 18	0 32	1 57	21 6	2.5	10 37	1.8
35	4 49	19 5	0 29	1 43	21 16	2.5	10 27	1.8
30	5 1	18 53	0 27	1 34	21 24	2.4	10 18	1.9
20	5 21	18 34	0 24	1 22	21 39	2.3	10 3	2.0
10	5 38	18 17	0 23	1 16	21 51	2.2	9 49	2.0
0	5 53	18 1	0 22	1 14	22 3	2.1	9 37	2.1
10	6 9	17 45	0 22	1 14	22 15	2.0	9 24	2.2
20	6 26	17 28	0 24	1 18	22 28	1.9	9 10	2.3
30	6 45	17 9	0 26	1 24	22 42	1.8	8 55	2.4
35	6 56	16 58	0 28	1 29	22 50	1.8	8 46	2.4
40	7 8	16 46	0 30	1 36	22 60	1.7	8 35	2.5
45	7 23	16 31	0 33	1 44	23 11	1.6	8 23	2.6
50	7 41	16 13	0 37	1 56	23 24	2.1	8 8	2.7
55	8 4	15 49	0 43	2 13	23 41	2.1	7 49	2.8
60	8 37	15 17	0 53	2 37	.. .	.0	7 24	3.0
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	310	39.0	102	17	28.6	-36	78	32.7	7	37.9	351	24.9	-20	38.8		
2	339	37.5	102	17	21.4	-38	108	37.5	7	37.8	21	30.3	-20	38.8		
4	8	35.9	102	17	13.9	-40	138	42.2	7	37.6	51	35.6	-20	38.7		
6	37	34.4	102	17	6.0	-41	168	46.9	7	37.5	81	40.9	-20	38.7		
8	66	32.9	102	16	57.7	-43	198	51.6	7	37.4	111	46.2	-20	38.6		
10	95	31.4	102	16	49.0	-45	228	56.3	7	37.3	141	51.5	-20	38.6		
12	124	29.9	102	16	40.0	-47	259	1.0	7	37.2	171	56.8	-20	38.5		
14	153	28.3	102	16	30.6	-49	289	5.7	7	37.1	202	2.1	-20	38.5		
16	182	26.8	102	16	20.9	-51	319	10.4	7	37.0	232	7.5	-20	38.5		
18	211	25.3	103	16	10.8	-52	349	15.1	7	36.9	262	12.8	-20	38.4		
20	240	23.8	103	16	.3	-54	289	19.8	7	36.8	292	18.1	-20	38.4		
22	269	22.3	103	15	49.5	-56	49	24.5	7	36.6	322	23.4	-20	38.3		
Δ								24		-1			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 58.3	-.3	15.8	T _m	3 24	2.1	56.1	15.3	
12	2 55.0	T _{m☉}	11 h 57.1 min	Starost	19.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	11 44	.1	300	-2.8	♄	18 43	.0	195	-1.7
♂	23 31	.1	122	-1.9	♅	0 34	.0	107	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	42.9	21	19.7	244	58.6	183	44.6	20	21.9	7	16.2	-21	32.9	
2	210	42.7	21	20.5	275	3.5	213	43.2	20	23.3	37	23.0	-21	32.8	
4	240	42.6	21	21.4	305	8.5	243	41.7	20	24.7	67	29.9	-21	32.6	
6	270	42.5	21	22.2	335	13.4	273	40.2	20	26.0	97	36.7	-21	32.5	
8	300	42.3	21	23.0	5	18.3	303	38.8	20	27.4	127	43.5	-21	32.4	
10	330	42.2	21	23.8	35	23.3	333	37.3	20	28.7	157	50.3	-21	32.3	
12	0	42.0	21	24.6	65	28.2	3	35.8	20	30.0	187	57.2	-21	32.1	
14	30	41.9	21	25.4	95	33.1	33	34.3	20	31.4	218	4.0	-21	32.0	
16	60	41.7	21	26.2	125	38.0	63	32.8	20	32.7	248	10.8	-21	31.9	
18	90	41.5	21	27.1	155	43.0	93	31.4	20	34.0	278	17.6	-21	31.7	
20	120	41.4	21	27.9	185	47.9	123	29.9	20	35.4	308	24.4	-21	31.6	
22	150	41.2	21	28.7	215	52.8	153	28.4	20	36.7	338	31.2	-21	31.5	
Δ		-1		4				-7		7			34		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 57	20 59	1 18	: : :	21 14	3.3	12 16	1.0
55	3 34	20 22	0 53	: : :	21 33	3.1	11 56	1.3
50	3 60	19 55	0 42	3 23	21 47	2.9	11 41	1.4
45	4 20	19 35	0 36	2 21	21 58	2.8	11 29	1.5
40	4 36	19 19	0 32	1 57	22 7	2.7	11 19	1.6
35	4 49	19 6	0 29	1 43	22 15	2.6	11 11	1.7
30	5 1	18 54	0 27	1 34	22 22	2.5	11 3	1.8
20	5 21	18 34	0 24	1 22	22 34	2.3	10 50	1.9
10	5 38	18 17	0 23	1 16	22 44	2.2	10 38	2.0
0	5 54	18 1	0 22	1 14	22 54	2.1	10 28	2.1
10	6 9	17 45	0 23	1 14	23 4	2.0	10 17	2.2
20	6 26	17 28	0 24	1 18	23 14	2.1	10 5	2.3
30	6 45	17 9	0 26	1 24	23 26	2.1	9 52	2.4
35	6 56	16 58	0 28	1 29	23 33	2.1	9 44	2.5
40	7 9	16 45	0 30	1 36	23 40	2.1	9 35	2.6
45	7 24	16 30	0 33	1 45	23 49	2.1	9 24	2.7
50	7 42	16 12	0 37	1 56	.. .	.0	9 12	2.8
55	8 6	15 48	0 43	2 13	.. .	.0	8 56	3.0
60	8 38	15 15	0 53	2 38	0 4	1.2	8 34	3.2
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	298	20.9	103	15	38.3	-58	79	29.2	7	36.5	352	28.7	-20	38.3		
2	327	19.4	103	15	26.8	-59	109	33.9	7	36.4	22	34.0	-20	38.3		
4	356	18.0	103	15	14.9	-61	139	38.6	7	36.3	52	39.4	-20	38.2		
6	25	16.5	103	15	2.7	-63	169	43.2	7	36.2	82	44.7	-20	38.2		
8	54	15.1	103	14	50.2	-64	199	47.9	7	36.1	112	50.0	-20	38.1		
10	83	13.7	103	14	37.3	-66	229	52.6	7	35.9	142	55.3	-20	38.1		
12	112	12.3	103	14	24.0	-68	259	57.3	7	35.8	173	.6	-20	38.1		
14	141	11.0	103	14	10.5	-69	290	2.0	7	35.7	203	5.9	-20	38.0		
16	170	9.6	103	13	56.6	-71	320	6.7	7	35.6	233	11.3	-20	38.0		
18	199	8.3	103	13	42.4	-73	350	11.4	7	35.5	263	16.6	-20	37.9		
20	228	7.0	104	13	27.8	-74	20	16.1	7	35.4	293	21.9	-20	37.9		
22	257	5.7	104	13	13.0	-76	50	20.7	7	35.2	323	27.2	-20	37.9		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 41.1	21 29.5	245 57.8	183 26.9	20 38.0	8 38.1	-21 31.3
2	210 40.9	21 30.3	276 2.7	213 25.4	20 39.3	38 44.9	-21 31.2
4	240 40.8	21 31.0	306 7.6	243 23.9	20 40.6	68 51.7	-21 31.1
6	270 40.6	21 31.8	336 12.5	273 22.4	20 41.9	98 58.5	-21 30.9
8	300 40.5	21 32.6	6 17.5	303 20.9	20 43.2	129 5.3	-21 30.8
10	330 40.3	21 33.4	36 22.4	333 19.4	20 44.5	159 12.1	-21 30.7
12	0 40.1	21 34.2	66 27.3	3 17.9	20 45.8	189 18.9	-21 30.6
14	30 40.0	21 35.0	96 32.3	33 16.4	20 47.1	219 25.7	-21 30.4
16	60 39.8	21 35.8	126 37.2	63 14.9	20 48.4	249 32.5	-21 30.3
18	90 39.6	21 36.5	156 42.1	93 13.4	20 49.7	279 39.4	-21 30.2
20	120 39.5	21 37.3	186 47.0	123 11.9	20 51.0	309 46.2	-21 30.0
22	150 39.3	21 38.1	216 52.0	153 10.4	20 52.3	339 53.0	-21 29.9
Δ	-1	4		-7	6	34	1

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	286 4.4	104	12 57.8	-77	80 25.4	7 35.1	353 32.5	-20 37.8		
2	315 3.2	104	12 42.4	-79	110 30.1	7 35.0	23 37.8	-20 37.8		
4	344 1.9	104	12 26.6	-80	140 34.8	7 34.9	53 43.2	-20 37.7		
6	13 .7	104	12 10.5	-82	170 39.5	7 34.7	83 48.5	-20 37.7		
8	41 59.4	104	11 54.2	-83	200 44.1	7 34.6	113 53.8	-20 37.7		
10	70 58.2	104	11 37.5	-85	230 48.8	7 34.5	143 59.1	-20 37.6		
12	99 57.0	104	11 20.6	-86	260 53.5	7 34.4	174 4.4	-20 37.6		
14	128 55.8	104	11 3.4	-87	290 58.2	7 34.3	204 9.7	-20 37.5		
16	157 54.6	104	10 46.0	-89	321 2.8	7 34.1	234 15.1	-20 37.5		
18	186 53.4	104	10 28.2	-90	351 7.5	7 34.0	264 20.4	-20 37.5		
20	215 52.2	104	10 10.2	-91	21 12.2	7 33.9	294 25.7	-20 37.4		
22	244 51.0	104	9 52.0	-93	51 16.9	7 33.8	324 31.0	-20 37.4		
Δ					23	-1	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 55	21 1	1 20	∴ ∴ ∴	22 33	3.4	12 41	.9
55	3 33	20 23	0 53	∴ ∴ ∴	22 46	3.2	12 26	1.1
50	3 59	19 56	0 42	3 29	22 56	3.0	12 15	1.3
45	4 19	19 36	0 36	2 21	23 4	2.1	12 6	1.4
40	4 35	19 20	0 32	1 58	23 11	2.1	11 58	1.5
35	4 49	19 6	0 29	1 43	23 16	2.1	11 52	1.6
30	5 0	18 55	0 27	1 34	23 21	2.1	11 46	1.7
20	5 20	18 34	0 24	1 22	23 30	2.1	11 36	1.9
10	5 38	18 17	0 23	1 17	23 38	2.1	11 27	2.0
0	5 54	18 1	0 22	1 14	23 45	2.1	11 18	2.1
10	6 10	17 45	0 23	1 14	23 52	2.1	11 10	2.2
20	6 26	17 28	0 24	1 18	∴ ∴ ∴	.0	11 1	2.4
30	6 46	17 9	0 26	1 24	∴ ∴ ∴	.0	10 50	2.5
35	6 57	16 58	0 28	1 29	∴ ∴ ∴	.0	10 44	2.6
40	7 10	16 45	0 30	1 36	∴ ∴ ∴	.0	10 37	2.7
45	7 25	16 30	0 33	1 45	∴ ∴ ∴	.0	10 29	2.8
50	7 43	16 11	0 37	1 57	0 0	1.3	10 19	2.9
55	8 7	15 47	0 43	2 13	0 14	1.2	10 7	3.1
60	8 40	15 14	0 54	2 39	0 32	1.0	9 51	3.4

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	2 44.3	-.3	15.8	5 6	2.1	57.3	15.6
12	2 40.5	T _{m☉} 11 h 57.3 min	Starost 21.2 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	11 47	.1	297	-2.8	♃	18 35	.0	194	-1.7
♂	23 20	.1	123	-1.9	♄	0 26	.0	108	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 39.2	21 38.8	246 56.9	183 8.9	20 53.5	9 59.8	-21 29.7
2	210 39.0	21 39.6	277 1.8	213 7.4	20 54.8	40 6.6	-21 29.6
4	240 38.8	21 40.4	307 6.8	243 5.9	20 56.1	70 13.4	-21 29.5
6	270 38.7	21 41.1	337 11.7	273 4.4	20 57.3	100 20.2	-21 29.3
8	300 38.5	21 41.9	7 16.6	303 2.8	20 58.6	130 27.0	-21 29.2
10	330 38.3	21 42.6	37 21.5	333 1.3	20 59.8	160 33.7	-21 29.1
12	0 38.1	21 43.4	67 26.5	2 59.8	21 1.1	190 40.5	-21 28.9
14	30 38.0	21 44.1	97 31.4	32 58.3	21 2.3	220 47.3	-21 28.8
16	60 37.8	21 44.9	127 36.3	62 56.8	21 3.5	250 54.1	-21 28.7
18	90 37.6	21 45.6	157 41.3	92 55.2	21 4.8	281 .9	-21 28.5
20	120 37.5	21 46.4	187 46.2	122 53.7	21 6.0	311 7.7	-21 28.4
22	150 37.3	21 47.1	217 51.1	152 52.2	21 7.2	341 14.5	-21 28.2
Δ	-1	4		-8	6	34	1

UT	MESEC				JUPITER			SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	Δ	S _♄	δ _♄	Δ
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	273 49.8	104	9 33.4	-94	81 21.5	7 33.6	354 36.3	-20 37.3		
2	302 48.6	104	9 14.7	-95	111 26.2	7 33.5	24 41.7	-20 37.3		
4	331 47.4	104	8 55.7	-96	141 30.9	7 33.4	54 47.0	-20 37.3		
6	0 46.1	104	8 36.5	-97	171 35.5	7 33.3	84 52.3	-20 37.2		
8	29 44.9	104	8 17.0	-98	201 40.2	7 33.1	114 57.6	-20 37.2		
10	58 43.6	103	7 57.4	-99	231 44.9	7 33.0	145 2.9	-20 37.1		
12	87 42.3	103	7 37.5	-100	261 49.5	7 32.9	175 8.3	-20 37.1		
14	116 40.9	103	7 17.4	-101	291 54.2	7 32.7	205 13.6	-20 37.1		
16	145 39.6	103	6 57.1	-102	321 58.8	7 32.6	235 18.9	-20 37.0		
18	174 38.2	103	6 36.6	-103	352 3.5	7 32.5	265 24.2	-20 37.0		
20	203 36.7	103	6 15.9	-104	22 8.2	7 32.4	295 29.5	-20 36.9		
22	232 35.2	102	5 55.1	-105	52 12.8	7 32.2	325 34.9	-20 36.9		
Δ					23	-1	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 53	21 3	1 21	∴ ∴ ∴	23 55	2.2	13 3	.8
55	3 31	20 24	0 53	∴ ∴ ∴	∴ ∴ ∴	.0	12 53	1.0
50	3 58	19 58	0 42	3 35	∴ ∴ ∴	.0	12 46	1.2
45	4 18	19 37	0 36	2 22	23 56	2.9	12 40	1.4
40	4 34	19 21	0 32	1 58	∴ ∴ ∴	.0	12 35	1.5
35	4 48	19 7	0 29	1 44	∴ ∴ ∴	.0	12 31	1.6
30	5 0	18 55	0 27	1 34	∴ ∴ ∴	.0	12 27	1.7
20	5 20	18 35	0 24	1 23	∴ ∴ ∴	.0	12 20	1.8
10	5 38	18 17	0 23	1 17	∴ ∴ ∴	.0	12 14	2.0
0	5 54	18 1	0 22	1 14	∴ ∴ ∴	.0	12 9	2.1
10	6 10	17 45	0 23	1 15	∴ ∴ ∴	.0	12 3	2.3
20	6 27	17 28	0 24	1 18	0 -1	1.9	11 57	2.4
30	6 46	17 8	0 26	1 24	0 8	1.7	11 50	2.6
35	6 58	16 57	0 28	1 29	0 13	1.6	11 46	2.7
40	7 10	16 44	0 30	1 36	0 18	1.5	11 42	2.8
45	7 26	16 29	0 33	1 45	0 25	1.4	11 37	2.9
50	7 44	16 10	0 37	1 57	0 33	1.3	11 30	3.1
55	8 8	15 46	0 44	2 14	0 42	1.1	11 22	3.2
60	8 42	15 12	0 54	2 39	0 55	.8	11 12	3.5

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	2 36.6	-.3	15.8	5 57	2.1	58.0	15.8
12	2 32.5	T _{m☉} 11 h 57.5 min	Starost 22.2 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	11 48	.1	296	-2.8	♃	18 32	.0	194	-1.6
♂	23 15	.1	123	-1.9	♄	0 22	.0	108	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	37.1	21	47.9	247	56.0	182	50.6	21	8.5	11	21.3	-21	28.1
2	210	36.9	21	48.6	278	1.0	212	49.1	21	9.7	41	28.1	-21	28.0
4	240	36.8	21	49.3	308	5.9	242	47.6	21	10.9	71	34.8	-21	27.8
6	270	36.6	21	50.1	338	10.8	272	46.0	21	12.1	101	41.6	-21	27.7
8	300	36.4	21	50.8	8	15.8	302	44.5	21	13.3	131	48.4	-21	27.5
10	330	36.2	21	51.5	38	20.7	332	43.0	21	14.5	161	55.2	-21	27.4
12	0	36.1	21	52.2	68	25.6	2	41.4	21	15.7	192	1.9	-21	27.3
14	30	35.9	21	52.9	98	30.5	32	39.9	21	16.9	222	8.7	-21	27.1
16	60	35.7	21	53.7	128	35.5	62	38.3	21	18.1	252	15.5	-21	27.0
18	90	35.5	21	54.4	158	40.4	92	36.8	21	19.3	282	22.3	-21	26.8
20	120	35.3	21	55.1	188	45.3	122	35.2	21	20.5	312	29.0	-21	26.7
22	150	35.1	21	55.8	218	50.2	152	33.7	21	21.6	342	35.8	-21	26.6
Δ		-1		4				-8		6		34		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 52	21 5	1 22	:	:	:	13 22	1.7
55	3 30	20 26	0 54	:	:	0 3	13 18	1.7
50	3 57	19 59	0 43	:	:	0 9	13 15	1.8
45	4 18	19 38	0 36	2 23	:	:	13 13	1.9
40	4 34	19 22	0 32	1 58	0 17	2.9	13 11	1.9
35	4 48	19 8	0 29	1 44	0 20	2.8	13 9	2.0
30	4 60	18 56	0 27	1 34	0 22	2.6	13 8	2.0
20	5 20	18 35	0 24	1 23	0 27	2.5	13 5	2.1
10	5 38	18 18	0 23	1 17	0 32	2.3	13 2	2.1
0	5 54	18 1	0 22	1 14	0 36	2.1	12 60	2.2
10	6 10	17 45	0 23	1 15	0 40	2.0	12 58	2.2
20	6 27	17 28	0 24	1 18	0 44	1.8	12 55	2.3
30	6 47	17 8	0 26	1 24	0 49	1.7	12 52	2.3
35	6 58	16 57	0 28	1 30	0 52	1.5	12 50	2.4
40	7 11	16 44	0 30	1 36	0 55	1.4	12 48	2.4
45	7 27	16 28	0 33	1 45	0 58	1.3	12 46	2.5
50	7 45	16 9	0 37	1 57	1 3	1.1	12 43	2.5
55	8 10	15 45	0 44	2 14	1 8	.9	12 40	2.6
60	8 44	15 11	0 54	2 40	1 15	.7	12 36	2.7
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	261	33.7	102	5	34.0	-106	82	17.5	7	32.1	355	40.2	-20	36.8
2	290	32.1	102	5	12.8	-107	112	22.1	7	32.0	25	45.5	-20	36.8
4	319	30.4	101	4	51.5	-108	142	26.8	7	31.8	55	50.8	-20	36.8
6	348	28.7	101	4	30.0	-108	172	31.4	7	31.7	85	56.1	-20	36.7
8	17	26.9	101	4	8.3	-109	202	36.1	7	31.6	116	1.4	-20	36.7
10	46	25.1	100	3	46.5	-110	232	40.7	7	31.4	146	6.8	-20	36.6
12	75	23.1	100	3	24.6	-110	262	45.4	7	31.3	176	12.1	-20	36.6
14	104	21.1	100	3	2.6	-111	292	50.0	7	31.2	206	17.4	-20	36.6
16	133	19.0	99	2	40.4	-111	322	54.7	7	31.0	236	22.7	-20	36.5
18	162	16.9	99	2	18.2	-112	352	59.3	7	30.9	266	28.1	-20	36.5
20	191	14.6	98	1	55.8	-112	382	4.0	7	30.8	296	33.4	-20	36.4
22	220	12.2	98	1	33.4	-113	53	8.6	7	30.6	326	38.7	-20	36.4
Δ								23		-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	2 28.5	-.4	15.8	T _m	6 48	2.1	58.7	16.0	
12	2 24.1	T _{m☉}	11 h 57.6 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	'	°	°
♂	23 9	.1	123	-1.9	♄	18 28	.0	194	-1.6
					♅	0 17	.0	108	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS								
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂							
h	°	'	°	'	°	'	°	'						
0	180	35.0	21	56.5	248	55.2	182	32.1	21	22.8	12	42.5	-21	26.4
2	210	34.8	21	57.2	279	.1	212	30.6	21	24.0	42	49.3	-21	26.3
4	240	34.6	21	57.9	309	5.0	242	29.0	21	25.1	72	56.1	-21	26.1
6	270	34.4	21	58.6	339	10.0	272	27.5	21	26.3	103	2.8	-21	26.0
8	300	34.2	21	59.3	9	14.9	302	25.9	21	27.5	133	9.6	-21	25.9
10	330	34.0	22	.0	39	19.8	332	24.3	21	28.6	163	16.3	-21	25.7
12	0	33.8	22	.7	69	24.7	2	22.8	21	29.8	193	23.1	-21	25.6
14	30	33.7	22	1.4	99	29.7	32	21.2	21	30.9	223	29.8	-21	25.4
16	60	33.5	22	2.0	129	34.6	62	19.7	21	32.0	253	36.6	-21	25.3
18	90	33.3	22	2.7	159	39.5	92	18.1	21	33.2	283	43.3	-21	25.1
20	120	33.1	22	3.4	189	44.5	122	16.5	21	34.3	313	50.1	-21	25.0
22	150	32.9	22	4.1	219	49.4	152	14.9	21	35.4	343	56.8	-21	24.9
Δ		-1		3				-8		6		34		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 50	21 6	1 24	:	:	1 25	1.2	14 2	3.7
55	3 29	20 27	0 54	:	:	1 25	1.4	14 0	3.4
50	3 56	19 60	0 43	:	:	1 25	1.5	13 59	3.2
45	4 17	19 39	0 36	2 24	1 25	1.6	13 58	3.1	
40	4 34	19 22	0 32	1 59	1 26	1.7	13 57	2.9	
35	4 47	19 8	0 29	1 44	1 26	1.8	13 56	2.8	
30	4 60	18 56	0 27	1 35	1 26	1.9	13 55	2.7	
20	5 20	18 36	0 24	1 23	1 26	2.0	13 54	2.5	
10	5 38	18 18	0 23	1 17	1 27	2.1	13 53	2.4	
0	5 54	18 1	0 22	1 14	1 27	2.2	13 52	2.2	
10	6 10	17 45	0 23	1 15	1 27	2.3	13 51	2.1	
20	6 28	17 28	0 24	1 18	1 28	2.4	13 50	1.9	
30	6 47	17 8	0 26	1 25	1 28	2.5	13 48	1.8	
35	6 59	16 56	0 28	1 30	1 29	2.6	13 48	1.7	
40	7 12	16 43	0 30	1 36	1 29	2.7	13 47	1.5	
45	7 27	16 28	0 33	1 45	1 30	2.8	13 46	1.4	
50	7 46	16 9	0 38	1 57	1 30	2.9	13 44	1.3	
55	8 11	15 44	0 44	2 14	1 31	3.0	13 43	1.1	
60	8 45	15 10	0 55	2 40	1 32	3.2	13 41	.8	
S									

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	249	9.7	97	1	10.9	-113	83	13.3	7	30.5	356	44.0	-20	36.4
2	278	7.1	96	0	48.3	-113	113	17.9	7	30.4	26	49.3	-20	36.3
4	307	4.4	96	0	25.6	-114	143	22.6	7	30.2	56	54.7	-20	36.3
6	336	1.6	95	0	2.9	85	173	27.2	7	30.1	86	60.0	-20	36.2
8	4	58.6	95	0	19.8	114	203	31.8	7	30.0	117	5.3	-20	36.2
10	33	55.5	94	0	42.6	114	233	36.5	7	29.8	147	10.6	-20	36.2
12	62	52.3	93	1	5.4	114	263	41.1	7	29.7	177	15.9	-20	36.1
14	91	49.0	93	1	28.3	114	293	45.8	7	29.5	207	21.3	-20	36.1
16	120	45.5	92	1	51.1	114	323	50.4	7	29.4	237	26.6	-20	36.0
18	149	41.8	91	2	13.9	114	353	55.0	7	29.3	267	31.9	-20	36.0
20	178	38.0	90	2	36.7	114	23	59.7	7	29.1	297	37.2	-20	36.0
22	207	34.1	89	2	59.5	114	54	4.3	7	29.0	327	42.5	-20	35.9
Δ								23		-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	2 19.8	-.4	15.8	T _m	7 39	2.2	59.4	16.2
12	2 15.3	T _{m☉}	11 h 57.7 min	Starost	24.2 d	Faza	☉	
PLANETE								
Pl.								

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	32.7	22	4.7	249	54.3	182	13.4	21	36.6	14	3.5	-21	24.7	
2	210	32.5	22	5.4	279	59.2	212	11.8	21	37.7	44	10.3	-21	24.6	
4	240	32.3	22	6.1	310	4.2	242	10.2	21	38.8	74	17.0	-21	24.4	
6	270	32.1	22	6.7	340	9.1	272	8.6	21	39.9	104	23.7	-21	24.3	
8	300	31.9	22	7.4	10	14.0	302	7.1	21	41.0	134	30.5	-21	24.1	
10	330	31.7	22	8.1	40	19.0	332	5.5	21	42.1	164	37.2	-21	24.0	
12	0	31.5	22	8.7	70	23.9	2	3.9	21	43.2	194	43.9	-21	23.9	
14	30	31.3	22	9.4	100	28.8	32	2.3	21	44.3	224	50.6	-21	23.7	
16	60	31.1	22	10.0	130	33.7	62	.7	21	45.4	254	57.3	-21	23.6	
18	90	30.9	22	10.7	160	38.7	91	59.1	21	46.5	285	4.1	-21	23.4	
20	120	30.7	22	11.3	190	43.6	121	57.5	21	47.6	315	10.8	-21	23.3	
22	150	30.5	22	12.0	220	48.5	151	56.0	21	48.6	345	17.5	-21	23.1	
Δ		-1		3				-8		5			34		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 49	21 8	1 25	: : :	1 54	.9	15 30	3.7
55	3 28	20 28	0 55	: : :	1 58	1.1	15 22	3.5
50	3 56	20 1	0 43	: : :	2 2	1.3	15 16	3.3
45	4 16	19 40	0 36	2 25	2 4	1.5	15 11	3.1
40	4 33	19 23	0 32	1 59	2 7	1.6	15 7	3.0
35	4 47	19 9	0 29	1 45	2 9	1.7	15 3	2.9
30	4 59	18 57	0 27	1 35	2 11	1.8	15 0	2.8
20	5 20	18 36	0 24	1 23	2 14	2.0	14 55	2.6
10	5 38	18 18	0 23	1 17	2 17	2.1	14 50	2.4
0	5 54	18 2	0 22	1 14	2 20	2.3	14 45	2.3
10	6 11	17 45	0 23	1 15	2 22	2.4	14 41	2.2
20	6 28	17 28	0 24	1 18	2 25	2.6	14 36	2.0
30	6 48	17 8	0 26	1 25	2 29	2.7	14 30	1.9
35	6 59	16 56	0 28	1 30	2 31	2.8	14 27	1.8
40	7 13	16 43	0 30	1 36	2 33	3.0	14 24	1.7
45	7 28	16 27	0 33	1 45	2 36	3.1	14 20	1.5
50	7 47	16 8	0 38	1 57	2 39	3.2	14 15	1.4
55	8 12	15 43	0 44	2 15	2 43	3.4	14 9	1.2
60	8 47	15 8	0 55	2 41	2 49	3.7	14 1	.9
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	236	30.0	89	3 22.3	114	84	8.9	7 28.8	357	47.9	-20	35.9		
2	265	25.7	88	3 45.0	113	114	13.6	7 28.7	27	53.2	-20	35.8		
4	294	21.3	87	4 7.6	113	144	18.2	7 28.6	57	58.5	-20	35.8		
6	323	16.6	86	4 30.2	113	174	22.8	7 28.4	88	3.8	-20	35.8		
8	352	11.9	85	4 52.7	112	204	27.4	7 28.3	118	9.1	-20	35.7		
10	21	6.9	84	5 15.2	112	234	32.1	7 28.1	148	14.5	-20	35.7		
12	50	1.7	83	5 37.5	111	264	36.7	7 28.0	178	19.8	-20	35.6		
14	78	56.4	82	5 59.7	111	294	41.3	7 27.8	208	25.1	-20	35.6		
16	107	50.8	81	6 21.8	110	324	45.9	7 27.7	238	30.4	-20	35.5		
18	136	45.1	80	6 43.8	109	354	50.6	7 27.5	268	35.8	-20	35.5		
20	165	39.2	79	7 5.6	108	24	55.2	7 27.4	298	41.1	-20	35.5		
22	194	33.1	78	7 27.3	108	54	59.8	7 27.3	328	46.4	-20	35.4		
Δ							23	-1				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 10.8	.4	15.8	T _m	8 32	2.3	60.0	16.3	
12	2 6.1	T _{m☉}	11 h 57.9 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	'	°	
♂	11 52	.1	292	-2.8	♄	18 21	.0	194	-1.6
	22 59	.1	124	-1.9	♅	0 9	.0	108	.2

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	30.3	22	12.6	250	53.5	181	54.4	21	49.7	15	24.2	-21	23.0	
2	210	30.1	22	13.2	280	58.4	211	52.8	21	50.8	45	30.9	-21	22.8	
4	240	29.9	22	13.9	311	3.3	241	51.2	21	51.8	75	37.6	-21	22.7	
6	270	29.7	22	14.5	341	8.2	271	49.6	21	52.9	105	44.3	-21	22.6	
8	300	29.5	22	15.1	11	13.2	301	48.0	21	54.0	135	51.0	-21	22.4	
10	330	29.3	22	15.8	41	18.1	331	46.4	21	55.0	165	57.7	-21	22.3	
12	0	29.1	22	16.4	71	23.0	1	44.8	21	56.1	196	4.4	-21	22.1	
14	30	28.9	22	17.0	101	28.0	31	43.2	21	57.1	226	11.1	-21	22.0	
16	60	28.7	22	17.6	131	32.9	61	41.6	21	58.1	256	17.8	-21	21.8	
18	90	28.5	22	18.3	161	37.8	91	40.0	21	59.2	286	24.4	-21	21.7	
20	120	28.3	22	18.9	191	42.7	121	38.3	22	.2	316	31.1	-21	21.5	
22	150	28.1	22	19.5	221	47.7	151	36.7	22	1.2	346	37.8	-21	21.4	
Δ		-1		3				-8		5			33		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 47	21 10	1 27	: : :	2 15	1.0	16 59	3.7
55	3 27	20 30	0 55	: : :	2 25	1.3	16 45	3.4
50	3 55	20 2	0 43	: : :	2 33	1.5	16 34	3.2
45	4 16	19 41	0 37	2 26	2 40	1.6	16 25	3.1
40	4 33	19 24	0 32	1 60	2 45	1.7	16 18	3.0
35	4 47	19 10	0 29	1 45	2 50	1.8	16 12	2.9
30	4 59	18 57	0 27	1 35	2 54	1.9	16 6	2.8
20	5 20	18 36	0 24	1 23	3 1	2.1	15 57	2.6
10	5 38	18 18	0 23	1 17	3 8	2.2	15 48	2.5
0	5 54	18 2	0 22	1 14	3 14	2.4	15 41	2.4
10	6 11	17 45	0 23	1 15	3 20	2.5	15 33	2.3
20	6 28	17 28	0 24	1 18	3 27	2.6	15 25	2.2
30	6 48	17 8	0 26	1 25	3 35	2.8	15 15	2.0
35	7 0	16 56	0 28	1 30	3 39	2.9	15 10	1.9
40	7 13	16 43	0 30	1 37	3 44	3.0	15 4	1.8
45	7 29	16 27	0 33	1 46	3 50	3.1	14 56	1.7
50	7 48	16 7	0 38	1 58	3 57	3.3	14 48	1.6
55	8 13	15 42	0 44	2 15	4 6	3.5	14 37	1.4
60	8 49	15 7	0 55	2 41	4 18	3.7	14 24	1.1
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	223	26.8	77	7 48.8	107	85	4.4	7 27.1	358	51.7	-20	35.4		
2	252	20.2	76	8 10.2	106	115	9.0	7 27.0	28	57.0	-20	35.3		
4	281	13.5	75	8 31.4	105	145	13.6	7 26.8	59	2.4	-20	35.3		
6	310	6.6	74	8 52.3	104	175	18.3	7 26.7	89	7.7	-20	35.3		
8	338	59.5	73	9 13.1	103	205	22.9	7 26.5	119	13.0	-20	35.2		
10	7	52.1	72	9 33.6	102	235	27.5	7 26.4	149	18.3	-20	35.2		
12	36	44.6	71	9 53.9	100	265	32.1	7 26.2	179	23.7	-20	35.1		
14	65	36.8	70	10 14.0	99	295	36.7	7 26.1	209	29.0	-20	35.1		
16	94	28.9	69	10 33.8	98	325	41.3	7 25.9	239	34.3	-20	35.1		
18	123	20.7	68	10 53.3	96	355	45.9	7 25.8	269	39.6	-20	35.0		
20	152	12.3	67	11 12.6	95	25	50.5	7 25.6	299	44.9	-20	35.0		
22	181	3.8	66	11 31.6	93	55	55.2	7 25.5	329	50.3	-20	34.9		
Δ							23	-1				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 1.3	.4	15.8	T _m	9 27	2.4	60.4	16.5	
12	1 56.4	T _{m☉}	11 h 58.1 min	Starost	26.2 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 27.9	22 20.1	251 52.6	181 35.1	22 2.3	16 44.5	-21 21.3
2	210 27.7	22 20.7	281 57.5	211 33.5	22 3.3	46 51.1	-21 21.1
4	240 27.5	22 21.3	312 2.4	241 31.9	22 4.3	76 57.8	-21 21.0
6	270 27.2	22 21.9	342 7.4	271 30.3	22 5.3	107 4.5	-21 20.8
8	300 27.0	22 22.5	12 12.3	301 28.7	22 6.3	137 11.1	-21 20.7
10	330 26.8	22 23.1	42 17.2	331 27.0	22 7.3	167 17.8	-21 20.5
12	0 26.6	22 23.7	72 22.2	1 25.4	22 8.3	197 24.4	-21 20.4
14	30 26.4	22 24.3	102 27.1	31 23.8	22 9.3	227 31.1	-21 20.2
16	60 26.2	22 24.9	132 32.0	61 22.2	22 10.3	257 37.7	-21 20.1
18	90 26.0	22 25.4	162 36.9	91 20.5	22 11.3	287 44.4	-21 19.9
20	120 25.7	22 26.0	192 41.9	121 18.9	22 12.2	317 51.0	-21 19.8
22	150 25.5	22 26.6	222 46.8	151 17.3	22 13.2	347 57.7	-21 19.7
Δ	-1	3		-8	5	33	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 46	21 12	1 28	: : :	2 40	1.3	18 28	3.5
55	3 26	20 31	0 55	: : :	2 56	1.5	18 7	3.3
50	3 54	20 3	0 43	: : :	3 8	1.7	17 52	3.1
45	4 15	19 41	0 37	2 26	3 18	1.8	17 40	3.0
40	4 32	19 24	0 32	2 0	3 27	1.9	17 30	2.9
35	4 47	19 10	0 29	1 45	3 34	2.0	17 21	2.8
30	4 59	18 58	0 27	1 35	3 40	2.1	17 13	2.8
20	5 20	18 37	0 24	1 23	3 52	2.2	17 0	2.7
10	5 38	18 19	0 23	1 17	4 1	2.3	16 49	2.6
0	5 55	18 2	0 22	1 15	4 11	2.4	16 38	2.5
10	6 11	17 45	0 23	1 15	4 20	2.5	16 28	2.4
20	6 29	17 28	0 24	1 18	4 30	2.7	16 16	2.3
30	6 49	17 7	0 26	1 25	4 41	2.8	16 3	2.2
35	7 1	16 56	0 28	1 30	4 48	2.9	15 56	2.1
40	7 14	16 42	0 30	1 37	4 56	3.0	15 47	2.0
45	7 30	16 26	0 33	1 46	5 5	3.1	15 37	1.9
50	7 49	16 7	0 38	1 58	5 16	3.2	15 26	1.8
55	8 15	15 42	0 44	2 15	5 29	3.4	15 11	1.7
60	8 50	15 6	0 55	2 42	5 47	3.6	14 51	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	209 55.0	65 11 50.3	92	85 59.8	7 25.3	359 55.6	-20 34.9	
2	238 46.0	64 12 8.7	90	116 4.4	7 25.2	30 9	-20 34.9	
4	267 36.9	63 12 26.7	89	146 9.0	7 25.0	60 6.2	-20 34.8	
6	296 27.5	62 12 44.4	87	176 13.6	7 24.9	90 11.5	-20 34.8	
8	325 18.0	61 13 1.8	85	206 18.2	7 24.7	120 16.9	-20 34.7	
10	354 8.2	60 13 18.9	83	236 22.8	7 24.6	150 22.2	-20 34.7	
12	22 58.3	59 13 35.6	82	266 27.4	7 24.4	180 27.5	-20 34.7	
14	51 48.2	59 13 51.9	80	296 32.0	7 24.3	210 32.8	-20 34.6	
16	80 37.9	58 14 7.8	78	326 36.6	7 24.1	240 38.2	-20 34.6	
18	109 27.5	57 14 23.3	76	356 41.2	7 23.9	270 43.5	-20 34.5	
20	138 16.9	56 14 38.5	74	26 45.8	7 23.8	300 48.8	-20 34.5	
22	167 6.1	55 14 53.2	72	56 50.4	7 23.6	330 54.1	-20 34.5	
Δ				23	-1	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	1 51.5	-.4	15.8	T _m	10 24	2.5	60.7	16.5	
12	1 46.4	T _{m☉}	11 h 58.2 min	Starost	27.2 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	-2.8	♃	h min	'	°	194
♁	22 48	.1	125	-1.9	♄	0 0	.0	108	-1.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 25.3	22 27.2	252 51.7	181 15.7	22 14.2	18 4.3	-21 19.5
2	210 25.1	22 27.8	282 56.7	211 14.0	22 15.1	48 10.9	-21 19.4
4	240 24.9	22 28.3	313 1.6	241 12.4	22 16.1	78 17.6	-21 19.2
6	270 24.7	22 28.9	343 6.5	271 10.8	22 17.1	108 24.2	-21 19.1
8	300 24.4	22 29.5	13 11.4	301 9.1	22 18.0	138 30.8	-21 18.9
10	330 24.2	22 30.0	43 16.4	331 7.5	22 19.0	168 37.4	-21 18.8
12	0 24.0	22 30.6	73 21.3	1 5.8	22 19.9	198 44.1	-21 18.6
14	30 23.8	22 31.1	103 26.2	31 4.2	22 20.8	228 50.7	-21 18.5
16	60 23.6	22 31.7	133 31.2	61 2.6	22 21.8	258 57.3	-21 18.4
18	90 23.3	22 32.2	163 36.1	91 9	22 22.7	289 3.9	-21 18.2
20	120 23.1	22 32.8	193 41.0	120 59.3	22 23.6	319 10.5	-21 18.1
22	150 22.9	22 33.3	223 45.9	150 57.6	22 24.5	349 17.1	-21 17.9
Δ	-1	3		-8	5	33	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 45	21 13	1 30	: : :	3 11	1.7	19 51	3.0
55	3 26	20 32	0 56	: : :	3 33	1.8	19 25	2.9
50	3 54	20 4	0 43	: : :	3 49	2.0	19 6	2.8
45	4 15	19 42	0 37	2 27	4 2	2.1	18 51	2.8
40	4 32	19 25	0 32	2 0	4 13	2.1	18 39	2.7
35	4 46	19 11	0 29	1 45	4 22	2.2	18 29	2.7
30	4 59	18 58	0 27	1 35	4 31	2.3	18 20	2.7
20	5 20	18 37	0 24	1 23	4 45	2.3	18 4	2.6
10	5 38	18 19	0 23	1 17	4 57	2.4	17 50	2.6
0	5 55	18 2	0 22	1 15	5 9	2.5	17 38	2.5
10	6 11	17 45	0 23	1 15	5 21	2.6	17 25	2.5
20	6 29	17 28	0 24	1 18	5 34	2.6	17 11	2.4
30	6 49	17 7	0 26	1 25	5 48	2.7	16 56	2.3
35	7 1	16 55	0 28	1 30	5 57	2.8	16 46	2.3
40	7 15	16 42	0 30	1 37	6 7	2.8	16 36	2.3
45	7 31	16 26	0 33	1 46	6 18	2.9	16 24	2.2
50	7 50	16 6	0 38	1 58	6 32	3.0	16 9	2.1
55	8 16	15 41	0 44	2 15	6 50	3.1	15 51	2.0
60	8 52	15 5	0 56	2 42	7 14	3.3	15 26	1.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	195 55.2	55 15 7.5	69	86 55.0	7 23.5	0 59.4	-20 34.4	
2	224 44.2	54 15 21.4	67	116 59.5	7 23.3	31 4.8	-20 34.4	
4	253 33.0	53 15 34.9	65	147 4.1	7 23.2	61 10.1	-20 34.3	
6	282 21.7	53 15 47.9	63	177 8.7	7 23.0	91 15.4	-20 34.3	
8	311 10.2	52 16 4	61	207 13.3	7 22.8	121 20.7	-20 34.3	
10	339 58.7	52 16 12.5	58	237 17.9	7 22.7	151 26.0	-20 34.2	
12	8 47.0	51 16 24.2	56	267 22.5	7 22.5	181 31.4	-20 34.2	
14	37 35.3	51 16 35.4	54	297 27.1	7 22.4	211 36.7	-20 34.1	
16	66 23.5	51 16 46.1	51	327 31.7	7 22.2	241 42.0	-20 34.1	
18	95 11.6	50 16 56.3	49	357 36.2	7 22.0	271 47.3	-20 34.1	
20	123 59.6	50 17 6.0	46	27 40.8	7 21.9	301 52.7	-20 34.0	
22	152 47.6	50 17 15.3	44	57 45.4	7 21.7	331 58.0	-20 34.0	
Δ				23	-1	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	1 41.3	-.4	15.8	T _m	11 23	2.5	60.7	16.5	
12	1 36.0	T _{m☉}	11 h 58.4 min	Starost	28.2 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	-2.8	♃	h min	'	°	194
♁	22 43	.1	125	-1.9	♄	23 52	.0	108	-1.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	22.7	22	33.9	253	50.9	180	56.0	22	25.5	19	23.7	-21	17.8	
2	210	22.4	22	34.4	283	55.8	210	54.3	22	26.4	49	30.3	-21	17.6	
4	240	22.2	22	35.0	314	7	240	52.7	22	27.3	79	36.9	-21	17.5	
6	270	22.0	22	35.5	344	5.7	270	51.0	22	28.2	109	43.4	-21	17.4	
8	300	21.8	22	36.0	14	10.6	300	49.4	22	29.1	139	50.0	-21	17.2	
10	330	21.5	22	36.6	44	15.5	330	47.7	22	30.0	169	56.6	-21	17.1	
12	0	21.3	22	37.1	74	20.4	0	46.1	22	30.9	200	3.2	-21	16.9	
14	30	21.1	22	37.6	104	25.4	30	44.4	22	31.8	230	9.7	-21	16.8	
16	60	20.9	22	38.1	134	30.3	60	42.7	22	32.6	260	16.3	-21	16.6	
18	90	20.6	22	38.6	164	35.2	90	41.1	22	33.5	290	22.9	-21	16.5	
20	120	20.4	22	39.2	194	40.2	120	39.4	22	34.4	320	29.4	-21	16.4	
22	150	20.2	22	39.7	224	45.1	150	37.8	22	35.3	350	36.0	-21	16.2	
Δ		-1		3				-8		4		33			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 44	21 15	1 31	:	3 51	2.1	21 3	2.5
55	3 25	20 33	0 56	:	4 17	2.2	20 35	2.5
50	3 53	20 4	0 44	:	4 36	2.3	20 14	2.5
45	4 15	19 43	0 37	2 28	4 52	2.3	19 58	2.5
40	4 32	19 26	0 32	2 1	5 5	2.4	19 45	2.5
35	4 46	19 11	0 29	1 45	5 15	2.4	19 34	2.5
30	4 59	18 59	0 27	1 35	5 25	2.4	19 24	2.5
20	5 20	18 37	0 24	1 23	5 41	2.4	19 7	2.5
10	5 38	18 19	0 23	1 17	5 56	2.5	18 52	2.5
0	5 55	18 2	0 22	1 15	6 9	2.5	18 38	2.5
10	6 12	17 45	0 23	1 15	6 23	2.5	18 24	2.5
20	6 30	17 28	0 24	1 18	6 37	2.5	18 9	2.5
30	6 50	17 7	0 26	1 25	6 54	2.6	17 52	2.5
35	7 2	16 55	0 28	1 30	7 4	2.6	17 42	2.4
40	7 15	16 42	0 30	1 37	7 15	2.6	17 30	2.4
45	7 31	16 26	0 33	1 46	7 28	2.6	17 17	2.4
50	7 51	16 6	0 38	1 58	7 44	2.7	17 0	2.4
55	8 17	15 40	0 45	2 16	8 4	2.7	16 40	2.4
60	8 53	15 4	0 56	2 43	8 32	2.8	16 11	2.4
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	181	35.6	50	17	24.0	41	87	50.0	7	21.6	2	3.3	-20	33.9	
2	210	23.5	49	17	32.3	39	117	54.6	7	21.4	32	8.6	-20	33.9	
4	239	11.4	49	17	40.0	36	147	59.2	7	21.2	62	13.9	-20	33.9	
6	267	59.3	49	17	47.2	34	178	3.7	7	21.1	92	19.3	-20	33.8	
8	296	47.2	50	17	54.0	31	208	8.3	7	20.9	122	24.6	-20	33.8	
10	325	35.1	50	18	.2	29	238	12.9	7	20.7	152	29.9	-20	33.7	
12	354	23.0	50	18	5.9	26	268	17.5	7	20.6	182	35.2	-20	33.7	
14	23	10.9	50	18	11.1	23	298	22.0	7	20.4	212	40.5	-20	33.7	
16	51	59.0	50	18	15.7	21	328	26.6	7	20.3	242	45.9	-20	33.6	
18	80	47.0	51	18	19.9	18	358	31.2	7	20.1	272	51.2	-20	33.6	
20	109	35.2	51	18	23.5	16	209	35.8	7	19.9	302	56.5	-20	33.5	
22	138	23.4	52	18	26.6	13	58	40.3	7	19.8	333	1.8	-20	33.5	
Δ								23		-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	1 30.7	- .5	15.8	T _m	12 23	2.5	60.4	16.5	
12	1 25.2			T _{m☉}	11 h 58.6 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	'	°	°
♂	11 57	.1	287	-2.8	♄	18 6	.0	194	-1.6
♂	22 37	.1	126	-1.9	♄	23 48	.0	108	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	180	19.9	22	40.2	254	50.0	180	36.1	22	36.1	20	42.5	-21	16.1	
2	210	19.7	22	40.7	284	54.9	210	34.4	22	37.0	50	49.1	-21	15.9	
4	240	19.5	22	41.2	314	59.9	240	32.8	22	37.8	80	55.6	-21	15.8	
6	270	19.3	22	41.7	345	4.8	270	31.1	22	38.7	111	2.2	-21	15.7	
8	300	19.0	22	42.2	15	9.7	300	29.4	22	39.5	141	8.7	-21	15.5	
10	330	18.8	22	42.7	45	14.7	330	27.8	22	40.4	171	15.2	-21	15.4	
12	0	18.6	22	43.2	75	19.6	0	26.1	22	41.2	201	21.7	-21	15.2	
14	30	18.3	22	43.7	105	24.5	30	24.4	22	42.0	231	28.3	-21	15.1	
16	60	18.1	22	44.2	135	29.4	60	22.8	22	42.8	261	34.8	-21	15.0	
18	90	17.9	22	44.6	165	34.4	90	21.1	22	43.7	291	41.3	-21	14.8	
20	120	17.6	22	45.1	195	39.3	120	19.5	22	44.4	321	47.8	-21	14.7	
22	150	17.4	22	45.6	225	44.2	150	17.4	22	45.2	351	54.3	-21	14.5	
Δ		-1		2				-8		4		33			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 42	21 16	1 33	:	4 42	2.6	22 2	1.9
55	3 24	20 34	0 56	:	5 10	2.6	21 34	2.0
50	3 53	20 5	0 44	:	5 31	2.5	21 14	2.1
45	4 14	19 44	0 37	2 28	5 48	2.5	20 58	2.1
40	4 31	19 26	0 33	2 1	6 1	2.5	20 44	2.2
35	4 46	19 12	0 29	1 46	6 12	2.5	20 33	2.2
30	4 59	18 59	0 27	1 36	6 22	2.5	20 23	2.2
20	5 20	18 38	0 24	1 23	6 40	2.5	20 6	2.3
10	5 38	18 19	0 23	1 17	6 55	2.4	19 51	2.3
0	5 55	18 2	0 22	1 15	7 9	2.4	19 37	2.4
10	6 12	17 46	0 23	1 15	7 23	2.4	19 23	2.4
20	6 30	17 28	0 24	1 18	7 38	2.4	19 8	2.5
30	6 50	17 7	0 26	1 25	7 56	2.4	18 50	2.5
35	7 2	16 55	0 28	1 30	8 6	2.3	18 40	2.5
40	7 16	16 41	0 30	1 37	8 17	2.3	18 29	2.6
45	7 32	16 25	0 34	1 46	8 31	2.3	18 15	2.6
50	7 52	16 5	0 38	1 58	8 48	2.3	17 59	2.6
55	8 18	15 40	0 45	2 16	9 9	2.2	17 37	2.7
60	8 54	15 3	0 56	2 43	9 38	2.1	17 8	2.8
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	167	11.7	52	18	29.2	10	88	44.9	7	19.6	3	7.2	-20	33.5	
2	196	.2	53	18	31.3	8	118	49.5	7	19.4	33	12.5	-20	33.4	
4	224	48.7	53	18	32.9	5	148	54.0	7	19.3	63	17.8	-20	33.4	
6	253	37.4	54	18	34.0	3	178	58.6	7	19.1	93	23.1	-20	33.3	
8	282	26.2	55	18	34.5	0	209	3.2	7	18.9	123	28.4	-20	33.3	
10	311	15.2	56	18	34.6	-2	239	7.7	7	18.8	153	33.8	-20	33.3	
12	340	4.3	57	18	34.1	-5	269	12.3	7	18.6	183	39.1	-20	33.2	
14	8	53.6	57	18	33.1	-7	299	16.8	7	18.4	213	44.4	-20	33.2	
16	37	43.1	58	18	31.7	-10	329	21.4	7	18.2	243	49.7	-20	33.1	
18	66	32.8	59	18	29.7	-12	359	26.0	7	18.1	273	55.0	-20	33.1	
20	95	22.7	60	18	27.3	-15	29	30.5	7	17.9	304	.4	-20	33.1	
22	124	12.8	62	18	24.4	-17	59	35.1	7	17.7	334	5.7	-20	33.0	
Δ								23		-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	1 19.8	- .5	15.8	T _m	13 23	2.4	59.9	16.3
12	1 14.2			T _{m☉}	11 h 58.8 min	Starost	.9 d	Faza ●

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 17.1	22 46.1	255 49.1	180 15.9	22 46.1	22 .8	-21 14.4
2	210 16.9	22 46.6	285 54.1	210 14.2	22 46.9	52 7.3	-21 14.3
4	240 16.7	22 47.0	315 59.0	240 12.6	22 47.7	82 13.8	-21 14.1
6	270 16.4	22 47.5	346 3.9	270 10.9	22 48.5	112 20.3	-21 14.0
8	300 16.2	22 48.0	16 8.9	300 9.2	22 49.3	142 26.8	-21 13.9
10	330 16.0	22 48.4	46 13.8	330 7.5	22 50.1	172 33.3	-21 13.7
12	0 15.7	22 48.9	76 18.7	0 5.9	22 50.9	202 39.7	-21 13.6
14	30 15.5	22 49.3	106 23.6	30 4.2	22 51.7	232 46.2	-21 13.5
16	60 15.2	22 49.8	136 28.6	60 2.5	22 52.4	262 52.7	-21 13.3
18	90 15.0	22 50.3	166 33.5	90 .8	22 53.2	292 59.1	-21 13.2
20	120 14.8	22 50.7	196 38.4	119 59.1	22 54.0	323 5.6	-21 13.0
22	150 14.5	22 51.2	226 43.4	149 57.4	22 54.7	353 12.1	-21 12.9
Δ	-1	2		-8	4	32	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 41	21 17	1 34	: : :	5 44	2.9	22 47	1.4
55	3 23	20 35	0 56	: : :	6 12	2.8	22 22	1.6
50	3 52	20 6	0 44	: : :	6 32	2.7	22 4	1.7
45	4 14	19 44	0 37	2 29	6 48	2.6	21 49	1.8
40	4 31	19 27	0 33	2 1	7 1	2.6	21 36	1.9
35	4 46	19 12	0 29	1 46	7 12	2.5	21 26	1.9
30	4 58	18 60	0 27	1 36	7 22	2.5	21 17	2.0
20	5 20	18 38	0 24	1 24	7 39	2.4	21 1	2.1
10	5 38	18 20	0 23	1 17	7 53	2.4	20 47	2.2
0	5 55	18 3	0 22	1 15	8 7	2.3	20 34	2.2
10	6 12	17 46	0 23	1 15	8 21	2.3	20 21	2.3
20	6 30	17 28	0 24	1 18	8 35	2.2	20 7	2.4
30	6 51	17 7	0 26	1 25	8 52	2.1	19 51	2.5
35	7 3	16 55	0 28	1 30	9 2	2.1	19 41	2.5
40	7 16	16 41	0 30	1 37	9 13	2.0	19 30	2.6
45	7 33	16 25	0 34	1 46	9 26	2.0	19 18	2.7
50	7 53	16 5	0 38	1 59	9 42	1.9	19 2	2.8
55	8 19	15 39	0 45	2 16	10 2	1.8	18 42	2.9
60	8 56	15 2	0 56	2 43	10 30	1.6	18 16	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	153 3.1	63 18 21.0	-19	89 39.6	7 17.6	4 11.0	-20 33.0	
2	181 53.6	64 18 17.1	-22	119 44.2	7 17.4	34 16.3	-20 32.9	
4	210 44.4	65 18 12.8	-24	149 48.8	7 17.2	64 21.6	-20 32.9	
6	239 35.4	66 18 8.0	-26	179 53.3	7 17.0	94 27.0	-20 32.9	
8	268 26.7	68 18 2.7	-28	209 57.9	7 16.9	124 32.3	-20 32.8	
10	297 18.2	69 17 57.0	-31	240 2.4	7 16.7	154 37.6	-20 32.8	
12	326 10.0	70 17 50.9	-33	270 7.0	7 16.5	184 42.9	-20 32.7	
14	355 2.1	72 17 44.3	-35	300 11.5	7 16.3	214 48.2	-20 32.7	
16	23 54.5	73 17 37.3	-37	330 16.1	7 16.2	244 53.6	-20 32.7	
18	52 47.1	75 17 29.9	-39	0 20.6	7 16.0	274 58.9	-20 32.6	
20	81 40.1	76 17 22.1	-41	30 25.2	7 15.8	305 4.2	-20 32.6	
22	110 33.3	78 17 13.8	-43	60 29.7	7 15.6	335 9.5	-20 32.5	
Δ				23	-1	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	1 8.6	-.5 15.8	T _m	14 21	2.2	59.1	16.1
12	1 2.8	T _{m☉} 11 h 59.0 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	' / "	°	°
♂	22 27	.1	284	-2.8	♄	17 59	.0	194	-1.6
					♅	23 39	.0	108	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 14.3	22 51.6	256 48.3	179 55.7	22 55.5	23 18.5	-21 12.8
2	210 14.0	22 52.0	286 53.2	209 54.0	22 56.2	53 25.0	-21 12.6
4	240 13.8	22 52.5	316 58.1	239 52.3	22 57.0	83 31.4	-21 12.5
6	270 13.6	22 52.9	347 3.1	269 50.6	22 57.7	113 37.8	-21 12.4
8	300 13.3	22 53.3	17 8.0	299 48.9	22 58.5	143 44.3	-21 12.2
10	330 13.1	22 53.8	47 12.9	329 47.2	22 59.2	173 50.7	-21 12.1
12	0 12.8	22 54.2	77 17.9	359 45.5	22 59.9	203 57.1	-21 12.0
14	30 12.6	22 54.6	107 22.8	29 43.8	23 .6	234 3.6	-21 11.8
16	60 12.3	22 55.0	137 27.7	59 42.1	23 1.4	264 10.0	-21 11.7
18	90 12.1	22 55.5	167 32.6	89 40.4	23 2.1	294 16.4	-21 11.6
20	120 11.8	22 55.9	197 37.6	119 38.7	23 2.8	324 22.8	-21 11.5
22	150 11.6	22 56.3	227 42.5	149 37.0	23 3.5	354 29.2	-21 11.3
Δ	-1	2		-9	4	32	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 40	21 19	1 36	: : :	6 55	3.1	23 21	1.1
55	3 23	20 36	0 57	: : :	7 19	2.9	23 0	1.3
50	3 52	20 7	0 44	: : :	7 37	2.8	22 45	1.4
45	4 14	19 45	0 37	2 30	7 52	2.7	22 32	1.5
40	4 31	19 27	0 33	2 2	8 3	2.6	22 22	1.6
35	4 46	19 13	0 30	1 46	8 13	2.5	22 13	1.7
30	4 58	19 0	0 27	1 36	8 22	2.5	22 5	1.8
20	5 20	18 39	0 24	1 24	8 37	2.3	21 51	1.9
10	5 38	18 20	0 23	1 17	8 50	2.3	21 39	2.0
0	5 55	18 3	0 22	1 15	9 3	2.2	21 28	2.1
10	6 12	17 46	0 23	1 15	9 15	2.1	21 17	2.2
20	6 31	17 28	0 24	1 18	9 28	2.0	21 4	2.3
30	6 51	17 7	0 26	1 25	9 43	1.9	20 50	2.4
35	7 3	16 55	0 28	1 30	9 52	1.8	20 42	2.5
40	7 17	16 41	0 30	1 37	10 2	1.8	20 33	2.6
45	7 33	16 25	0 34	1 46	10 13	1.7	20 22	2.7
50	7 53	16 5	0 38	1 59	10 27	1.6	20 9	2.8
55	8 20	15 38	0 45	2 16	10 45	1.4	19 52	2.9
60	8 57	15 1	0 56	2 44	11 8	1.2	19 29	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	139 26.8	79 17 5.2	-45	90 34.3	7 15.5	5 14.8	-20 32.5	
2	168 20.6	81 16 56.2	-47	120 38.8	7 15.3	35 20.2	-20 32.5	
4	197 14.8	82 16 46.8	-49	150 43.3	7 15.1	65 25.5	-20 32.4	
6	226 9.2	84 16 37.0	-51	180 47.9	7 14.9	95 30.8	-20 32.4	
8	255 4.0	85 16 26.8	-53	210 52.4	7 14.8	125 36.1	-20 32.3	
10	283 59.1	87 16 16.3	-54	240 57.0	7 14.6	155 41.4	-20 32.3	
12	312 54.4	89 16 5.5	-56	271 1.5	7 14.4	185 46.8	-20 32.3	
14	341 50.1	90 15 54.3	-58	301 6.0	7 14.2	215 52.1	-20 32.2	
16	10 46.2	92 15 42.8	-59	331 10.6	7 14.0	245 57.4	-20 32.2	
18	39 42.5	93 15 30.9	-61	1 15.1	7 13.9	276 2.7	-20 32.1	
20	68 39.2	95 15 18.7	-62	31 19.6	7 13.7	306 8.0	-20 32.1	
22	97 36.2	97 15 6.2	-64	61 24.2	7 13.5	336 13.3	-20 32.1	
Δ				23	-1	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	0 57.1	-.5 15.8	T _m	15 15	2.2	58.3	15.9
12	0 51.3	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	' / "	°	°
♂	22 22	.1	283	-2.8	♄	17 55	.0	194	-1.6
					♅	23 35	.0	108	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS					
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂				
h	°	'	°	'	°	'	°	'			
0	180	11.3	22 56.7	257	47.4	179	35.3	23 4.2	24 35.6	-21 11.2	
2	210	11.1	22 57.1	287	52.4	209	33.6	23 4.9	54 42.0	-21 11.1	
4	240	10.9	22 57.5	317	57.3	239	31.9	23 5.6	84 48.4	-21 10.9	
6	270	10.6	22 57.9	348	2.2	269	30.1	23 6.2	114 54.7	-21 10.8	
8	300	10.4	22 58.3	18	7.1	299	28.4	23 6.9	145 1.1	-21 10.7	
10	330	10.1	22 58.7	48	12.1	329	26.7	23 7.6	175 7.5	-21 10.6	
12	0	9.9	22 59.1	78	17.0	359	25.0	23 8.3	205 13.9	-21 10.4	
14	30	9.6	22 59.5	108	21.9	29	23.3	23 8.9	235 20.2	-21 10.3	
16	60	9.4	22 59.9	138	26.9	59	21.6	23 9.6	265 26.6	-21 10.2	
18	90	9.1	23 .3	168	31.8	89	19.8	23 10.3	295 32.9	-21 10.0	
20	120	8.9	23 .6	198	36.7	119	18.1	23 10.9	325 39.3	-21 9.9	
22	150	8.6	23 1.0	228	41.6	149	16.4	23 11.6	355 45.6	-21 9.8	
Δ		-1	2				-9	3		32	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 40	21 20	1 37	: : :	8 10	3.1	23 47	.9
55	3 22	20 37	0 57	: : :	8 29	2.9	23 31	1.1
50	3 51	20 8	0 44	: : :	8 44	2.8	23 19	1.2
45	4 13	19 46	0 37	2 30	8 56	2.6	23 9	1.4
40	4 31	19 28	0 33	2 2	9 5	2.5	23 1	1.5
35	4 46	19 13	0 30	1 46	9 14	2.5	22 54	1.5
30	4 58	19 0	0 27	1 36	9 21	2.4	22 48	1.6
20	5 20	18 39	0 24	1 18	9 33	2.3	22 37	1.8
10	5 38	18 20	0 23	1 17	9 44	2.1	22 27	1.9
0	5 56	18 3	0 22	1 15	9 55	2.0	22 18	2.0
10	6 13	17 46	0 23	1 15	10 5	1.9	22 9	2.1
20	6 31	17 28	0 24	1 18	10 16	1.8	21 60	2.2
30	6 52	17 7	0 26	1 25	10 28	1.7	21 48	2.3
35	7 4	16 55	0 28	1 30	10 35	1.6	21 42	2.4
40	7 18	16 41	0 30	1 37	10 44	1.5	21 35	2.5
45	7 34	16 25	0 34	1 46	10 53	1.4	21 26	2.6
50	7 54	16 4	0 38	1 59	11 5	1.3	21 15	2.7
55	8 21	15 38	0 45	2 17	11 19	1.2	21 2	2.9
60	8 58	15 1	0 57	2 44	11 38	.9	20 45	3.1

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	126	33.5	98	14 53.5	-65	91 28.7	7 13.3	6 18.7	-20 32.0
2	155	31.1	100	14 40.4	-67	121 33.3	7 13.1	36 24.0	-20 32.0
4	184	29.0	101	14 27.0	-68	151 37.8	7 13.0	66 29.3	-20 31.9
6	213	27.3	103	14 13.4	-70	181 42.3	7 12.8	96 34.6	-20 31.9
8	242	25.9	104	13 59.5	-71	211 46.8	7 12.6	126 39.9	-20 31.9
10	271	24.7	106	13 45.3	-72	241 51.4	7 12.4	156 45.3	-20 31.8
12	300	23.9	108	13 30.9	-73	271 55.9	7 12.2	186 50.6	-20 31.8
14	329	23.4	109	13 16.3	-74	302 .4	7 12.0	216 55.9	-20 31.7
16	358	23.2	111	13 1.4	-76	332 5.0	7 11.9	247 1.2	-20 31.7
18	27	23.3	112	12 46.2	-77	2 9.5	7 11.7	277 6.5	-20 31.7
20	56	23.8	114	12 30.9	-78	32 14.0	7 11.5	307 11.8	-20 31.6
22	85	24.5	115	12 15.3	-79	62 18.5	7 11.3	337 17.2	-20 31.6
Δ						23	-1	27	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	0 45.4	- .5	15.8	T _m	16 7	2.0	57.4 15.6
12	0 39.4	T _{m☉}	11 h 59.3 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 2	.1	282	-2.8	♄	17 51	.0	194	-1.6
♂	22 17	.1	127	-1.9	♃	23 31	.0	109	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS					
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂				
h	°	'	°	'	°	'	°	'			
0	180	8.4	23 1.4	258	46.6	179	14.7	23 12.2	25 52.0	-21 9.7	
2	210	8.1	23 1.8	288	51.5	209	13.0	23 12.8	55 58.3	-21 9.6	
4	240	7.9	23 2.1	318	56.4	239	11.2	23 13.5	86 4.7	-21 9.4	
6	270	7.6	23 2.5	349	1.3	269	9.5	23 14.1	116 11.0	-21 9.3	
8	300	7.4	23 2.9	19	6.3	299	7.8	23 14.7	146 17.3	-21 9.2	
10	330	7.1	23 3.2	49	11.2	329	6.0	23 15.4	176 23.6	-21 9.1	
12	0	6.9	23 3.6	79	16.1	359	4.3	23 16.0	206 29.9	-21 8.9	
14	30	6.6	23 4.0	109	21.1	29	2.6	23 16.6	236 36.2	-21 8.8	
16	60	6.3	23 4.3	139	26.0	59	.9	23 17.2	266 42.5	-21 8.7	
18	90	6.1	23 4.7	169	30.9	88	59.1	23 17.8	296 48.8	-21 8.6	
20	120	5.8	23 5.0	199	35.8	118	57.4	23 18.4	326 55.1	-21 8.5	
22	150	5.6	23 5.4	229	40.8	148	55.7	23 19.0	357 1.4	-21 8.3	
Δ		-1	2				-9	3		32	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 39	21 21	1 38	: : :	9 25	3.1	. . . .	.0
55	3 22	20 38	0 57	: : :	9 39	2.9	23 57	.9
50	3 51	20 8	0 44	: : :	9 50	2.7	23 49	1.1
45	4 13	19 46	0 37	2 31	9 59	2.6	23 42	1.2
40	4 31	19 29	0 33	2 2	10 6	2.5	23 36	1.3
35	4 46	19 14	0 30	1 46	10 13	2.4	23 31	1.4
30	4 58	19 1	0 27	1 36	10 18	2.3	23 27	1.5
20	5 20	18 39	0 24	1 24	10 28	2.2	23 19	1.6
10	5 39	18 21	0 23	1 17	10 36	2.0	23 12	1.8
0	5 56	18 3	0 22	1 15	10 44	1.9	23 6	1.9
10	6 13	17 46	0 23	1 15	10 51	1.8	22 60	2.0
20	6 31	17 28	0 24	1 18	10 60	1.7	22 53	2.1
30	6 52	17 7	0 26	1 25	11 9	1.5	22 45	2.3
35	7 4	16 55	0 28	1 30	11 14	1.5	22 40	2.3
40	7 18	16 41	0 30	1 37	11 20	1.4	22 35	2.4
45	7 35	16 24	0 34	1 46	11 28	1.3	22 29	2.6
50	7 55	16 4	0 38	1 59	11 36	1.1	22 21	2.7
55	8 21	15 38	0 45	2 17	11 47	1.0	22 12	2.9
60	8 59	14 60	0 57	2 45	12 0	.8	22 0	3.1

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	114	25.4	116	11 59.6	-80	92 23.0	7 11.1	7 22.5	-20 31.6
2	143	26.7	118	11 43.6	-81	122 27.6	7 10.9	37 27.8	-20 31.5
4	172	28.3	119	11 27.4	-82	152 32.1	7 10.7	67 33.1	-20 31.5
6	201	30.1	121	11 11.1	-83	182 36.6	7 10.6	97 38.4	-20 31.4
8	230	32.3	122	10 54.6	-83	212 41.1	7 10.4	127 43.7	-20 31.4
10	259	34.7	123	10 37.9	-84	242 45.6	7 10.2	157 49.1	-20 31.4
12	288	37.3	125	10 21.0	-85	272 50.2	7 10.0	187 54.4	-20 31.3
14	317	40.2	126	10 4.0	-86	302 54.7	7 9.8	217 59.7	-20 31.3
16	346	43.4	127	9 46.8	-87	332 59.2	7 9.6	248 5.0	-20 31.2
18	15	46.8	128	9 29.5	-87	3 3.7	7 9.4	278 10.3	-20 31.2
20	44	50.5	130	9 12.1	-88	33 8.2	7 9.2	308 15.6	-20 31.2
22	73	54.4	131	8 54.5	-89	63 12.7	7 9.0	338 21.0	-20 31.1
Δ						23	-1	27	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	'	h min	min	'	'
00	0 33.5	- .5	15.8	T _m	16 55	1.9	56.5 15.4
12	0 27.4	T _{m☉}	11 h 59.5 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 4	.1	280	-2.8	♄	17 48	.0	194	-1.6
♂	22 12	.1	127	-1.9	♃	23 26	.0	109	.2

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS						
	S _☉		δ _☉		S _♈		S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	5.3	23	5.7	259	45.7	178	53.9	23	19.6	27	7.7	-21	8.2		
2	210	5.1	23	6.0	289	50.6	208	52.2	23	20.1	57	14.0	-21	8.1		
4	240	4.8	23	6.4	319	55.6	238	50.5	23	20.7	87	20.2	-21	8.0		
6	270	4.6	23	6.7	350	.5	268	48.7	23	21.3	117	26.5	-21	7.9		
8	300	4.3	23	7.0	20	5.4	298	47.0	23	21.9	147	32.8	-21	7.8		
10	330	4.1	23	7.4	50	10.3	328	45.2	23	22.4	177	39.0	-21	7.6		
12	0	3.8	23	7.7	80	15.3	358	43.5	23	23.0	207	45.3	-21	7.5		
14	30	3.5	23	8.0	110	20.2	28	41.8	23	23.5	237	51.5	-21	7.4		
16	60	3.3	23	8.3	140	25.1	58	40.0	23	24.1	267	57.8	-21	7.3		
18	90	3.0	23	8.6	170	30.1	88	38.3	23	24.6	298	4.0	-21	7.2		
20	120	2.8	23	9.0	200	35.0	118	36.5	23	25.2	328	10.2	-21	7.1		
22	150	2.5	23	9.3	230	39.9	148	34.8	23	25.7	358	16.5	-21	7.0		
Δ		-1		2				-9		3				31		1

UT	MESEC				JUPITER			SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄							
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	102	58.5	132	8	36.8	-89	93	17.2	7	8.8	8	26.3	-20	31.1		
2	132	2.9	133	8	19.0	-90	123	21.7	7	8.7	38	31.6	-20	31.0		
4	161	7.5	134	8	1.1	-90	153	26.3	7	8.5	68	36.9	-20	31.0		
6	190	12.3	135	7	43.0	-91	183	30.8	7	8.3	98	42.2	-20	31.0		
8	219	17.3	136	7	24.9	-91	213	35.3	7	8.1	128	47.5	-20	30.9		
10	248	22.6	137	7	6.6	-92	243	39.8	7	7.9	158	52.9	-20	30.9		
12	277	28.0	138	6	48.3	-92	273	44.3	7	7.7	188	58.2	-20	30.9		
14	306	33.6	139	6	29.9	-92	303	48.8	7	7.5	219	3.5	-20	30.8		
16	335	39.4	140	6	11.4	-93	333	53.3	7	7.3	249	8.8	-20	30.8		
18	4	45.4	141	5	52.8	-93	3	57.8	7	7.1	279	14.1	-20	30.7		
20	33	51.6	142	5	34.2	-93	34	2.3	7	6.9	309	19.4	-20	30.7		
22	62	57.9	142	5	15.5	-94	64	6.8	7	6.7	339	24.7	-20	30.7		
Δ								23		-1				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 38	21 22	1 40	:	:	:	10 39	3.0	0 8	.7
55	3 21	20 38	0 57	:	:	:	10 48	2.8	...	.0
50	3 51	20 9	0 44	:	:	:	10 55	2.6	...	.0
45	4 13	19 47	0 37	2 31	11 1	2.5	...	...	...	.0
40	4 31	19 29	0 33	2 2	11 6	2.4	...	...	...	.0
35	4 45	19 14	0 30	1 47	11 10	2.3	...	...	...	.0
30	4 58	19 1	0 27	1 36	11 13	2.2	...	...	...	.0
20	5 20	18 40	0 25	1 24	11 19	2.1	23 58	1.6		
10	5 39	18 21	0 23	1 18	11 25	2.0	23 55	1.7		
0	5 56	18 3	0 22	1 15	11 30	1.8	23 51	1.8		
10	6 13	17 46	0 23	1 15	11 35	1.7	23 47	1.9		
20	6 32	17 28	0 24	1 19	11 40	1.6	23 43	2.1		
30	6 52	17 7	0 26	1 25	11 46	1.5	23 39	2.2		
35	7 5	16 55	0 28	1 31	11 50	1.4	23 36	2.3		
40	7 19	16 41	0 30	1 37	11 54	1.3	23 33	2.4		
45	7 35	16 24	0 34	1 47	11 58	1.2	23 30	2.5		
50	7 56	16 4	0 38	1 59	12 4	1.0	23 26	2.6		
55	8 22	15 37	0 45	2 17	12 10	.9	23 21	2.8		
60	8 60	14 59	0 57	2 45	12 19	.7	23 14	3.0		
S										

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r		
h	min	s	s	h min	min	'	'		
00	0 21.3	- .5	15.8	T _m	17 40	1.8	55.7	15.2	
12	0 15.2			T _{m☉}	11 h 59.7 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 5	.1	279	-2.8	♄	17 44	.0	194	-1.6
♂	22 7	.1	127	-1.9	♅	23 22	.0	109	.2

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS						
	S _☉		δ _☉		S _♈		S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	2.3	23	9.6	260	44.8	178	33.0	23	26.2	28	22.7	-21	6.9		
2	210	2.0	23	9.9	290	49.8	208	31.3	23	26.8	58	28.9	-21	6.7		
4	240	1.7	23	10.2	320	54.7	238	29.5	23	27.3	88	35.1	-21	6.6		
6	270	1.5	23	10.5	350	59.6	268	27.8	23	27.8	118	41.3	-21	6.5		
8	300	1.2	23	10.8	21	4.6	298	26.0	23	28.3	148	47.5	-21	6.4		
10	330	1.0	23	11.1	51	9.5	328	24.3	23	28.8	178	53.7	-21	6.3		
12	0	.7	23	11.4	81	14.4	358	22.5	23	29.3	208	59.9	-21	6.2		
14	30	.4	23	11.7	111	19.3	28	20.8	23	29.8	239	6.1	-21	6.1		
16	60	.2	23	11.9	141	24.3	58	19.0	23	30.3	269	12.3	-21	6.0		
18	89	59.9	23	12.2	171	29.2	88	17.3	23	30.8	299	18.4	-21	5.9		
20	119	59.7	23	12.5	201	34.1	118	15.5	23	31.3	329	24.6	-21	5.8		
22	149	59.4	23	12.8	231	39.1	148	13.8	23	31.8	359	30.8	-21	5.7		
Δ		-1		1				-9		2				31		1

UT	MESEC				JUPITER			SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄							
h	°	'	°	'	°	'	°	'	°	'	°	'				
0	92	4.4	143	4	56.8	-94	94	11.3	7	6.5	9	30.1	-20	30.6		
2	121	11.0	144	4	37.9	-94	124	15.8	7	6.3	39	35.4	-20	30.6		
4	150	17.8	145	4	19.1	-94	154	20.3	7	6.1	69	40.7	-20	30.5		
6	179	24.8	145	4	.2	-95	184	24.8	7	5.9	99	46.0	-20	30.5		
8	208	31.9	146	3	41.3	-95	214	29.3	7	5.7	129	51.3	-20	30.5		
10	237	39.1	147	3	22.3	-95	244	33.8	7	5.5	159	56.6	-20	30.4		
12	266	46.4	147	3	3.3	-95	274	38.3	7	5.3	190	1.9	-20	30.4		
14	295	53.9	148	2	44.3	-95	304	42.8	7	5.2	220	7.3	-20	30.4		
16	325	1.4	148	2	25.3	-95	334	47.2	7	5.0	250	12.6	-20	30.3		
18	354	9.1	149	2	6.2	-95	4	51.7	7	4.8	280	17.9	-20	30.3		
20	23	16.9	149	1	47.1	-95	34	56.2	7	4.6	310	23.2	-20	30.2		
22	52	24.7	150	1	28.1	-95	65	.7	7	4.4	340	28.5	-20	30.2		
Δ								22		-1				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 37	21 23	1 41	:	:	:	11 52	2.4	0 26	.9
55	3 21	20 39	0 58	:	:	:	11 56	2.3	0 20	1.1
50	3 51	20 10	0 44	:	:	:	11 59	2.2	0 15	1.2
45	4 13	19 47	0 37	2 32	12 1	2.2	0 11	1.3		
40	4 31	19 29	0 33	2 3	12 3	2.1	0 8	1.4		
35	4 45	19 15	0 30	1 47	12 5	2.0	0 5	1.5		
30	4 58	19 2	0 27	1 36	12 7	2.0	0 3	1.5		
20	5 20	18 40	0 25	1 24	12 9	1.9	...	.0		
10	5 39	18 21	0 23	1 18	12 12	1.8	...	.0		
0	5 56	18 4	0 22	1 15	12 14	1.8	...	.0		
10	6 14	17 46	0 23	1 15	12 16	1.7	...	.0		
20	6 32	17 28	0 24	1 19	12 18	1.7	...	.0		
30	6 53	17 7	0 26	1 25	12 21	1.6	...	.0		
35	7 5	16 55	0 28	1 31	12 22	1.5	...	.0		
40	7 19	16 41	0 30	1 37	12 24	1.5	...	.0		
45	7 36	16 24	0 34	1 47	12 26	1.4	...	.0		
50	7 56	16 4	0 38	1 59	12 29	1.40		
55	8 23	15 37	0 45	2 17	12 32	1.30		
60	9 1	14 59	0 57	2 45	12 35	1.20		
S										

SUNCE			
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UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 59.1	23 13.1	261 44.0	178 12.0	23 32.2	29 36.9	-21 5.6	
2	209 58.9	23 13.3	291 48.9	208 10.3	23 32.7	59 43.1	-21 5.5	
4	239 58.6	23 13.6	321 53.8	238 8.5	23 33.2	89 49.2	-21 5.4	
6	269 58.3	23 13.9	351 58.8	268 6.8	23 33.6	119 55.4	-21 5.3	
8	299 58.1	23 14.1	22 3.7	298 5.0	23 34.1	150 1.5	-21 5.2	
10	329 57.8	23 14.4	52 8.6	328 3.2	23 34.5	180 7.6	-21 5.1	
12	359 57.6	23 14.6	82 13.6	358 1.5	23 35.0	210 13.8	-21 5.0	
14	29 57.3	23 14.9	112 18.5	27 59.7	23 35.4	240 19.9	-21 4.9	
16	59 57.0	23 15.2	142 23.4	57 58.0	23 35.8	270 26.0	-21 4.8	
18	89 56.8	23 15.4	172 28.3	87 56.2	23 36.3	300 32.1	-21 4.7	
20	119 56.5	23 15.6	202 33.3	117 54.4	23 36.7	330 38.2	-21 4.6	
22	149 56.2	23 15.9	232 38.2	147 52.7	23 37.1	0 44.3	-21 4.5	
Δ	-1	1		-9	2	31	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 37	21 24	1 42	:	12 51	.6	0 48	2.0
55	3 21	20 40	0 58	:	12 52	.8	0 46	2.0
50	3 50	20 10	0 44	:	12 52	1.0	0 44	2.0
45	4 13	19 48	0 37	2 32	12 53	1.1	0 43	1.9
40	4 31	19 30	0 33	2 3	12 54	1.2	0 41	1.9
35	4 45	19 15	0 30	1 47	12 54	1.3	0 40	1.9
30	4 58	19 2	0 27	1 36	12 54	1.4	0 39	1.9
20	5 20	18 40	0 25	1 24	12 55	1.5	0 37	1.8
10	5 39	18 21	0 23	1 18	12 56	1.7	0 36	1.8
0	5 56	18 4	0 23	1 15	12 57	1.8	0 34	1.8
10	6 14	17 47	0 23	1 15	12 57	1.9	0 33	1.7
20	6 32	17 28	0 24	1 19	12 58	2.0	0 31	1.7
30	6 53	17 7	0 26	1 25	12 59	2.2	0 30	1.7
35	7 5	16 55	0 28	1 31	12 59	2.2	0 28	1.7
40	7 20	16 41	0 31	1 37	12 60	2.3	0 27	1.7
45	7 36	16 24	0 34	1 47	13 0	2.4	0 26	1.6
50	7 57	16 4	0 38	1 59	13 1	2.6	0 24	1.6
55	8 24	15 37	0 45	2 17	13 2	2.7	0 22	1.6
60	9 2	14 58	0 57	2 45	13 3	2.9	0 20	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	81 32.7	150	1 9.0	-95	95 5.2	7 4.2	10 33.8	-20 30.2
2	110 40.7	151	0 49.9	-95	125 9.7	7 4.0	40 39.1	-20 30.1
4	139 48.8	151	0 30.9	-95	155 14.2	7 3.8	70 44.4	-20 30.1
6	168 57.0	151	0 11.8	-23	185 18.7	7 3.6	100 49.7	-20 30.0
8	198 5.2	151	0 7.2	95	215 23.1	7 3.4	130 55.1	-20 30.0
10	227 13.5	152	0 26.2	95	245 27.6	7 3.1	161 .4	-20 30.0
12	256 21.8	152	0 45.2	95	275 32.1	7 2.9	191 5.7	-20 29.9
14	285 30.2	152	1 4.1	95	305 36.6	7 2.7	221 11.0	-20 29.9
16	314 38.6	152	1 23.0	94	335 41.1	7 2.5	251 16.3	-20 29.9
18	343 47.1	152	1 41.9	94	5 45.6	7 2.3	281 21.6	-20 29.8
20	12 55.5	152	2 .8	94	35 50.0	7 2.1	311 26.9	-20 29.8
22	42 4.0	153	2 19.6	94	65 54.5	7 1.9	341 32.2	-20 29.7
Δ					22	-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 3.5	-.5	15.8	T _m	19 7	1.8	54.6 14.9		
12	- 0 9.8	T _{m☉}	12 h .2 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 8	.1	276	-2.8	♃	17 37	.0	193	-1.6
♂	21 57	.1	128	-1.9	♄	23 14	.0	109	.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 56.0	23 16.1	262 43.1	177 50.9	23 37.5	30 50.4	-21 4.4	
2	209 55.7	23 16.4	292 48.0	207 49.1	23 37.9	60 56.5	-21 4.3	
4	239 55.5	23 16.6	322 53.0	237 47.4	23 38.4	91 2.6	-21 4.2	
6	269 55.2	23 16.8	352 57.9	267 45.6	23 38.8	121 8.7	-21 4.1	
8	299 54.9	23 17.1	23 2.8	297 43.8	23 39.1	151 14.7	-21 4.0	
10	329 54.7	23 17.3	53 7.8	327 42.1	23 39.5	181 20.8	-21 3.9	
12	359 54.4	23 17.5	83 12.7	357 40.3	23 39.9	211 26.9	-21 3.8	
14	29 54.1	23 17.7	113 17.6	27 38.5	23 40.3	241 32.9	-21 3.7	
16	59 53.9	23 17.9	143 22.5	57 36.8	23 40.7	271 39.0	-21 3.7	
18	89 53.6	23 18.2	173 27.5	87 35.0	23 41.1	301 45.0	-21 3.6	
20	119 53.3	23 18.4	203 32.4	117 33.2	23 41.4	331 51.1	-21 3.5	
22	149 53.1	23 18.6	233 37.3	147 31.5	23 41.8	1 57.1	-21 3.4	
Δ	-1	1		-9	2	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	2 36	21 25	1 43	:	13 6	.7	1 37	2.9
55	3 21	20 40	0 58	:	13 12	.9	1 34	2.7
50	3 50	20 11	0 44	:	13 16	1.0	1 31	2.6
45	4 13	19 48	0 37	2 32	13 20	1.2	1 29	2.4
40	4 31	19 30	0 33	2 3	13 23	1.3	1 27	2.3
35	4 46	19 15	0 30	1 47	13 25	1.3	1 25	2.2
30	4 58	19 2	0 27	1 36	13 28	1.4	1 24	2.1
20	5 20	18 40	0 25	1 24	13 32	1.6	1 21	2.0
10	5 39	18 22	0 23	1 18	13 36	1.7	1 19	1.9
0	5 57	18 4	0 23	1 15	13 39	1.8	1 17	1.8
10	6 14	17 47	0 23	1 15	13 42	1.9	1 15	1.7
20	6 32	17 28	0 24	1 19	13 46	2.0	1 13	1.5
30	6 54	17 7	0 26	1 25	13 50	2.1	1 10	1.4
35	7 6	16 55	0 28	1 31	13 53	2.2	1 9	1.3
40	7 20	16 41	0 31	1 38	13 56	2.3	1 7	1.2
45	7 37	16 24	0 34	1 47	13 59	2.4	1 5	1.1
50	7 57	16 3	0 38	1 59	14 3	2.6	1 3	1.0
55	8 24	15 37	0 45	2 17	14 8	2.7	1 0	.9
60	9 3	14 58	0 57	2 46	14 14	2.9	0 57	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	71 12.5	153	2 38.3	93	95 59.0	7 1.7	11 37.5	-20 29.7
2	100 21.0	153	2 57.0	93	126 3.5	7 1.5	41 42.9	-20 29.7
4	129 29.5	153	3 15.6	93	156 7.9	7 1.3	71 48.2	-20 29.6
6	158 38.0	152	3 34.2	93	186 12.4	7 1.1	101 53.5	-20 29.6
8	187 46.5	152	3 52.7	92	216 16.9	7 .9	131 58.8	-20 29.6
10	216 55.0	152	4 11.2	92	246 21.4	7 .7	162 4.1	-20 29.5
12	246 3.5	152	4 29.5	91	276 25.8	7 .5	192 9.4	-20 29.5
14	275 11.9	152	4 47.8	91	306 30.3	7 .3	222 14.7	-20 29.4
16	304 20.3	152	5 6.0	91	336 34.8	7 .1	252 20.0	-20 29.4
18	333 28.7	152	5 24.1	90	6 39.2	6 59.9	282 25.3	-20 29.4
20	2 37.0	151	5 42.1	90	36 43.7	6 59.7	312 30.6	-20 29.3
22	31 45.2	151	6 .1	89	66 48.2	6 59.4	342 35.9	-20 29.3
Δ					22	-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 16.1	-.5	15.8	T _m	19 49	1.8	54.3 14.8		
12	- 0 22.4	T _{m☉}	12 h .4 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	'	°	
♁	12 9	.1	275	-2.8	♃	17 33	.0	193	-1.5
♂	21 52	.1	128	-1.8	♄	23 9	.0	109	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	52.8	23	18.8	263	42.3	177	29.7	23	42.1	32	3.1	-21	3.3
2	209	52.5	23	19.0	293	47.2	207	27.9	23	42.5	62	9.1	-21	3.2
4	239	52.3	23	19.2	323	52.1	237	26.1	23	42.8	92	15.2	-21	3.1
6	269	52.0	23	19.4	353	57.0	267	24.4	23	43.2	122	21.2	-21	3.0
8	299	51.7	23	19.6	24	2.0	297	22.6	23	43.5	152	27.2	-21	3.0
10	329	51.5	23	19.8	54	6.9	327	20.8	23	43.9	182	33.2	-21	2.9
12	359	51.2	23	20.0	84	11.8	357	19.0	23	44.2	212	39.2	-21	2.8
14	29	50.9	23	20.2	114	16.8	27	17.3	23	44.5	242	45.1	-21	2.7
16	59	50.7	23	20.3	144	21.7	57	15.5	23	44.8	272	51.1	-21	2.6
18	89	50.4	23	20.5	174	26.6	87	13.7	23	45.1	302	57.1	-21	2.6
20	119	50.1	23	20.7	204	31.5	117	11.9	23	45.5	333	3.1	-21	2.5
22	149	49.9	23	20.9	234	36.5	147	10.2	23	45.8	3	9.0	-21	2.4
Δ		-1		1				-9		2		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	2 36	21 25	1 44	:	13 22	.8	2 48	2.9
55	3 20	20 41	0 58	:	13 33	1.0	2 39	2.7
50	3 50	20 11	0 45	:	13 41	1.1	2 32	2.5
45	4 13	19 49	0 37	2 33	13 47	1.2	2 27	2.4
40	4 31	19 31	0 33	2 3	13 53	1.3	2 23	2.3
35	4 46	19 16	0 30	1 47	13 58	1.4	2 19	2.2
30	4 59	19 3	0 27	1 36	14 2	1.5	2 15	2.2
20	5 20	18 41	0 25	1 24	14 9	1.6	2 9	2.0
10	5 39	18 22	0 23	1 18	14 16	1.7	2 4	1.9
0	5 57	18 4	0 23	1 15	14 22	1.8	1 60	1.8
10	6 14	17 47	0 23	1 15	14 28	1.9	1 55	1.7
20	6 33	17 28	0 24	1 19	14 34	2.0	1 50	1.6
30	6 54	17 7	0 26	1 25	14 42	2.2	1 44	1.4
35	7 6	16 55	0 28	1 31	14 46	2.2	1 40	1.4
40	7 20	16 41	0 31	1 38	14 51	2.3	1 37	1.3
45	7 37	16 24	0 34	1 47	14 57	2.4	1 32	1.2
50	7 58	16 3	0 38	1 59	15 4	2.5	1 27	1.1
55	8 25	15 36	0 45	2 17	15 13	2.7	1 21	.9
60	9 3	14 58	0 58	2 46	15 24	2.9	1 13	.7

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	60	53.5	151	6	17.9	89	96	52.6	6	59.2	12	41.3	-20	29.3
2	90	1.6	150	6	35.6	88	126	57.1	6	59.0	42	46.6	-20	29.2
4	119	9.7	150	6	53.3	88	157	1.6	6	58.8	72	51.9	-20	29.2
6	148	17.7	150	7	10.8	87	187	6.0	6	58.6	102	57.2	-20	29.1
8	177	25.7	149	7	28.2	86	217	10.5	6	58.4	133	2.5	-20	29.1
10	206	33.5	149	7	45.4	86	247	15.0	6	58.2	163	7.8	-20	29.1
12	235	41.3	148	8	2.6	85	277	19.4	6	58.0	193	13.1	-20	29.0
14	264	49.0	148	8	19.6	84	307	23.9	6	57.8	223	18.4	-20	29.0
16	293	56.6	147	8	36.5	84	337	28.3	6	57.5	253	23.7	-20	29.0
18	323	4.1	147	8	53.3	83	7	32.8	6	57.3	283	29.0	-20	28.9
20	352	11.5	146	9	9.9	82	37	37.2	6	57.1	313	34.3	-20	28.9
22	21	18.8	146	9	26.3	82	67	41.7	6	56.9	343	39.6	-20	28.8
Δ								22		-1		27		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 0 28.8	-.5	15.8	T _m	20 32	1.8	54.2	14.8
12	- 0 35.2	T _{m☉}	12 h .6 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 11	.1	274	-2.8	♄	17 30	.0	193	-1.5
♂	21 47	.1	128	-1.8	♃	23 5	.0	109	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	49.6	23	21.0	264	41.4	177	8.4	23	46.1	33	15.0	-21	2.3
2	209	49.3	23	21.2	294	46.3	207	6.6	23	46.4	63	21.0	-21	2.3
4	239	49.1	23	21.4	324	51.3	237	4.8	23	46.6	93	26.9	-21	2.2
6	269	48.8	23	21.5	354	56.2	267	3.0	23	46.9	123	32.9	-21	2.1
8	299	48.5	23	21.7	25	1.1	297	1.3	23	47.2	153	38.8	-21	2.0
10	329	48.3	23	21.9	55	6.0	326	59.5	23	47.5	183	44.7	-21	2.0
12	359	48.0	23	22.0	85	11.0	356	57.7	23	47.8	213	50.6	-21	1.9
14	29	47.7	23	22.2	115	15.9	26	55.9	23	48.0	243	56.6	-21	1.8
16	59	47.5	23	22.3	145	20.8	56	54.1	23	48.3	274	2.5	-21	1.7
18	89	47.2	23	22.5	175	25.8	86	52.3	23	48.5	304	8.4	-21	1.7
20	119	46.9	23	22.6	205	30.7	116	50.6	23	48.8	334	14.3	-21	1.6
22	149	46.7	23	22.7	235	35.6	146	48.8	23	49.0	4	20.2	-21	1.5
Δ		-1		1				-9		1		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	2 36	21 26	1 45	:	13 41	.9	3 58	2.9
55	3 20	20 42	0 58	:	13 56	1.1	3 44	2.7
50	3 50	20 12	0 45	:	14 8	1.3	3 34	2.5
45	4 13	19 49	0 37	2 33	14 17	1.4	3 25	2.4
40	4 31	19 31	0 33	2 3	14 25	1.4	3 18	2.3
35	4 46	19 16	0 30	1 47	14 31	1.5	3 12	2.2
30	4 59	19 3	0 27	1 37	14 37	1.6	3 7	2.2
20	5 21	18 41	0 25	1 24	14 48	1.7	2 58	2.1
10	5 40	18 22	0 23	1 18	14 57	1.8	2 50	1.9
0	5 57	18 4	0 23	1 15	15 5	1.9	2 43	1.9
10	6 15	17 47	0 23	1 15	15 14	2.0	2 35	1.8
20	6 33	17 29	0 24	1 19	15 23	2.1	2 27	1.6
30	6 54	17 7	0 26	1 25	15 34	2.2	2 19	1.5
35	7 7	16 55	0 28	1 31	15 40	2.3	2 13	1.5
40	7 21	16 41	0 31	1 38	15 47	2.3	2 8	1.4
45	7 37	16 24	0 34	1 47	15 55	2.4	2 1	1.3
50	7 58	16 3	0 38	1 59	16 5	2.5	1 53	1.2
55	8 25	15 36	0 46	2 18	16 17	2.7	1 43	1.0
60	9 4	14 58	0 58	2 46	16 34	2.9	1 30	.8

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	50	25.9	145	9	42.7	81	97	46.2	6	56.7	13	44.9	-20	28.8
2	79	33.0	145	9	58.8	80	127	50.6	6	56.5	43	50.2	-20	28.8
4	108	39.9	144	10	14.8	79	157	55.1	6	56.3	73	55.5	-20	28.7
6	137	46.8	143	10	30.7	78	187	59.5	6	56.1	104	.9	-20	28.7
8	166	53.5	143	10	46.3	78	218	4.0	6	55.8	134	6.2	-20	28.7
10	196	.0	142	11	1.8	77	248	8.4	6	55.6	164	11.5	-20	28.6
12	225	6.4	141	11	17.2	76	278	12.9	6	55.4	194	16.8	-20	28.6
14	254	12.7	141	11	32.3	75	308	17.3	6	55.2	224	22.1	-20	28.5
16	283	18.9	140	11	47.3	74	338	21.8	6	55.0	254	27.4	-20	28.5
18	312	24.9	139	12	2.0	73	8	26.2	6	54.8	284	32.7	-20	28.5
20	341	30.7	139	12	16.6	72	38	30.7	6	54.5	314	38.0	-20	28.4
22	10	36.4	138	12	31.0	71	68	35.1	6	54.3	344	43.3	-20	28.4
Δ								22		-1		27		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r	
h	min	s	'	h min	min	'	'	
00	- 0 41.6	-.5	15.8	T _m	21 16	1.9	54.1	14.8
12	- 0 48.0	T _{m☉}	12 h .8 min	Starost				

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	46.4	23	22.9	265	40.5	176	47.0	23	49.3	34	26.1	-21	1.5	
2	209	46.1	23	23.0	295	45.5	206	45.2	23	49.5	64	32.0	-21	1.4	
4	239	45.8	23	23.1	325	50.4	236	43.4	23	49.7	94	37.8	-21	1.3	
6	269	45.6	23	23.3	355	55.3	266	41.6	23	50.0	124	43.7	-21	1.3	
8	299	45.3	23	23.4	26	.2	296	39.9	23	50.2	154	49.6	-21	1.2	
10	329	45.0	23	23.5	56	5.2	326	38.1	23	50.4	184	55.5	-21	1.2	
12	359	44.8	23	23.6	86	10.1	356	36.3	23	50.6	215	1.3	-21	1.1	
14	29	44.5	23	23.7	116	15.0	26	34.5	23	50.8	245	7.2	-21	1.0	
16	59	44.2	23	23.9	146	20.0	56	32.7	23	51.0	275	13.0	-21	1.0	
18	89	44.0	23	24.0	176	24.9	86	30.9	23	51.2	305	18.8	-21	.9	
20	119	43.7	23	24.1	206	29.8	116	29.1	23	51.4	335	24.7	-21	.9	
22	149	43.4	23	24.2	236	34.7	146	27.3	23	51.6	5	30.5	-21	.8	
Δ		-1		1				-9		1		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	2 36	21 27	1 46	:::	14 3	1.1	5 7	2.8
55	3 20	20 42	0 58	:::	14 23	1.3	4 48	2.6
50	3 50	20 12	0 45	:::	14 38	1.4	4 34	2.5
45	4 13	19 49	0 37	2 33	14 50	1.5	4 23	2.4
40	4 31	19 31	0 33	2 3	14 59	1.6	4 14	2.3
35	4 46	19 16	0 30	1 47	15 8	1.7	4 6	2.3
30	4 59	19 3	0 27	1 37	15 16	1.7	3 59	2.2
20	5 21	18 41	0 25	1 24	15 29	1.8	3 47	2.1
10	5 40	18 22	0 23	1 18	15 40	1.9	3 37	2.0
0	5 57	18 5	0 23	1 15	15 51	2.0	3 27	1.9
10	6 15	17 47	0 23	1 15	16 2	2.0	3 17	1.8
20	6 33	17 29	0 24	1 19	16 13	2.1	3 7	1.7
30	6 54	17 8	0 26	1 26	16 26	2.2	2 55	1.6
35	7 7	16 55	0 28	1 31	16 34	2.3	2 48	1.6
40	7 21	16 41	0 31	1 38	16 43	2.3	2 41	1.5
45	7 38	16 24	0 34	1 47	16 53	2.4	2 32	1.4
50	7 59	16 3	0 38	1 60	17 6	2.5	2 21	1.3
55	8 26	15 36	0 46	2 18	17 21	2.6	2 7	1.2
60	9 4	14 58	0 58	2 46	17 43	2.8	1 50	1.0
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	39	42.0	137	12	45.2	70	98	39.6	6	54.1	14	48.6	-20	28.4	
2	68	47.4	136	12	59.1	69	128	44.0	6	53.9	44	53.9	-20	28.3	
4	97	52.6	135	13	12.9	68	158	48.4	6	53.7	74	59.2	-20	28.3	
6	126	57.7	135	13	26.4	67	188	52.9	6	53.4	105	4.5	-20	28.3	
8	156	2.6	134	13	39.7	65	218	57.3	6	53.2	135	9.8	-20	28.2	
10	185	7.4	133	13	52.8	64	249	1.8	6	53.0	165	15.1	-20	28.2	
12	214	12.0	132	14	5.6	63	279	6.2	6	52.8	195	20.4	-20	28.1	
14	243	16.4	131	14	18.2	62	309	10.6	6	52.6	225	25.7	-20	28.1	
16	272	20.6	130	14	30.6	61	339	15.1	6	52.3	255	31.0	-20	28.1	
18	301	24.7	130	14	42.7	59	9	19.5	6	52.1	285	36.3	-20	28.0	
20	330	28.6	129	14	54.5	58	39	23.9	6	51.9	315	41.6	-20	28.0	
22	359	32.3	128	15	6.2	57	69	28.4	6	51.7	345	46.9	-20	28.0	
Δ								22		-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	54.5	- .5	15.8	T _m	22 2	2.0	54.3	14.8
12	- 1	.9	T _{m☉}	12 h 1.0 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 14	.1	271	-2.8	♄	17 23	.0	193	-1.5
♂	21 38	.1	129	-1.8	♄	22 57	.0	109	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	43.1	23	24.3	266	39.7	176	25.6	23	51.8	35	36.3	-21	.7	
2	209	42.9	23	24.4	296	44.6	206	23.8	23	52.0	65	42.1	-21	.7	
4	239	42.6	23	24.5	326	49.5	236	22.0	23	52.1	95	48.0	-21	.6	
6	269	42.3	23	24.6	356	54.5	266	20.2	23	52.3	125	53.8	-21	.6	
8	299	42.1	23	24.7	26	59.4	296	18.4	23	52.5	155	59.6	-21	.5	
10	329	41.8	23	24.8	57	4.3	326	16.6	23	52.6	186	5.3	-21	.5	
12	359	41.5	23	24.8	87	9.2	356	14.8	23	52.8	216	11.1	-21	.4	
14	29	41.3	23	24.9	117	14.2	26	13.0	23	52.9	246	16.9	-21	.4	
16	59	41.0	23	25.0	147	19.1	56	11.2	23	53.1	276	22.7	-21	.3	
18	89	40.7	23	25.1	177	24.0	86	9.5	23	53.2	306	28.5	-21	.3	
20	119	40.4	23	25.2	207	29.0	116	7.7	23	53.3	336	34.2	-21	.2	
22	149	40.2	23	25.2	237	33.9	146	5.9	23	53.5	6	40.0	-21	.2	
Δ		-1		0				-9		1		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	2 36	21 27	1 46	:::	14 30	1.5	6 14	2.7
55	3 20	20 42	0 58	:::	14 44	1.6	5 51	2.5
50	3 50	20 12	0 45	:::	15 12	1.7	5 34	2.4
45	4 13	19 50	0 37	2 33	15 26	1.7	5 21	2.4
40	4 31	19 32	0 33	2 3	15 38	1.8	5 10	2.3
35	4 46	19 17	0 30	1 47	15 48	1.8	5 0	2.2
30	4 59	19 4	0 27	1 37	15 57	1.9	4 52	2.2
20	5 21	18 41	0 25	1 24	16 12	1.9	4 37	2.1
10	5 40	18 23	0 23	1 18	16 25	2.0	4 25	2.1
0	5 58	18 5	0 23	1 15	16 38	2.0	4 13	2.0
10	6 15	17 47	0 23	1 15	16 50	2.1	4 1	1.9
20	6 34	17 29	0 24	1 19	17 4	2.1	3 49	1.9
30	6 55	17 8	0 26	1 26	17 19	2.2	3 35	1.8
35	7 7	16 55	0 28	1 31	17 28	2.2	3 27	1.7
40	7 21	16 41	0 31	1 38	17 38	2.3	3 17	1.7
45	7 38	16 24	0 34	1 47	17 50	2.3	3 6	1.6
50	7 59	16 4	0 39	1 60	18 5	2.4	2 53	1.5
55	8 26	15 36	0 46	2 18	18 24	2.5	2 36	1.4
60	9 5	14 58	0 58	2 46	18 49	2.6	2 14	1.3
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	28	35.9	127	15	17.5	55	99	32.8	6	51.5	15	52.2	-20	27.9	
2	57	39.3	126	15	28.6	54	129	37.2	6	51.2	45	57.5	-20	27.9	
4	86	42.5	125	15	39.4	53	159	41.7	6	51.0	76	2.8	-20	27.9	
6	115	45.5	124	15	49.9	51	189	46.1	6	50.8	106	8.1	-20	27.8	
8	144	48.4	123	16	.2	50	219	50.5	6	50.6	136	13.4	-20	27.8	
10	173	51.0	123	16	10.1	48	249	55.0	6	50.3	166	18.7	-20	27.7	
12	202	53.5	122	16	19.8	47	279	59.4	6	50.1	196	24.0	-20	27.7	
14	231	55.9	121	16	29.2	45	310	3.8	6	49.9	226	29.3	-20	27.7	
16	260	58.0	120	16	38.3	44	340	8.3	6	49.7	256	34.6	-20	27.6	
18	290	.0	119	16	47.1	42	10	12.7	6	49.4	286	39.9	-20	27.6	
20	319	1.8	118	16	55.5	41	40	17.1	6	49.2	316	45.2	-20	27.6	
22	348	3.5	117	17	3.7	39	70	21.5	6	49.0	346	50.5	-20	27.5	
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	- 1	7.4	- .5	15.8	T _m	22 49	2.1	54.5	14.9
12	- 1	13.9	T _{m☉}	12 h 1.2 min					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 39.9	23 25.3	267 38.8	176 4.1	23 53.6	36 45.7	-21 .1	
2	209 39.6	23 25.4	297 43.7	206 2.3	23 53.7	66 51.5	-21 .1	
4	239 39.4	23 25.4	327 48.7	236 .5	23 53.8	96 57.2	-21 .1	
6	269 39.1	23 25.5	357 53.6	265 58.7	23 53.9	127 2.9	-21 .0	
8	299 38.8	23 25.5	27 58.5	295 56.9	23 54.0	157 8.7	-20 60.0	
10	329 38.6	23 25.6	58 3.5	325 55.1	23 54.1	187 14.4	-20 59.9	
12	359 38.3	23 25.6	88 8.4	355 53.3	23 54.2	217 20.1	-20 59.9	
14	29 38.0	23 25.7	118 13.3	25 51.5	23 54.3	247 25.8	-20 59.8	
16	59 37.7	23 25.7	148 18.2	55 49.7	23 54.4	277 31.5	-20 59.8	
18	89 37.5	23 25.8	178 23.2	85 48.0	23 54.5	307 37.2	-20 59.8	
20	119 37.2	23 25.8	208 28.1	115 46.2	23 54.6	337 42.9	-20 59.7	
22	149 36.9	23 25.9	238 33.0	145 44.4	23 54.6	7 48.6	-20 59.7	
Δ	-1	0		-9	0	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	2 36	21 27	1 47	:::	15 5	1.9	7 19	2.4
55	3 20	20 43	0 58	:::	15 32	1.9	6 52	2.3
50	3 50	20 13	0 45	:::	15 52	2.0	6 33	2.3
45	4 13	19 50	0 37	2 33	16 8	2.0	6 17	2.3
40	4 31	19 32	0 33	2 3	16 21	2.0	6 5	2.2
35	4 46	19 17	0 30	1 47	16 32	2.0	5 54	2.2
30	4 59	19 4	0 27	1 37	16 42	2.0	5 45	2.2
20	5 21	18 42	0 25	1 24	16 58	2.1	5 28	2.1
10	5 40	18 23	0 23	1 18	17 13	2.1	5 14	2.1
0	5 58	18 5	0 23	1 15	17 27	2.1	5 1	2.1
10	6 15	17 48	0 23	1 15	17 40	2.1	4 48	2.0
20	6 34	17 29	0 24	1 19	17 55	2.1	4 34	2.0
30	6 55	17 8	0 26	1 26	18 12	2.2	4 18	2.0
35	7 7	16 55	0 28	1 31	18 22	2.2	4 8	1.9
40	7 22	16 41	0 31	1 38	18 33	2.2	3 58	1.9
45	7 38	16 24	0 34	1 47	18 46	2.2	3 45	1.9
50	7 59	16 4	0 39	1 60	19 2	2.2	3 30	1.8
55	8 26	15 37	0 46	2 18	19 23	2.2	3 11	1.7
60	9 5	14 58	0 58	2 46	19 51	2.3	2 45	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	17 4.9	117 17	11.5	38	100 26.0	6 48.8	16 55.8	-20 27.5
2	46 6.2	116 17	19.1	36	130 30.4	6 48.5	47 1.1	-20 27.5
4	75 7.4	115 17	26.3	34	160 34.8	6 48.3	77 6.4	-20 27.4
6	104 8.4	114 17	33.1	33	190 39.2	6 48.1	107 11.7	-20 27.4
8	133 9.2	113 17	39.7	31	220 43.6	6 47.8	137 17.0	-20 27.3
10	162 9.8	112 17	45.9	29	250 48.1	6 47.6	167 22.3	-20 27.3
12	191 10.3	112 17	51.8	28	280 52.5	6 47.4	197 27.6	-20 27.3
14	220 10.7	111 17	57.3	26	310 56.9	6 47.2	227 32.9	-20 27.2
16	249 10.9	110 18	2.5	24	341 1.3	6 46.9	257 38.2	-20 27.2
18	278 10.9	110 18	7.3	22	11 5.7	6 46.7	287 43.5	-20 27.2
20	307 10.8	109 18	11.7	21	41 10.1	6 46.5	317 48.7	-20 27.1
22	336 10.6	108 18	15.8	19	71 14.6	6 46.2	347 54.0	-20 27.1
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	- 1 20.4	-.5	15.8	T _m	23 39	2.1	54.9 15.0
12	- 1 26.9	T _{m☉}	12 h 1.4 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 16	.1	268	-2.8	♄	17 16	.0	193	-1.5
♂	21 29	.1	129	-1.8	♃	22 48	.0	109	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 36.7	23 25.9	268 38.0	175 42.6	23 54.7	37 54.3	-20 59.7	
2	209 36.4	23 25.9	298 42.9	205 40.8	23 54.7	67 60.0	-20 59.6	
4	239 36.1	23 26.0	328 47.8	235 39.0	23 54.8	98 5.6	-20 59.6	
6	269 35.9	23 26.0	358 52.7	265 37.2	23 54.9	128 11.3	-20 59.6	
8	299 35.6	23 26.0	28 57.7	295 35.4	23 54.9	158 16.9	-20 59.5	
10	329 35.3	23 26.0	59 2.6	325 33.6	23 54.9	188 22.6	-20 59.5	
12	359 35.0	23 26.0	89 7.5	355 31.8	23 55.0	218 28.2	-20 59.5	
14	29 34.8	23 26.1	119 12.5	25 30.0	23 55.0	248 33.9	-20 59.5	
16	59 34.5	23 26.1	149 17.4	55 28.2	23 55.0	278 39.5	-20 59.4	
18	89 34.2	23 26.1	179 22.3	85 26.4	23 55.0	308 45.1	-20 59.4	
20	119 34.0	23 26.1	209 27.2	115 24.6	23 55.1	338 50.8	-20 59.4	
22	149 33.7	23 26.1	239 32.2	145 22.8	23 55.1	8 56.4	-20 59.4	
Δ	-1	0		-9	0	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	2 36	21 28	1 47	:::	15 50	2.3	8 17	2.1
55	3 20	20 43	0 58	:::	16 18	2.3	7 49	2.1
50	3 51	20 13	0 45	:::	16 39	2.2	7 28	2.1
45	4 13	19 50	0 37	2 33	16 56	2.2	7 11	2.1
40	4 31	19 32	0 33	2 3	17 9	2.2	6 58	2.1
35	4 46	19 17	0 30	1 47	17 21	2.2	6 47	2.1
30	4 59	19 4	0 27	1 37	17 31	2.2	6 37	2.1
20	5 21	18 42	0 25	1 24	17 48	2.2	6 20	2.1
10	5 40	18 23	0 23	1 18	18 3	2.2	6 5	2.1
0	5 58	18 5	0 23	1 15	18 17	2.1	5 51	2.1
10	6 15	17 48	0 23	1 15	18 31	2.1	5 37	2.1
20	6 34	17 29	0 24	1 19	18 46	2.1	5 22	2.1
30	6 55	17 8	0 26	1 26	19 3	2.1	5 5	2.1
35	7 8	16 56	0 28	1 31	19 14	2.1	4 55	2.1
40	7 22	16 41	0 31	1 38	19 25	2.1	4 43	2.1
45	7 39	16 25	0 34	1 47	19 39	2.0	4 30	2.1
50	7 59	16 4	0 39	1 60	19 55	2.0	4 13	2.1
55	8 27	15 37	0 46	2 18	20 16	2.0	3 53	2.1
60	9 6	14 58	0 58	2 46	20 45	1.9	3 24	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	5 10.2	107 18	19.6	17	101 19.0	6 46.0	17 59.3	-20 27.1
2	34 9.7	107 18	23.0	15	131 23.4	6 45.8	48 4.6	-20 27.0
4	63 9.1	106 18	26.0	13	161 27.8	6 45.5	78 9.9	-20 27.0
6	92 8.3	106 18	28.6	11	191 32.2	6 45.3	108 15.2	-20 27.0
8	121 7.4	105 18	30.9	9	221 36.6	6 45.1	138 20.5	-20 26.9
10	150 6.4	104 18	32.8	8	251 41.0	6 44.8	168 25.8	-20 26.9
12	179 5.3	104 18	34.3	6	281 45.4	6 44.6	198 31.1	-20 26.9
14	208 4.1	103 18	35.4	4	311 49.8	6 44.4	228 36.4	-20 26.8
16	237 2.7	103 18	36.2	2	341 54.2	6 44.1	258 41.7	-20 26.8
18	266 1.3	102 18	36.6	0	11 58.6	6 43.9	288 47.0	-20 26.8
20	294 59.8	102 18	36.6	-2	42 3.0	6 43.7	318 52.3	-20 26.7
22	323 58.2	102 18	36.2	-4	72 7.5	6 43.4	348 57.5	-20 26.7
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	- 1 33.3	-.5	15.8	T _m	...	1.0	55.3 15.1
12	- 1 39.8	T _{m☉}	12 h 1.7 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 18	.1	267	-2.8	♄	17 12	.0	193	-1.5
♂	21 24	.1	129	-1.8	♃	22 44	.0	109	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	33.4	23	26.1	269	37.1	175	21.0	23	55.1	39	2.0	-20	59.3	
2	209	33.2	23	26.1	299	42.0	205	19.3	23	55.1	69	7.6	-20	59.3	
4	239	32.9	23	26.1	329	46.9	235	17.5	23	55.1	99	13.2	-20	59.3	
6	269	32.6	23	26.1	359	51.9	265	15.7	23	55.1	129	18.8	-20	59.3	
8	299	32.3	23	26.0	29	56.8	295	13.9	23	55.1	159	24.4	-20	59.3	
10	329	32.1	23	26.0	60	1.7	325	12.1	23	55.0	189	29.9	-20	59.2	
12	359	31.8	23	26.0	90	6.7	355	10.3	23	55.0	219	35.5	-20	59.2	
14	29	31.5	23	26.0	120	11.6	25	8.5	23	55.0	249	41.1	-20	59.2	
16	59	31.3	23	26.0	150	16.5	55	6.7	23	54.9	279	46.6	-20	59.2	
18	89	31.0	23	25.9	180	21.4	85	4.9	23	54.9	309	52.2	-20	59.2	
20	119	30.7	23	25.9	210	26.4	115	3.1	23	54.9	339	57.7	-20	59.2	
22	149	30.5	23	25.9	240	31.3	145	1.3	23	54.8	10	3.3	-20	59.2	
Δ		-1		0				-9		0			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	2 36	21 28	1 46	:::	16 45	2.7	9 7	1.7
55	3 21	20 43	0 58	:::	17 13	2.6	8 39	1.8
50	3 51	20 13	0 45	:::	17 33	2.5	8 18	1.9
45	4 13	19 50	0 37	2 33	17 49	2.4	8 2	1.9
40	4 31	19 32	0 33	2 3	18 2	2.4	7 49	2.0
35	4 46	19 17	0 30	1 47	18 13	2.4	7 38	2.0
30	4 60	19 4	0 27	1 37	18 23	2.3	7 28	2.0
20	5 22	18 42	0 25	1 24	18 40	2.3	7 10	2.1
10	5 41	18 23	0 23	1 18	18 55	2.2	6 56	2.1
0	5 58	18 6	0 23	1 15	19 8	2.2	6 42	2.1
10	6 16	17 48	0 23	1 15	19 22	2.1	6 28	2.2
20	6 34	17 30	0 24	1 19	19 37	2.0	6 13	2.2
30	6 55	17 8	0 26	1 26	19 53	2.0	5 55	2.3
35	7 8	16 56	0 28	1 31	20 3	1.9	5 45	2.3
40	7 22	16 42	0 31	1 38	20 14	1.9	5 34	2.3
45	7 39	16 25	0 34	1 47	20 27	1.8	5 20	2.3
50	7 60	16 4	0 39	1 60	20 43	1.8	5 4	2.4
55	8 27	15 37	0 46	2 18	21 4	1.7	4 43	2.4
60	9 6	14 58	0 58	2 46	21 31	1.5	4 14	2.5

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	352	56.5	101	18	35.4	-6	102	11.9	6	43.2	19	2.8	-20	26.6	
2	21	54.7	101	18	34.2	-8	132	16.3	6	43.0	49	8.1	-20	26.6	
4	50	52.8	100	18	32.6	-10	162	20.7	6	42.7	79	13.4	-20	26.6	
6	79	50.9	100	18	30.6	-12	192	25.1	6	42.5	109	18.7	-20	26.5	
8	108	48.9	100	18	28.3	-14	222	29.5	6	42.3	139	24.0	-20	26.5	
10	137	46.9	99	18	25.5	-16	252	33.9	6	42.0	169	29.3	-20	26.5	
12	166	44.8	99	18	22.4	-18	282	38.3	6	41.8	199	34.6	-20	26.4	
14	195	42.6	99	18	18.8	-20	312	42.7	6	41.5	229	39.9	-20	26.4	
16	224	40.4	99	18	14.9	-22	342	47.0	6	41.3	259	45.2	-20	26.4	
18	253	38.2	99	18	10.6	-24	12	51.4	6	41.1	289	50.4	-20	26.3	
20	282	35.9	98	18	5.9	-26	42	55.8	6	40.8	319	55.7	-20	26.3	
22	311	33.6	98	18	.7	-28	73	.2	6	40.6	350	1.0	-20	26.3	
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	- 1 46.3	-.5	15.8	T _m	0 29	2.2	55.8	15.2
12	- 1 52.8	T _{m☉}	12 h 1.9 min	Starost	15.9 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°	°	h min	'	°	°	°
♀	12 19	.1	266	-2.8	♃	17 9	.0	193	-1.5
♂	21 20	.1	129	-1.8	♄	22 40	.0	109	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	30.2	23	25.8	270	36.2	174	59.5	23	54.8	40	8.8	-20	59.1	
2	209	29.9	23	25.8	300	41.2	204	57.7	23	54.7	70	14.4	-20	59.1	
4	239	29.7	23	25.8	330	46.1	234	55.9	23	54.6	100	19.9	-20	59.1	
6	269	29.4	23	25.7	0	51.0	264	54.1	23	54.6	130	25.4	-20	59.1	
8	299	29.1	23	25.7	30	55.9	294	52.4	23	54.5	160	30.9	-20	59.1	
10	329	28.8	23	25.6	61	.9	324	50.6	23	54.4	190	36.4	-20	59.1	
12	359	28.6	23	25.6	91	5.8	354	48.8	23	54.3	220	41.9	-20	59.1	
14	29	28.3	23	25.5	121	10.7	24	47.0	23	54.2	250	47.4	-20	59.1	
16	59	28.0	23	25.5	151	15.7	54	45.2	23	54.2	280	52.9	-20	59.1	
18	89	27.8	23	25.4	181	20.6	84	43.4	23	54.1	310	58.4	-20	59.1	
20	119	27.5	23	25.3	211	25.5	114	41.6	23	54.0	341	3.9	-20	59.1	
22	149	27.2	23	25.3	241	30.4	144	39.8	23	53.8	11	9.3	-20	59.1	
Δ		-1		0				-9		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	:::	17 50	3.0	9 48	1.4
55	3 21	20 43	0 58	:::	18 15	2.8	9 23	1.6
50	3 51	20 13	0 45	:::	18 33	2.7	9 4	1.7
45	4 14	19 51	0 37	2 33	18 48	2.6	8 49	1.8
40	4 32	19 33	0 33	2 3	18 60	2.5	8 36	1.8
35	4 47	19 17	0 30	1 47	19 10	2.5	8 26	1.9
30	4 60	19 4	0 27	1 37	19 19	2.4	8 16	1.9
20	5 22	18 42	0 25	1 24	19 34	2.3	8 0	2.0
10	5 41	18 23	0 23	1 18	19 47	2.2	7 46	2.1
0	5 58	18 6	0 23	1 15	19 60	2.1	7 33	2.2
10	6 16	17 48	0 23	1 15	20 12	2.1	7 20	2.2
20	6 34	17 30	0 24	1 19	20 26	2.0	7 6	2.3
30	6 56	17 9	0 26	1 26	20 41	1.9	6 49	2.4
35	7 8	16 56	0 28	1 31	20 50	1.8	6 40	2.4
40	7 22	16 42	0 31	1 38	21 0	1.8	6 29	2.5
45	7 39	16 25	0 34	1 47	21 12	1.7	6 16	2.5
50	7 60	16 4	0 39	1 60	21 26	1.6	6 1	2.6
55	8 27	15 37	0 46	2 18	21 44	1.4	5 41	2.7
60	9 6	14 58	0 58	2 46	22 8	1.2	5 14	2.9

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	340	31.3	98	17	55.2	-30	103	4.6	6	40.3	20	6.3	-20	26.2	
2	9	29.0	98	17	49.3	-31	133	9.0	6	40.1	50	11.6	-20	26.2	
4	38	26.6	98	17	43.0	-33	163	13.4	6	39.9	80	16.9	-20	26.2	
6	67	24.2	98	17	36.4	-35	193	17.8	6	39.6	110	22.2	-20	26.1	
8	96	21.8	98	17	29.3	-37	223	22.2	6	39.4	140	27.5	-20	26.1	
10	125	19.5	98	17	21.8	-39	253	26.6	6	39.1	170	32.7	-20	26.1	
12	154	17.1	98	17	14.0	-41	283	31.0	6	38.9	200	38.0	-20	26.0	
14	183	14.7	98	17	5.8	-43	313	35.4	6	38.7	230	43.3	-20	26.0	
16	212	12.3	98	16	57.2	-45	343	39.7	6	38.4	260	48.6	-20	26.0	
18	241	10.0	98	16	48.2	-47	13	44.1	6	38.2	290	53.9	-20	25.9	
20	270	7.6	98	16	38.8	-49	43	48.5	6	37.9	320	59.2	-20	25.9	
22	299	5.3	99	16	29.1	-50	73	52.9	6	37.7	351	4.4	-20	25.9	
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	- 1 59.2	-.5	15.8	T _m	1 21	2.1	56.2	15.3
12	- 2 5.7	T _{m☉}	12 h 2.1 min	Starost	16.9 d	Faza	☉	

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 27.0	23 25.2	271 35.4	174 38.0	23 53.7	41 14.8	-20 59.1
2	209 26.7	23 25.1	301 40.3	204 36.2	23 53.6	71 20.3	-20 59.1
4	239 26.4	23 25.1	331 45.2	234 34.4	23 53.5	101 25.7	-20 59.1
6	269 26.2	23 25.0	1 50.2	264 32.6	23 53.4	131 31.2	-20 59.1
8	299 25.9	23 24.9	31 55.1	294 30.9	23 53.2	161 36.6	-20 59.1
10	329 25.6	23 24.8	62 .0	324 29.1	23 53.1	191 42.0	-20 59.1
12	359 25.4	23 24.7	92 4.9	354 27.3	23 53.0	221 47.5	-20 59.1
14	29 25.1	23 24.6	122 9.9	24 25.5	23 52.8	251 52.9	-20 59.1
16	59 24.8	23 24.5	152 14.8	54 23.7	23 52.7	281 58.3	-20 59.2
18	89 24.6	23 24.4	182 19.7	84 21.9	23 52.5	312 3.7	-20 59.2
20	119 24.3	23 24.3	212 24.7	114 20.1	23 52.3	342 9.1	-20 59.2
22	149 24.0	23 24.2	242 29.6	144 18.3	23 52.2	12 14.5	-20 59.2
Δ	-1	0		-9	-1	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	:::	19 2	3.2	10 22	1.1
55	3 21	20 43	0 58	:::	19 23	3.0	10 0	1.3
50	3 51	20 13	0 45	:::	19 38	2.9	9 44	1.5
45	4 14	19 51	0 37	2 33	19 50	2.7	9 31	1.6
40	4 32	19 33	0 33	2 3	20 0	2.6	9 20	1.7
35	4 47	19 18	0 30	1 47	20 9	2.5	9 11	1.8
30	4 60	19 5	0 27	1 37	20 17	2.5	9 3	1.8
20	5 22	18 43	0 25	1 24	20 30	2.3	8 49	1.9
10	5 41	18 24	0 23	1 18	20 41	2.2	8 36	2.0
0	5 59	18 6	0 23	1 15	20 51	2.1	8 25	2.1
10	6 16	17 49	0 23	1 15	21 2	2.0	8 13	2.2
20	6 35	17 30	0 24	1 19	21 13	1.9	8 1	2.3
30	6 56	17 9	0 26	1 26	21 26	1.8	7 46	2.4
35	7 8	16 56	0 28	1 31	21 34	1.7	7 38	2.5
40	7 22	16 42	0 31	1 38	21 42	1.6	7 28	2.6
45	7 39	16 25	0 34	1 47	21 52	1.5	7 17	2.7
50	8 0	16 5	0 39	1 60	22 4	1.4	7 3	2.8
55	8 27	15 38	0 46	2 18	22 18	1.2	6 46	2.9
60	9 6	14 59	0 58	2 46	22 38	1.0	6 23	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	328 3.0	99 16	19.0	-52	103 57.3	6 37.4	21 9.7	-20 25.8
2	357 .8	99 16	8.6	-54	134 1.7	6 37.2	51 15.0	-20 25.8
4	25 58.5	99 15	57.7	-56	164 6.0	6 37.0	81 20.3	-20 25.8
6	54 56.3	99 15	46.6	-58	194 10.4	6 36.7	111 25.6	-20 25.7
8	83 54.1	99 15	35.0	-59	224 14.8	6 36.5	141 30.9	-20 25.7
10	112 52.0	100 15	23.1	-61	254 19.2	6 36.2	171 36.1	-20 25.7
12	141 49.9	100 15	10.9	-63	284 23.6	6 36.0	201 41.4	-20 25.6
14	170 47.9	100 14	58.3	-65	314 27.9	6 35.7	231 46.7	-20 25.6
16	199 45.9	100 14	45.3	-66	344 32.3	6 35.5	261 52.0	-20 25.6
18	228 43.9	100 14	32.1	-68	14 36.7	6 35.2	291 57.3	-20 25.5
20	257 42.0	101 14	18.5	-70	44 41.1	6 35.0	322 2.6	-20 25.5
22	286 40.1	101 14	4.5	-71	74 45.4	6 34.7	352 7.8	-20 25.5
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	- 2 12.1	-.5	15.8	T _m	2 12	2.2	56.7 15.5		
12	- 2 18.5	T _{m☉}	12 h 2.3 min	Starost	17.9 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	12 22	.1	263	-2.8	♄	17 2	.0	192	-1.5
♂	21 11	.1	130	-1.8	♄	22 31	.0	110	.3

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 23.8	23 24.1	272 34.5	174 16.5	23 52.0	42 19.9	-20 59.2
2	209 23.5	23 24.0	302 39.4	204 14.7	23 51.8	72 25.3	-20 59.2
4	239 23.2	23 23.9	332 44.4	234 13.0	23 51.6	102 30.7	-20 59.2
6	269 23.0	23 23.8	2 49.3	264 11.2	23 51.4	132 36.0	-20 59.3
8	299 22.7	23 23.7	32 54.2	294 9.4	23 51.3	162 41.4	-20 59.3
10	329 22.4	23 23.6	62 59.1	324 7.6	23 51.1	192 46.8	-20 59.3
12	359 22.2	23 23.5	93 4.1	354 5.8	23 50.9	222 52.1	-20 59.3
14	29 21.9	23 23.3	123 9.0	24 4.0	23 50.7	252 57.5	-20 59.3
16	59 21.6	23 23.2	153 13.9	54 2.2	23 50.4	283 2.8	-20 59.4
18	89 21.4	23 23.1	183 18.9	84 .5	23 50.2	313 8.2	-20 59.4
20	119 21.1	23 22.9	213 23.8	113 58.7	23 50.0	343 13.5	-20 59.4
22	149 20.9	23 22.8	243 28.7	143 56.9	23 49.8	13 18.8	-20 59.4
Δ	-1	-1		-9	-1	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 37	21 28	1 45	:::	20 20	3.4	10 49	.9
55	3 22	20 43	0 58	:::	20 35	3.1	10 32	1.2
50	3 52	20 13	0 45	:::	20 47	3.0	10 19	1.3
45	4 14	19 51	0 37	2 33	20 56	2.8	10 9	1.5
40	4 32	19 33	0 33	2 3	21 4	2.7	10 0	1.6
35	4 47	19 18	0 30	1 47	21 10	2.6	9 53	1.7
30	5 0	19 5	0 27	1 37	21 16	2.5	9 47	1.7
20	5 22	18 43	0 25	1 24	21 26	2.4	9 35	1.9
10	5 41	18 24	0 23	1 18	21 34	2.2	9 25	2.0
0	5 59	18 6	0 23	1 15	21 42	2.1	9 16	2.1
10	6 16	17 49	0 23	1 15	21 51	2.0	9 7	2.2
20	6 35	17 30	0 24	1 19	21 59	1.9	8 56	2.4
30	6 56	17 9	0 26	1 26	22 9	1.7	8 45	2.5
35	7 8	16 57	0 28	1 31	22 15	1.6	8 38	2.6
40	7 23	16 43	0 31	1 38	22 21	1.5	8 30	2.7
45	7 39	16 26	0 34	1 47	22 28	1.4	8 21	2.8
50	8 0	16 5	0 38	1 60	22 37	1.3	8 11	2.9
55	8 27	15 38	0 46	2 18	22 48	1.1	7 57	3.1
60	9 6	14 59	0 58	2 46	23 2	.9	7 39	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	315 38.3	101 13	50.3	-73	104 49.8	6 34.5	22 13.1	-20 25.4
2	344 36.5	101 13	35.7	-74	134 54.2	6 34.2	52 18.4	-20 25.4
4	13 34.8	102 13	20.8	-76	164 58.5	6 34.0	82 23.7	-20 25.4
6	42 33.2	102 13	5.7	-77	195 2.9	6 33.7	112 28.9	-20 25.3
8	71 31.5	102 12	50.2	-79	225 7.3	6 33.5	142 34.2	-20 25.3
10	100 30.0	102 12	34.4	-80	255 11.7	6 33.2	172 39.5	-20 25.3
12	129 28.5	103 12	18.3	-82	285 16.0	6 33.0	202 44.8	-20 25.2
14	158 27.0	103 12	1.9	-83	315 20.4	6 32.7	232 50.1	-20 25.2
16	187 25.6	103 11	45.2	-85	345 24.8	6 32.5	262 55.3	-20 25.2
18	216 24.2	103 11	28.3	-86	15 29.1	6 32.2	293 .6	-20 25.1
20	245 22.9	104 11	11.1	-87	45 33.5	6 32.0	323 5.9	-20 25.1
22	274 21.6	104 10	53.6	-89	75 37.9	6 31.7	353 11.2	-20 25.1
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	- 2 24.9	-.5	15.8	T _m	3 4	2.1	57.2 15.6		
12	- 2 31.3	T _{m☉}	12 h 2.5 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	'	°	
♂	12 24	.1	262	-2.8	♄	16 58	.0	192	-1.5
♂	21 7	.1	130	-1.7	♄	22 27	.0	110	.3

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}
h	°	'	°	'	°	'	°	'	°	'
0	179	20.6	23	22.7	273	33.6	173	55.1	23	49.5
2	209	20.3	23	22.5	303	38.6	203	53.3	23	49.3
4	239	20.1	23	22.4	333	43.5	233	51.5	23	49.1
6	269	19.8	23	22.2	3	48.4	263	49.7	23	48.8
8	299	19.5	23	22.1	33	53.4	293	48.0	23	48.6
10	329	19.3	23	21.9	63	58.3	323	46.2	23	48.3
12	359	19.0	23	21.8	94	3.2	353	44.4	23	48.1
14	29	18.7	23	21.6	124	8.1	23	42.6	23	47.8
16	59	18.5	23	21.5	154	13.1	53	40.8	23	47.5
18	89	18.2	23	21.3	184	18.0	83	39.1	23	47.2
20	119	18.0	23	21.1	214	22.9	113	37.3	23	47.0
22	149	17.7	23	21.0	244	27.9	143	35.5	23	46.7
Δ		-1		-1				-9		-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	2 37	21 28	1 44	:::	21 41	3.5	11 11	.8
55	3 22	20 43	0 58	:::	21 51	3.2	10 60	1.1
50	3 52	20 13	0 45	:::	21 58	3.0	10 51	1.2
45	4 15	19 51	0 37	2 33	22 4	2.9	10 44	1.4
40	4 33	19 33	0 33	2 3	22 8	2.7	10 38	1.5
35	4 48	19 18	0 30	1 47	22 13	2.6	10 33	1.6
30	5 1	19 5	0 27	1 36	22 16	2.5	10 28	1.7
20	5 23	18 43	0 25	1 24	22 22	2.4	10 20	1.8
10	5 41	18 24	0 23	1 18	22 28	2.2	10 13	2.0
0	5 59	18 6	0 23	1 15	22 33	2.1	10 7	2.1
10	6 16	17 49	0 23	1 15	22 38	2.0	10 0	2.2
20	6 35	17 31	0 24	1 19	22 44	1.8	9 53	2.4
30	6 56	17 9	0 26	1 25	22 50	1.7	9 45	2.5
35	7 8	16 57	0 28	1 31	22 53	1.6	9 40	2.6
40	7 23	16 43	0 31	1 38	22 57	1.5	9 34	2.7
45	7 39	16 26	0 34	1 47	23 2	1.3	9 28	2.8
50	8 0	16 5	0 38	1 59	23 8	1.2	9 20	3.0
55	8 27	15 38	0 46	2 18	23 14	1.0	9 11	3.2
60	9 6	14 60	0 58	2 46	23 23	.8	8 59	3.4
S								

UT	MESEC				JUPITER		SATURN								
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{η}	δ_{η}	S_{θ}	δ_{θ}							
h	°	'	°	'	°	'	°	'							
0	303	20.4	104	10	35.9	-90	105	42.2	6	31.5	23	16.4	-20	25.0	
2	332	19.2	104	10	17.9	-91	135	46.6	6	31.2	53	21.7	-20	25.0	
4	1	18.1	104	9	59.7	-92	165	50.9	6	31.0	83	27.0	-20	25.0	
6	30	17.0	105	9	41.3	-93	195	55.3	6	30.7	113	32.3	-20	24.9	
8	59	15.9	105	9	22.6	-95	225	59.7	6	30.5	143	37.5	-20	24.9	
10	88	14.9	105	9	3.6	-96	256	4.0	6	30.2	173	42.8	-20	24.9	
12	117	13.9	105	8	44.5	-97	286	8.4	6	30.0	203	48.1	-20	24.8	
14	146	12.9	105	8	25.2	-98	316	12.7	6	29.7	233	53.4	-20	24.8	
16	175	11.9	105	8	5.6	-99	346	17.1	6	29.5	263	58.6	-20	24.8	
18	204	11.0	105	7	45.8	-100	16	21.5	6	29.2	294	3.9	-20	24.7	
20	233	10.1	106	7	25.9	-101	46	25.8	6	29.0	324	9.2	-20	24.7	
22	262	9.2	106	7	5.7	-102	76	30.2	6	28.7	354	14.5	-20	24.7	
Δ								22		-1					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	- 2	37.6	- .5	15.8	T_m	3 55	2.1	57.8	15.7
12	- 2	43.9	$T_{m\odot}$	12 h 2.7 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 25	.1	260	-2.8	♃	16 55	.0	192	-1.5
♁	21 3	.1	130	-1.7	♄	22 23	.0	110	.3

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}
h	°	'	°	'	°	'	°	'	°	'
0	179	17.4	23	20.8	274	32.8	173	33.7	23	46.4
2	209	17.2	23	20.6	304	37.7	203	31.9	23	46.1
4	239	16.9	23	20.4	334	42.6	233	30.2	23	45.8
6	269	16.7	23	20.3	4	47.6	263	28.4	23	45.5
8	299	16.4	23	20.1	34	52.5	293	26.6	23	45.2
10	329	16.1	23	19.9	64	57.4	323	24.8	23	44.9
12	359	15.9	23	19.7	95	2.4	353	23.1	23	44.6
14	29	15.6	23	19.5	125	7.3	23	21.3	23	44.2
16	59	15.4	23	19.3	155	12.2	53	19.5	23	43.9
18	89	15.1	23	19.1	185	17.1	83	17.7	23	43.6
20	119	14.8	23	18.9	215	22.1	113	16.0	23	43.2
22	149	14.6	23	18.7	245	27.0	143	14.2	23	42.9
Δ		-1		-1				-9		-2
									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	2 38	21 27	1 43	:::	23 5	2.4	11 31	.8
55	3 23	20 43	0 58	:::	23 8	2.4	11 25	1.0
50	3 52	20 13	0 44	:::	23 11	2.3	11 20	1.2
45	4 15	19 51	0 37	2 32	23 13	2.3	11 17	1.3
40	4 33	19 33	0 33	2 3	23 14	2.3	11 14	1.5
35	4 48	19 18	0 30	1 47	23 16	2.2	11 11	1.6
30	5 1	19 5	0 27	1 36	23 17	2.2	11 9	1.7
20	5 23	18 43	0 25	1 24	23 20	2.2	11 4	1.8
10	5 42	18 24	0 23	1 18	23 22	2.2	11 1	2.0
0	5 59	18 7	0 23	1 15	23 24	2.1	10 57	2.1
10	6 17	17 49	0 23	1 15	23 25	2.1	10 54	2.2
20	6 35	17 31	0 24	1 19	23 27	2.1	10 50	2.4
30	6 56	17 10	0 26	1 25	23 30	2.0	10 45	2.6
35	7 9	16 57	0 28	1 31	23 31	2.0	10 43	2.7
40	7 23	16 43	0 31	1 38	23 33	2.0	10 40	2.8
45	7 39	16 26	0 34	1 47	23 34	2.0	10 36	2.9
50	8 0	16 6	0 38	1 59	23 36	1.9	10 32	3.1
55	8 27	15 39	0 45	2 17	23 39	1.9	10 27	3.2
60	9 6	15 0	0 58	2 46	23 42	1.8	10 21	3.5
S								

UT	MESEC				JUPITER		SATURN								
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{η}	δ_{η}	S_{θ}	δ_{θ}							
h	°	'	°	'	°	'	°	'							
0	291	8.3	106	6	45.4	-102	106	34.5	6	28.4	24	19.7	-20	24.6	
2	320	7.4	106	6	24.9	-103	136	38.9	6	28.2	54	25.0	-20	24.6	
4	349	6.6	106	6	4.2	-104	166	43.2	6	27.9	84	30.3	-20	24.6	
6	18	5.7	106	5	43.4	-105	196	47.6	6	27.7	114	35.5	-20	24.6	
8	47	4.8	106	5	22.5	-106	226	51.9	6	27.4	144	40.8	-20	24.5	
10	76	4.0	106	5	1.3	-106	256	56.3	6	27.2	174	46.1	-20	24.5	
12	105	3.1	105	4	40.1	-107	287	.6	6	26.9	204	51.4	-20	24.5	
14	134	2.2	105	4	18.7	-107	317	5.0	6	26.6	234	56.6	-20	24.4	
16	163	1.3	105	3	57.2	-108	347	9.3	6	26.4	265	1.9	-20	24.4	
18	192	.3	105	3	35.6	-109	17	13.7	6	26.1	295	7.2	-20	24.4	
20	220	59.3	105	3	13.9	-109	47	18.0	6	25.9	325	12.4	-20	24.3	
22	249	58.3	105	2	52.1	-110	77	22.4	6	25.6	355	17.7	-20	24.3	
Δ								22		-1					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	- 2	50.2	- .5	15.8	T_m	4 45	2.1	58.2	15.9
12	- 2	56.5	$T_{m\odot}$	12 h 2.9 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 26	.1	259	-2.8	♃	16 51	.0	192	-1.5
♁	20 59	.1	130	-1.7	♄	22 19	.0	110	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	14.3	23	18.5	275	31.9	173	12.4	23	42.5	45	30.0	-21	.4
2	209	14.1	23	18.3	305	36.9	203	10.6	23	42.2	75	35.2	-21	.5
4	239	13.8	23	18.1	335	41.8	233	8.9	23	41.8	105	40.3	-21	.5
6	269	13.5	23	17.9	5	46.7	263	7.1	23	41.5	135	45.5	-21	.6
8	299	13.3	23	17.6	35	51.6	293	5.3	23	41.1	165	50.6	-21	.7
10	329	13.0	23	17.4	65	56.6	323	3.6	23	40.7	195	55.8	-21	.7
12	359	12.8	23	17.2	96	1.5	353	1.8	23	40.3	226	.9	-21	.8
14	29	12.5	23	17.0	126	6.4	23	.0	23	40.0	256	6.1	-21	.8
16	59	12.3	23	16.7	156	11.4	52	58.2	23	39.6	286	11.2	-21	.9
18	89	12.0	23	16.5	186	16.3	82	56.5	23	39.2	316	16.3	-21	1.0
20	119	11.8	23	16.3	216	21.2	112	54.7	23	38.8	346	21.4	-21	1.0
22	149	11.5	23	16.0	246	26.1	142	52.9	23	38.4	16	26.5	-21	1.1
Δ		-1		-1				-9		-2		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 39	21 27	1 42	:::	. . . .	.0	11 49	3.4
55	3 23	20 43	0 58	:::	. . . .	.0	11 49	3.1
50	3 53	20 13	0 44	:::	. . . .	.0	11 49	3.0
45	4 15	19 51	0 37	2 32	. . . .	.0	11 49	2.8
40	4 33	19 33	0 33	2 3	. . . .	.0	11 49	2.7
35	4 48	19 18	0 30	1 47	. . . .	.0	11 48	2.6
30	5 1	19 5	0 27	1 36	. . . .	.0	11 48	2.5
20	5 23	18 43	0 25	1 24	. . . .	.0	11 48	2.4
10	5 42	18 24	0 23	1 18	. . . .	.0	11 48	2.3
0	5 59	18 7	0 23	1 15	. . . .	.0	11 48	2.1
10	6 17	17 49	0 23	1 15	. . . .	.0	11 47	2.0
20	6 35	17 31	0 24	1 19	. . . .	.0	11 47	1.9
30	6 56	17 10	0 26	1 25	. . . .	.0	11 47	1.7
35	7 9	16 58	0 28	1 31	. . . .	.0	11 47	1.7
40	7 23	16 44	0 31	1 38	. . . .	.0	11 46	1.6
45	7 39	16 27	0 34	1 47	. . . .	.0	11 46	1.5
50	8 0	16 6	0 38	1 59	. . . .	.0	11 46	1.3
55	8 27	15 39	0 45	2 17	. . . .	.0	11 45	1.2
60	9 5	15 1	0 57	2 46	. . . .	.0	11 45	1.0
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	278	57.2	104	2	30.2	-110	107	26.7	6	25.3	25	23.0	-20	24.3
2	307	56.1	104	2	8.2	-110	137	31.1	6	25.1	55	28.2	-20	24.2
4	336	55.0	104	1	46.1	-111	167	35.4	6	24.8	85	33.5	-20	24.2
6	5	53.8	104	1	24.0	-111	197	39.7	6	24.6	115	38.8	-20	24.2
8	34	52.5	103	1	1.8	-111	227	44.1	6	24.3	145	44.0	-20	24.1
10	63	51.2	103	0	39.6	-111	257	48.4	6	24.0	175	49.3	-20	24.1
12	92	49.8	103	0	17.3	-61	287	52.8	6	23.8	205	54.6	-20	24.1
14	121	48.3	102	0	5.0	112	317	57.1	6	23.5	235	59.8	-20	24.1
16	150	46.8	102	0	27.4	112	348	1.4	6	23.3	266	5.1	-20	24.0
18	179	45.1	101	0	49.7	112	18	5.8	6	23.0	296	10.4	-20	24.0
20	208	43.4	101	1	12.1	112	48	10.1	6	22.7	326	15.6	-20	24.0
22	237	41.5	100	1	34.4	112	78	14.4	6	22.5	356	20.9	-20	23.9
Δ								22		-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	- 3	2.7	- .5	15.8	T _m	5 36	2.1	58.7	16.0
12	- 3	8.9	T _{m☉}	12 h 3.1 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	'	°	
♂	12 28	.1	258	-2.8	♃	16 48	.0	192	-1.5
	20 54	.1	130	-1.7	♄	22 15	.0	110	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	11.2	23	15.8	276	31.1	172	51.2	23	38.0	46	31.6	-21	1.2
2	209	11.0	23	15.6	306	36.0	202	49.4	23	37.6	76	36.7	-21	1.2
4	239	10.7	23	15.3	336	40.9	232	47.7	23	37.1	106	41.8	-21	1.3
6	269	10.5	23	15.1	6	45.8	262	45.9	23	36.7	136	46.9	-21	1.4
8	299	10.2	23	14.8	36	50.8	292	44.1	23	36.3	166	52.0	-21	1.4
10	329	10.0	23	14.6	66	55.7	322	42.4	23	35.9	196	57.0	-21	1.5
12	359	9.7	23	14.3	97	.6	352	40.6	23	35.4	227	2.1	-21	1.6
14	29	9.5	23	14.0	127	5.6	22	38.8	23	35.0	257	7.2	-21	1.7
16	59	9.2	23	13.8	157	10.5	52	37.1	23	34.5	287	12.2	-21	1.7
18	89	9.0	23	13.5	187	15.4	82	35.3	23	34.1	317	17.3	-21	1.8
20	119	8.7	23	13.2	217	20.3	112	33.6	23	33.6	347	22.3	-21	1.9
22	149	8.5	23	13.0	247	25.3	142	31.8	23	33.2	17	27.3	-21	2.0
Δ		-1		-1				-9		-2		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	2 40	21 27	1 41	:::	0 1	.8	13 10	3.6
55	3 24	20 43	0 57	:::	0 4	1.1	13 5	3.3
50	3 53	20 13	0 44	:::	0 5	1.2	13 0	3.1
45	4 16	19 51	0 37	2 32	0 7	1.4	12 57	3.0
40	4 34	19 33	0 33	2 3	0 8	1.5	12 54	2.9
35	4 49	19 18	0 30	1 47	0 9	1.6	12 51	2.8
30	5 2	19 5	0 27	1 36	0 10	1.7	12 49	2.7
20	5 23	18 43	0 25	1 24	0 12	1.9	12 46	2.5
10	5 42	18 24	0 23	1 18	0 13	2.0	12 42	2.3
0	5 60	18 7	0 23	1 15	0 14	2.2	12 39	2.2
10	6 17	17 50	0 23	1 15	0 16	2.3	12 36	2.1
20	6 35	17 31	0 24	1 19	0 18	2.5	12 33	1.9
30	6 56	17 10	0 26	1 25	0 19	2.6	12 29	1.8
35	7 9	16 58	0 28	1 31	0 20	2.7	12 27	1.7
40	7 23	16 44	0 31	1 37	0 22	2.8	12 24	1.6
45	7 39	16 27	0 34	1 47	0 23	3.0	12 21	1.4
50	7 60	16 7	0 38	1 59	0 25	3.1	12 18	1.3
55	8 27	15 40	0 45	2 17	0 27	3.3	12 14	1.1
60	9 5	15 2	0 57	2 45	0 30	3.6	12 8	.9
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	266	39.6	100	1	56.8	112	108	18.8	6	22.2	26	26.2	-20	23.9
2	295	37.6	99	2	19.1	112	138	23.1	6	21.9	56	31.4	-20	23.9
4	324	35.4	99	2	41.4	111	168	27.4	6	21.7	86	36.7	-20	23.8
6	353	33.2	98	3	3.7	111	198	31.8	6	21.4	116	41.9	-20	23.8
8	22	30.8	97	3	25.9	111	228	36.1	6	21.1	146	47.2	-20	23.8
10	51	28.3	97	3	48.1	111	258	40.4	6	20.9	176	52.5	-20	23.7
12	80	25.6	96	4	10.2	110	288	44.8	6	20.6	206	57.7	-20	23.7
14	109	22.8	95	4	32.2	110	318	49.1	6	20.3	237	3.0	-20	23.7
16	138	19.9	95	4	54.2	109	348	53.4	6	20.1	267	8.2	-20	23.7
18	167	16.8	94	5	16.0	109	18	57.8	6	19.8	297	13.5	-20	23.6
20	196	13.6	93	5	37.8	108	49	2.1	6	19.5	327	18.8	-20	23.6
22	225	10.2	92	5	59.4	108	79	6.4	6	19.3	357	24.0	-20	23.6
Δ								22		-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	- 3	15.0	- .5	15.8	T _m	6 27	2.2	59.1	16.1
12	- 3	21.1	T _{m☉}	12 h 3.4 min	Starost	22.9 d	Faza	☉	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	8.2	23	12.7	277	30.2	172	30.1	23	32.7	47	32.4	-21	2.0
2	209	8.0	23	12.4	307	35.1	202	28.3	23	32.2	77	37.4	-21	2.1
4	239	7.7	23	12.1	337	40.1	232	26.5	23	31.8	107	42.4	-21	2.2
6	269	7.5	23	11.9	7	45.0	262	24.8	23	31.3	137	47.4	-21	2.3
8	299	7.2	23	11.6	37	49.9	292	23.0	23	30.8	167	52.4	-21	2.4
10	329	7.0	23	11.3	67	54.8	322	21.3	23	30.3	197	57.4	-21	2.4
12	359	6.7	23	11.0	97	59.8	352	19.5	23	29.8	228	2.4	-21	2.5
14	29	6.5	23	10.7	128	4.7	22	17.8	23	29.3	258	7.4	-21	2.6
16	59	6.2	23	10.4	158	9.6	52	16.0	23	28.8	288	12.4	-21	2.7
18	89	6.0	23	10.1	188	14.6	82	14.3	23	28.3	318	17.4	-21	2.8
20	119	5.7	23	9.8	218	19.5	112	12.5	23	27.8	348	22.3	-21	2.9
22	149	5.5	23	9.5	248	24.4	142	10.8	23	27.3	18	27.3	-21	3.0
Δ		-1		-1				-9		-2		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	2 41	21 26	1 40	:::	0 21	.9	14 36	3.6
55	3 24	20 42	0 57	:::	0 29	1.2	14 25	3.3
50	3 54	20 13	0 44	:::	0 35	1.3	14 16	3.2
45	4 16	19 51	0 37	2 31	0 40	1.5	14 9	3.0
40	4 34	19 33	0 33	2 2	0 44	1.6	14 3	2.9
35	4 49	19 18	0 30	1 47	0 48	1.7	13 57	2.8
30	5 2	19 5	0 27	1 36	0 51	1.8	13 53	2.7
20	5 24	18 43	0 25	1 24	0 57	2.0	13 45	2.5
10	5 42	18 25	0 23	1 18	1 2	2.1	13 38	2.4
0	5 60	18 7	0 22	1 15	1 7	2.2	13 32	2.3
10	6 17	17 50	0 23	1 15	1 11	2.4	13 25	2.2
20	6 35	17 32	0 24	1 19	1 17	2.5	13 19	2.0
30	6 56	17 11	0 26	1 25	1 23	2.7	13 11	1.9
35	7 9	16 58	0 28	1 31	1 26	2.8	13 6	1.8
40	7 23	16 44	0 30	1 37	1 30	2.9	13 1	1.7
45	7 39	16 28	0 34	1 47	1 35	3.0	12 55	1.6
50	7 60	16 7	0 38	1 59	1 40	3.2	12 48	1.4
55	8 27	15 41	0 45	2 17	1 47	3.4	12 40	1.2
60	9 5	15 3	0 57	2 45	1 56	3.6	12 29	1.0
S								

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	254	6.7	92	6 21.0	109	10.7	6 19.0	27 29.3	-20 23.5
2	283	3.0	91	6 42.4	139	15.1	6 18.7	57 34.5	-20 23.5
4	311	59.2	90	7 3.6	169	19.4	6 18.5	87 39.8	-20 23.5
6	340	55.1	89	7 24.7	199	23.7	6 18.2	117 45.1	-20 23.5
8	9	50.9	88	7 45.7	229	28.0	6 17.9	147 50.3	-20 23.4
10	38	46.6	87	8 6.5	259	32.4	6 17.7	177 55.6	-20 23.4
12	67	42.0	86	8 27.1	289	36.7	6 17.4	208 .8	-20 23.4
14	96	37.3	85	8 47.5	319	41.0	6 17.1	238 6.1	-20 23.3
16	125	32.3	84	9 7.8	349	45.3	6 16.9	268 11.3	-20 23.3
18	154	27.2	84	9 27.8	19	49.6	6 16.6	298 16.6	-20 23.3
20	183	21.9	83	9 47.6	49	54.0	6 16.3	328 21.8	-20 23.2
22	212	16.5	82	10 7.2	79	58.3	6 16.0	358 27.1	-20 23.2
Δ					22		-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	- 3 27.2	.5	15.8	T _m	7 19	2.2	59.5	16.2	
12	- 3 33.1	T _{m☉}	12 h 3.6 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 31	.1	255	-2.8	♃	16 41	.0	192	-1.5
	20 46	.1	130	-1.7	♄	22 6	.0	110	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	5.2	23	9.2	278	29.3	172	9.0	23	26.7	48	32.2	-21	3.1
2	209	5.0	23	8.9	308	34.3	202	7.3	23	26.2	78	37.2	-21	3.2
4	239	4.7	23	8.6	338	39.2	232	5.5	23	25.7	108	42.1	-21	3.3
6	269	4.5	23	8.2	8	44.1	262	3.8	23	25.1	138	47.1	-21	3.4
8	299	4.2	23	7.9	38	49.1	292	2.1	23	24.6	168	52.0	-21	3.5
10	329	4.0	23	7.6	68	54.0	322	.3	23	24.1	198	56.9	-21	3.6
12	359	3.7	23	7.3	98	58.9	352	58.6	23	23.5	229	1.9	-21	3.7
14	29	3.5	23	6.9	129	3.8	21	56.8	23	22.9	259	6.8	-21	3.8
16	59	3.3	23	6.6	159	8.8	51	55.1	23	22.4	289	11.7	-21	3.9
18	89	3.0	23	6.3	189	13.7	81	53.4	23	21.8	319	16.6	-21	4.0
20	119	2.8	23	5.9	219	18.6	111	51.6	23	21.2	349	21.5	-21	4.1
22	149	2.5	23	5.6	249	23.6	141	49.9	23	20.7	19	26.4	-21	4.2
Δ		-1		-2				-9		-3		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	2 42	21 25	1 38	:::	0 43	1.1	16 3	3.5
55	3 25	20 42	0 57	:::	0 57	1.4	15 45	3.3
50	3 55	20 13	0 44	:::	1 7	1.5	15 31	3.1
45	4 17	19 51	0 37	2 31	1 16	1.7	15 21	3.0
40	4 35	19 33	0 33	2 2	1 23	1.8	15 12	2.9
35	4 49	19 18	0 30	1 46	1 29	1.9	15 4	2.8
30	5 2	19 5	0 27	1 36	1 34	1.9	14 58	2.7
20	5 24	18 43	0 24	1 24	1 44	2.1	14 46	2.6
10	5 43	18 25	0 23	1 17	1 52	2.2	14 36	2.5
0	6 0	18 7	0 22	1 15	2 0	2.3	14 27	2.4
10	6 17	17 50	0 23	1 15	2 8	2.4	14 17	2.3
20	6 36	17 32	0 24	1 19	2 17	2.6	14 7	2.2
30	6 57	17 11	0 26	1 25	2 27	2.7	13 56	2.0
35	7 9	16 59	0 28	1 31	2 33	2.8	13 49	2.0
40	7 23	16 45	0 30	1 37	2 39	2.9	13 42	1.9
45	7 39	16 28	0 34	1 47	2 47	3.0	13 33	1.8
50	7 60	16 8	0 38	1 59	2 56	3.1	13 23	1.6
55	8 26	15 41	0 45	2 17	3 8	3.3	13 10	1.5
60	9 4	15 4	0 57	2 45	3 23	3.6	12 53	1.2
S								

UT	MESEC				JUPITER		SATURN		
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄	
h	°	'	°	'	°	'	°	'	
0	241	10.8	81	10 26.5	110	2.6	6 15.8	28 32.4	-20 23.2
2	270	4.9	80	10 45.6	140	6.9	6 15.5	58 37.6	-20 23.2
4	298	58.8	79	11 4.5	170	11.2	6 15.2	88 42.9	-20 23.1
6	327	52.5	78	11 23.0	200	15.5	6 15.0	118 48.1	-20 23.1
8	356	46.1	77	11 41.4	230	19.9	6 14.7	148 53.4	-20 23.1
10	25	39.4	76	11 59.4	260	24.2	6 14.4	178 58.6	-20 23.0
12	54	32.6	75	12 17.1	290	28.5	6 14.1	209 3.9	-20 23.0
14	83	25.5	74	12 34.5	320	32.8	6 13.9	239 9.1	-20 23.0
16	112	18.3	73	12 51.6	350	37.1	6 13.6	269 14.4	-20 23.0
18	141	10.8	72	13 8.4	20	41.4	6 13.3	299 19.6	-20 22.9
20	170	3.2	71	13 24.9	50	45.7	6 13.0	329 24.9	-20 22.9
22	198	55.4	70	13 41.0	80	50.0	6 12.8	359 30.1	-20 22.9
Δ					22		-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	- 3 39.1	.5	15.8	T _m	8 13	2.4	59.8	16.3	
12	- 3 45.0	T _{m☉}	12 h 3.8 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	'	°	
♂	12 32	.1	254	-2.8	♃	16 37	.0	192	-1.5
	20 42	.1	130	-1.7	♄	22 2	.0	110	.3

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	2.3	23	5.3	279	28.5	171	48.1	23	20.1	49	31.3	-21	4.3	
2	209	2.0	23	4.9	309	33.4	201	46.4	23	19.5	79	36.1	-21	4.4	
4	239	1.8	23	4.6	339	38.3	231	44.7	23	18.9	109	41.0	-21	4.5	
6	269	1.6	23	4.2	9	43.3	261	42.9	23	18.3	139	45.9	-21	4.6	
8	299	1.3	23	3.9	39	48.2	291	41.2	23	17.7	169	50.7	-21	4.7	
10	329	1.1	23	3.5	69	53.1	321	39.5	23	17.1	199	55.6	-21	4.8	
12	359	.8	23	3.1	99	58.0	351	37.8	23	16.5	230	.4	-21	4.9	
14	29	.6	23	2.8	130	3.0	21	36.0	23	15.9	260	5.3	-21	5.0	
16	59	.4	23	2.4	160	7.9	51	34.3	23	15.3	290	10.1	-21	5.2	
18	89	.1	23	2.0	190	12.8	81	32.6	23	14.6	320	14.9	-21	5.3	
20	118	59.9	23	1.7	220	17.8	111	30.8	23	14.0	350	19.8	-21	5.4	
22	148	59.7	23	1.3	250	22.7	141	29.1	23	13.4	20	24.6	-21	5.5	
Δ		-1		-2				-9		-3		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	2 43	21 25	1 37	:::	1 10	1.4	17 26	3.2
55	3 26	20 42	0 57	:::	1 29	1.6	17 3	3.0
50	3 55	20 12	0 44	:::	1 44	1.8	16 46	2.9
45	4 17	19 50	0 37	2 30	1 56	1.9	16 32	2.8
40	4 35	19 33	0 33	2 2	2 5	2.0	16 21	2.8
35	4 50	19 18	0 30	1 46	2 14	2.1	16 11	2.7
30	5 3	19 5	0 27	1 36	2 21	2.1	16 3	2.7
20	5 24	18 44	0 24	1 24	2 34	2.2	15 48	2.6
10	5 43	18 25	0 23	1 17	2 45	2.3	15 35	2.5
0	6 0	18 8	0 22	1 15	2 56	2.4	15 23	2.4
10	6 17	17 50	0 23	1 15	3 7	2.5	15 12	2.4
20	6 36	17 32	0 24	1 18	3 18	2.6	14 59	2.3
30	6 57	17 11	0 26	1 25	3 32	2.7	14 45	2.2
35	7 9	16 59	0 28	1 30	3 39	2.8	14 36	2.2
40	7 23	16 45	0 30	1 37	3 48	2.8	14 27	2.1
45	7 39	16 29	0 34	1 46	3 59	2.9	14 15	2.0
50	7 59	16 9	0 38	1 59	4 11	3.0	14 2	1.9
55	8 26	15 42	0 45	2 17	4 27	3.2	13 45	1.8
60	9 3	15 5	0 57	2 45	4 48	3.4	13 23	1.6

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	227	47.4	69	13	56.8	77	110	54.3	6	12.5	29	35.4	-20	22.8	
2	256	39.2	68	14	12.2	75	140	58.6	6	12.2	59	40.6	-20	22.8	
4	285	30.8	67	14	27.3	73	171	2.9	6	11.9	89	45.9	-20	22.8	
6	314	22.2	66	14	41.9	71	201	7.3	6	11.7	119	51.1	-20	22.8	
8	343	13.5	66	14	56.2	70	231	11.6	6	11.4	149	56.4	-20	22.7	
10	12	4.6	65	15	10.1	68	261	15.9	6	11.1	180	1.6	-20	22.7	
12	40	55.6	64	15	23.6	65	291	20.2	6	10.8	210	6.9	-20	22.7	
14	69	46.3	63	15	36.7	63	321	24.5	6	10.5	240	12.1	-20	22.6	
16	98	37.0	62	15	49.4	61	351	28.8	6	10.3	270	17.3	-20	22.6	
18	127	27.5	62	16	1.7	59	21	33.1	6	10.0	300	22.6	-20	22.6	
20	156	17.8	61	16	13.5	57	51	37.4	6	9.7	330	27.8	-20	22.6	
22	185	8.0	60	16	24.9	55	81	41.7	6	9.4	0	33.1	-20	22.5	
Δ							22			-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	- 3 50.9	-.5	15.8	T _m	9 10	2.4	59.9	16.3
12	- 3 56.6	T _{m☉}	12 h 3.9 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 34	.1	252	-2.8	♄	16 34	.0	191	-1.4
♂	20 39	.1	130	-1.7	♄	21 58	.0	110	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	59.4	23	.9	280	27.6	171	27.4	23	12.7	50	29.4	-21	5.6	
2	208	59.2	23	.6	310	32.5	201	25.7	23	12.1	80	34.2	-21	5.7	
4	238	58.9	23	.2	340	37.5	231	24.0	23	11.5	110	39.0	-21	5.9	
6	268	58.7	22	59.8	10	42.4	261	22.2	23	10.8	140	43.8	-21	6.0	
8	298	58.5	22	59.4	40	47.3	291	20.5	23	10.1	170	48.6	-21	6.1	
10	328	58.2	22	59.0	70	52.3	321	18.8	23	9.5	200	53.4	-21	6.2	
12	358	58.0	22	58.6	100	57.2	351	17.1	23	8.8	230	58.1	-21	6.4	
14	28	57.8	22	58.2	131	2.1	21	15.4	23	8.1	261	2.9	-21	6.5	
16	58	57.5	22	57.8	161	7.0	51	13.6	23	7.5	291	7.7	-21	6.6	
18	88	57.3	22	57.4	191	12.0	81	11.9	23	6.8	321	12.4	-21	6.7	
20	118	57.1	22	57.0	221	16.9	111	10.2	23	6.1	351	17.2	-21	6.9	
22	148	56.8	22	56.6	251	21.8	141	8.5	23	5.4	20	21.9	-21	7.0	
Δ		-1		-2				-9		-3		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	2 44	21 24	1 35	:::	1 44	1.8	18 43	2.7
55	3 27	20 41	0 57	:::	2 8	2.0	18 16	2.7
50	3 56	20 12	0 44	:::	2 27	2.1	17 56	2.6
45	4 18	19 50	0 37	2 30	2 41	2.1	17 40	2.6
40	4 36	19 33	0 33	2 2	2 53	2.2	17 27	2.6
35	4 50	19 18	0 30	1 46	3 3	2.2	17 16	2.6
30	5 3	19 5	0 27	1 36	3 12	2.3	17 6	2.5
20	5 25	18 44	0 24	1 24	3 28	2.3	16 50	2.5
10	5 43	18 25	0 23	1 17	3 41	2.4	16 35	2.5
0	6 0	18 8	0 22	1 15	3 54	2.5	16 22	2.5
10	6 18	17 51	0 23	1 15	4 7	2.5	16 8	2.4
20	6 36	17 33	0 24	1 18	4 20	2.5	15 54	2.4
30	6 57	17 12	0 26	1 25	4 36	2.6	15 37	2.4
35	7 9	16 60	0 28	1 30	4 46	2.6	15 28	2.3
40	7 22	16 46	0 30	1 37	4 56	2.7	15 17	2.3
45	7 39	16 30	0 34	1 46	5 9	2.7	15 4	2.3
50	7 59	16 9	0 38	1 59	5 24	2.8	14 48	2.2
55	8 25	15 43	0 45	2 17	5 43	2.9	14 28	2.2
60	9 3	15 6	0 57	2 44	6 9	3.0	14 2	2.1

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	213	58.1	60	16	35.9	53	111	46.0	6	9.2	30	38.3	-20	22.5	
2	242	48.0	59	16	46.4	50	141	50.3	6	8.9	60	43.6	-20	22.5	
4	271	37.9	59	16	56.4	48	171	54.6	6	8.6	90	48.8	-20	22.4	
6	300	27.6	58	17	6.0	46	201	58.9	6	8.3	120	54.1	-20	22.4	
8	329	17.2	58	17	15.1	43	232	3.2	6	8.0	150	59.3	-20	22.4	
10	358	6.8	57	17	23.8	41	262	7.4	6	7.8	181	4.5	-20	22.4	
12	26	56.3	57	17	32.0	39	292	11.7	6	7.5	211	9.8	-20	22.3	
14	55	45.7	57	17	39.7	36	322	16.0	6	7.2	241	15.0	-20	22.3	
16	84	35.0	56	17	46.9	34	352	20.3	6	6.9	271	20.3	-20	22.3	
18	113	24.3	56	17	53.6	31	22	24.6	6	6.6	301	25.5	-20	22.3	
20	142	13.6	56	17	59.9	29	52	28.9	6	6.3	331	30.7	-20	22.2	
22	171	2.8	56	18	5.6	26	82	33.2	6	6.1	1	36.0	-20	22.2	
Δ							21			-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	- 4 2.3	-.5	15.8	T _m	10 8	2.5	59.9	16.3
12	- 4 8.0	T _{m☉}	12 h 4.1 min	Starost	26.9 d	Faza	☉	

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

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 56.6	22 56.2	281 26.8	171 6.8	23 4.7	51 26.7	-21 7.1	
2	208 56.4	22 55.8	311 31.7	201 5.1	23 4.0	81 31.4	-21 7.3	
4	238 56.1	22 55.4	341 36.6	231 3.4	23 3.3	111 36.1	-21 7.4	
6	268 55.9	22 55.0	11 41.5	261 1.7	23 2.6	141 40.9	-21 7.5	
8	298 55.7	22 54.5	41 46.5	290 60.0	23 1.9	171 45.6	-21 7.7	
10	328 55.5	22 54.1	71 51.4	320 58.3	23 1.2	201 50.3	-21 7.8	
12	358 55.2	22 53.7	101 56.3	350 56.6	23 .4	231 55.0	-21 8.0	
14	28 55.0	22 53.3	132 1.3	20 54.9	22 59.7	261 59.7	-21 8.1	
16	58 54.8	22 52.8	162 6.2	50 53.2	22 59.0	292 4.4	-21 8.2	
18	88 54.6	22 52.4	192 11.1	80 51.5	22 58.2	322 9.1	-21 8.4	
20	118 54.3	22 52.0	222 16.0	110 49.8	22 57.5	352 13.7	-21 8.5	
22	148 54.1	22 51.5	252 21.0	140 48.1	22 56.8	22 18.4	-21 8.7	
Δ	-1	-2		-9	-4	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	2 45	21 23	1 34	:::	2 28	2.3	19 48	2.2
55	3 28	20 41	0 56	:::	2 56	2.4	19 20	2.2
50	3 57	20 12	0 44	:::	3 16	2.4	18 59	2.3
45	4 19	19 50	0 37	2 29	3 33	2.4	18 42	2.3
40	4 36	19 32	0 33	2 1	3 46	2.4	18 29	2.3
35	4 51	19 18	0 29	1 46	3 57	2.4	18 17	2.3
30	5 3	19 5	0 27	1 36	4 7	2.4	18 7	2.4
20	5 25	18 44	0 24	1 24	4 24	2.4	17 50	2.4
10	5 43	18 25	0 23	1 17	4 39	2.4	17 35	2.4
0	6 1	18 8	0 22	1 15	4 53	2.4	17 21	2.4
10	6 18	17 51	0 23	1 15	5 7	2.4	17 7	2.4
20	6 36	17 33	0 24	1 18	5 22	2.4	16 51	2.5
30	6 56	17 12	0 26	1 25	5 39	2.5	16 34	2.5
35	7 9	17 0	0 28	1 30	5 49	2.5	16 24	2.5
40	7 22	16 46	0 30	1 37	6 0	2.5	16 12	2.5
45	7 39	16 30	0 34	1 46	6 14	2.5	15 59	2.5
50	7 59	16 10	0 38	1 59	6 30	2.5	15 42	2.5
55	8 25	15 44	0 45	2 16	6 52	2.4	15 21	2.5
60	9 2	15 7	0 56	2 44	7 21	2.4	14 52	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	199 52.0	56 18 10.9	24	112 37.5	6 5.8	31 41.2	-20 22.2	
2	228 41.2	56 18 15.6	21	142 41.8	6 5.5	61 46.5	-20 22.2	
4	257 30.4	56 18 19.9	19	172 46.1	6 5.2	91 51.7	-20 22.1	
6	286 19.6	56 18 23.7	16	202 50.4	6 4.9	121 56.9	-20 22.1	
8	315 8.8	56 18 26.9	14	232 54.6	6 4.6	152 2.2	-20 22.1	
10	343 58.1	57 18 29.7	11	262 58.9	6 4.4	182 7.4	-20 22.0	
12	12 47.4	57 18 31.9	9	293 3.2	6 4.1	212 12.6	-20 22.0	
14	41 36.7	57 18 33.7	6	323 7.5	6 3.8	242 17.9	-20 22.0	
16	70 26.1	58 18 34.9	4	353 11.8	6 3.5	272 23.1	-20 22.0	
18	99 15.6	58 18 35.7	1	23 16.1	6 3.2	302 28.3	-20 21.9	
20	128 5.2	58 18 35.9	-1	53 20.4	6 2.9	332 33.6	-20 21.9	
22	156 54.9	59 18 35.7	-4	83 24.6	6 2.6	2 38.8	-20 21.9	
Δ				21	-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 13.6	- .5	15.8	T _m	11 7	2.4	59.6	16.2	
12	- 4 19.0	T _{m☉}	12 h 4.3 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	'	°	°
♁	12 36	.1	250	-2.8	♃	16 27	.0	191	-1.4
♂	20 31	.1	130	-1.6	♄	21 49	.0	110	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 53.9	22 51.1	282 25.9	170 46.4	22 56.0	52 23.1	-21 8.8	
2	208 53.7	22 50.6	312 30.8	200 44.7	22 55.2	82 27.7	-21 9.0	
4	238 53.4	22 50.2	342 35.8	230 43.0	22 54.5	112 32.4	-21 9.1	
6	268 53.2	22 49.7	12 40.7	260 41.3	22 53.7	142 37.1	-21 9.3	
8	298 53.0	22 49.3	42 45.6	290 39.6	22 53.0	172 41.7	-21 9.4	
10	328 52.8	22 48.8	72 50.5	320 37.9	22 52.2	202 46.3	-21 9.6	
12	358 52.5	22 48.4	102 55.5	350 36.2	22 51.4	232 51.0	-21 9.7	
14	28 52.3	22 47.9	133 .4	20 34.5	22 50.6	262 55.6	-21 9.9	
16	58 52.1	22 47.4	163 5.3	50 32.8	22 49.8	293 .2	-21 10.0	
18	88 51.9	22 47.0	193 10.3	80 31.2	22 49.0	323 4.8	-21 10.2	
20	118 51.7	22 46.5	223 15.2	110 29.5	22 48.2	353 9.4	-21 10.3	
22	148 51.4	22 46.0	253 20.1	140 27.8	22 47.4	23 14.0	-21 10.5	
Δ	-1	-2		-8	-4	23	-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 46	21 22	1 32	:::	3 24	2.8	20 40	1.6
55	3 29	20 40	0 56	:::	3 53	2.7	20 13	1.8
50	3 57	20 11	0 44	:::	4 14	2.6	19 53	1.9
45	4 19	19 50	0 37	2 28	4 30	2.6	19 37	2.0
40	4 37	19 32	0 32	2 1	4 44	2.6	19 25	2.0
35	4 51	19 18	0 29	1 46	4 55	2.5	19 13	2.1
30	5 4	19 5	0 27	1 36	5 5	2.5	19 4	2.1
20	5 25	18 44	0 24	1 23	5 22	2.5	18 47	2.2
10	5 44	18 25	0 23	1 17	5 37	2.4	18 32	2.3
0	6 1	18 8	0 22	1 15	5 51	2.4	18 19	2.3
10	6 18	17 51	0 23	1 15	6 5	2.3	18 5	2.4
20	6 36	17 33	0 24	1 18	6 20	2.3	17 50	2.4
30	6 56	17 13	0 26	1 25	6 38	2.2	17 33	2.5
35	7 8	17 1	0 28	1 30	6 48	2.2	17 23	2.6
40	7 22	16 47	0 30	1 37	6 59	2.2	17 12	2.6
45	7 38	16 31	0 34	1 46	7 13	2.1	16 59	2.7
50	7 58	16 11	0 38	1 59	7 29	2.1	16 43	2.7
55	8 24	15 45	0 45	2 16	7 50	2.0	16 22	2.8
60	9 1	15 8	0 56	2 43	8 19	1.9	15 53	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	185 44.7	60 18 35.0	-6	113 28.9	6 2.4	32 44.0	-20 21.9	
2	214 34.6	60 18 33.7	-9	143 33.2	6 2.1	62 49.3	-20 21.8	
4	243 24.7	61 18 32.0	-11	173 37.5	6 1.8	92 54.5	-20 21.8	
6	272 14.9	62 18 29.8	-13	203 41.8	6 1.5	122 59.7	-20 21.8	
8	301 5.2	62 18 27.1	-16	233 46.0	6 1.2	153 5.0	-20 21.8	
10	329 55.7	63 18 23.9	-18	263 50.3	6 .9	183 10.2	-20 21.7	
12	358 46.4	64 18 20.3	-21	293 54.6	6 .6	213 15.4	-20 21.7	
14	27 37.2	65 18 16.2	-23	323 58.9	6 .3	243 20.7	-20 21.7	
16	56 28.2	66 18 11.6	-25	354 3.1	6 .1	273 25.9	-20 21.7	
18	85 19.5	67 18 6.6	-27	24 7.4	5 59.8	303 31.1	-20 21.6	
20	114 10.9	68 18 1.1	-30	54 11.7	5 59.5	333 36.3	-20 21.6	
22	143 2.5	69 17 55.1	-32	84 16.0	5 59.2	3 41.6	-20 21.6	
Δ				21	-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 24.5	- .4	15.8	T _m	12 5	2.4	59.2	16.1	
12	- 4 29.8	T _{m☉}	12 h 4.5 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	'	°	°
♁	12 38	.1	248	-2.8	♃	16 24	.0	191	-1.4
♂	20 27	.1	130	-1.6	♄	21 45	.0	110	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 51.2	22 45.6	283 25.0	170 26.1	22 46.6	53 18.6	-21 10.6
2	208 51.0	22 45.1	313 30.0	200 24.4	22 45.8	83 23.2	-21 10.8
4	238 50.8	22 44.6	343 34.9	230 22.8	22 45.0	113 27.8	-21 11.0
6	268 50.6	22 44.1	13 39.8	260 21.1	22 44.2	143 32.4	-21 11.1
8	298 50.4	22 43.6	43 44.7	290 19.4	22 43.3	173 37.0	-21 11.3
10	328 50.1	22 43.1	73 49.7	320 17.7	22 42.5	203 41.5	-21 11.5
12	358 49.9	22 42.6	103 54.6	350 16.1	22 41.7	233 46.1	-21 11.6
14	28 49.7	22 42.2	133 59.5	20 14.4	22 40.8	263 50.7	-21 11.8
16	58 49.5	22 41.7	164 4.5	50 12.7	22 40.0	293 55.2	-21 12.0
18	88 49.3	22 41.2	194 9.4	80 11.0	22 39.1	323 59.8	-21 12.1
20	118 49.1	22 40.7	224 14.3	110 9.4	22 38.3	354 4.3	-21 12.3
22	148 48.9	22 40.1	254 19.2	140 7.7	22 37.4	24 8.8	-21 12.5
Δ	-1	-2		-8	-4	23	-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 48	21 21	1 31	:	4 31	3.1	21 20	1.2
55	3 30	20 39	0 56	:	4 58	2.9	20 56	1.4
50	3 58	20 11	0 44	:	5 17	2.8	20 39	1.6
45	4 20	19 49	0 37	2 28	5 32	2.7	20 25	1.7
40	4 37	19 32	0 32	2 1	5 45	2.6	20 14	1.8
35	4 52	19 17	0 29	1 45	5 56	2.6	20 4	1.9
30	5 4	19 5	0 27	1 35	6 5	2.5	19 55	1.9
20	5 26	18 44	0 24	1 23	6 21	2.4	19 40	2.0
10	5 44	18 25	0 23	1 17	6 35	2.3	19 27	2.1
0	6 1	18 8	0 22	1 15	6 48	2.3	19 15	2.2
10	6 18	17 51	0 23	1 15	7 1	2.2	19 2	2.3
20	6 36	17 34	0 24	1 18	7 16	2.1	18 49	2.4
30	6 56	17 13	0 26	1 25	7 32	2.0	18 34	2.5
35	7 8	17 1	0 28	1 30	7 41	2.0	18 25	2.6
40	7 22	16 48	0 30	1 37	7 52	1.9	18 15	2.6
45	7 38	16 31	0 34	1 46	8 4	1.8	18 3	2.7
50	7 58	16 12	0 38	1 58	8 19	1.7	17 48	2.8
55	8 24	15 46	0 45	2 16	8 38	1.6	17 30	3.0
60	9 0	15 9	0 56	2 43	9 4	1.4	17 5	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	171 54.4	70	17 48.8	-34	114 20.2	5 58.9	33 46.8	-20 21.6
2	200 46.5	72	17 41.9	-36	144 24.5	5 58.6	63 52.0	-20 21.5
4	229 38.8	73	17 34.7	-38	174 28.8	5 58.3	93 57.3	-20 21.5
6	258 31.4	74	17 27.0	-40	204 33.0	5 58.0	124 2.5	-20 21.5
8	287 24.2	75	17 18.9	-43	234 37.3	5 57.7	154 7.7	-20 21.5
10	316 17.2	77	17 10.4	-45	264 41.6	5 57.4	184 12.9	-20 21.4
12	345 10.6	78	17 1.5	-47	294 45.9	5 57.1	214 18.2	-20 21.4
14	14 4.2	79	16 52.2	-48	324 50.1	5 56.9	244 23.4	-20 21.4
16	42 58.0	81	16 42.5	-50	354 54.4	5 56.6	274 28.6	-20 21.4
18	71 52.1	82	16 32.4	-52	24 58.7	5 56.3	304 33.8	-20 21.3
20	100 46.5	83	16 22.0	-54	55 2.9	5 56.0	334 39.0	-20 21.3
22	129 41.2	85	16 11.2	-56	85 7.2	5 55.7	4 44.3	-20 21.3
Δ					21	-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 35.1	-.4	15.8	T _m	13 2	2.2	58.6 16.0
12	- 4 40.2	T _{m☉}	12 h 4.7 min	Starost	.5 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
☾	h min	'	°		☾	h min	'	°	
♂	12 39	.1	247	-2.8	♂	16 20	.0	191	-1.4
♂	20 24	.1	130	-1.6	♂	21 41	.0	110	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 48.7	22 39.6	284 24.2	170 6.0	22 36.6	54 13.4	-21 12.6
2	208 48.5	22 39.1	314 29.1	200 4.4	22 35.7	84 17.9	-21 12.8
4	238 48.2	22 38.6	344 34.0	230 2.7	22 34.8	114 22.4	-21 13.0
6	268 48.0	22 38.1	14 39.0	260 1.1	22 34.0	144 26.9	-21 13.2
8	298 47.8	22 37.6	44 43.9	289 59.4	22 33.1	174 31.4	-21 13.3
10	328 47.6	22 37.1	74 48.8	319 57.7	22 32.2	204 35.9	-21 13.5
12	358 47.4	22 36.5	104 53.7	349 56.1	22 31.3	234 40.4	-21 13.7
14	28 47.2	22 36.0	134 58.7	19 54.4	22 30.4	264 44.9	-21 13.9
16	58 47.0	22 35.5	165 3.6	49 52.8	22 29.5	294 49.4	-21 14.1
18	88 46.8	22 34.9	195 8.5	79 51.1	22 28.6	324 53.8	-21 14.2
20	118 46.6	22 34.4	225 13.5	109 49.5	22 27.7	354 58.3	-21 14.4
22	148 46.4	22 33.9	255 18.4	139 47.8	22 26.8	25 2.8	-21 14.6
Δ	-1	-3		-8	-4	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 49	21 20	1 29	:	5 45	3.2	21 49	1.0
55	3 31	20 38	0 55	:	6 7	3.0	21 31	1.2
50	3 59	20 10	0 43	:	6 24	2.8	21 17	1.3
45	4 21	19 49	0 37	2 27	6 37	2.7	21 6	1.5
40	4 38	19 32	0 32	2 0	6 48	2.6	20 56	1.6
35	4 52	19 17	0 29	1 45	6 57	2.5	20 48	1.7
30	5 5	19 5	0 27	1 35	7 5	2.5	20 41	1.7
20	5 26	18 44	0 24	1 23	7 19	2.3	20 29	1.9
10	5 44	18 25	0 23	1 17	7 31	2.2	20 18	2.0
0	6 1	18 8	0 22	1 15	7 43	2.1	20 8	2.1
10	6 18	17 52	0 23	1 15	7 54	2.0	19 57	2.2
20	6 36	17 34	0 24	1 18	8 6	1.9	19 46	2.3
30	6 56	17 14	0 26	1 25	8 20	1.8	19 33	2.4
35	7 8	17 2	0 28	1 30	8 28	1.7	19 26	2.5
40	7 22	16 48	0 30	1 37	8 37	1.7	19 18	2.6
45	7 38	16 32	0 33	1 46	8 48	1.6	19 8	2.7
50	7 58	16 12	0 38	1 58	9 1	1.5	18 56	2.8
55	8 23	15 47	0 45	2 16	9 17	1.3	18 41	3.0
60	8 59	15 11	0 56	2 43	9 38	1.1	18 20	3.2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	158 36.2	86	16 .0	-58	115 11.4	5 55.4	34 49.5	-20 21.3
2	187 31.5	88	15 48.5	-59	145 15.7	5 55.1	64 54.7	-20 21.2
4	216 27.0	89	15 36.7	-61	175 20.0	5 54.8	94 59.9	-20 21.2
6	245 22.9	91	15 24.5	-63	205 24.2	5 54.5	125 5.2	-20 21.2
8	274 19.0	92	15 12.0	-64	235 28.5	5 54.2	155 10.4	-20 21.2
10	303 15.4	94	14 59.1	-66	265 32.8	5 53.9	185 15.6	-20 21.1
12	332 12.2	95	14 46.0	-67	295 37.0	5 53.6	215 20.8	-20 21.1
14	1 9.2	97	14 32.6	-69	325 41.3	5 53.3	245 26.0	-20 21.1
16	30 6.5	98	14 18.8	-70	355 45.5	5 53.0	275 31.2	-20 21.1
18	59 4.1	100	14 4.8	-71	25 49.8	5 52.7	305 36.5	-20 21.0
20	88 2.0	101	13 50.5	-73	55 54.0	5 52.4	335 41.7	-20 21.0
22	117 .2	103	13 36.0	-74	85 58.3	5 52.1	5 46.9	-20 21.0
Δ					21	-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 45.4	-.4	15.8	T _m	13 55	2.1	57.9 15.8
12	- 4 50.3	T _{m☉}	12 h 4.8 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	'	°	
♂	12 40	.1	246	-2.8	♂	16 17	.0	191	-1.4
♂	20 20	.1	130	-1.6	♂	21 37	.0	110	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 46.2	22 33.3	285 23.3	169 46.2	22 25.9	55 7.2	-21 14.8	
2	208 46.0	22 32.8	315 28.2	199 44.5	22 24.9	85 11.7	-21 15.0	
4	238 45.8	22 32.2	345 33.2	229 42.9	22 24.0	115 16.1	-21 15.2	
6	268 45.6	22 31.7	15 38.1	259 41.3	22 23.1	145 20.6	-21 15.3	
8	298 45.4	22 31.1	45 43.0	289 39.6	22 22.1	175 25.0	-21 15.5	
10	328 45.2	22 30.6	75 48.0	319 38.0	22 21.2	205 29.4	-21 15.7	
12	358 45.0	22 30.0	105 52.9	349 36.3	22 20.3	235 33.9	-21 15.9	
14	28 44.8	22 29.5	135 57.8	19 34.7	22 19.3	265 38.3	-21 16.1	
16	58 44.6	22 28.9	166 2.7	49 33.1	22 18.4	295 42.7	-21 16.3	
18	88 44.4	22 28.3	196 7.7	79 31.4	22 17.4	325 47.1	-21 16.5	
20	118 44.2	22 27.8	226 12.6	109 29.8	22 16.4	355 51.5	-21 16.7	
22	148 44.0	22 27.2	256 17.5	139 28.2	22 15.5	25 55.9	-21 16.9	
Δ	-1	-3		-8	-5	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 50	21 19	1 28	:	7 2	3.2	22 13	.8
55	3 32	20 38	0 55	:	7 19	3.0	21 60	1.0
50	3 60	20 10	0 43	:	7 32	2.8	21 49	1.2
45	4 21	19 48	0 37	2 26	7 42	2.7	21 41	1.3
40	4 38	19 31	0 32	2 0	7 50	2.6	21 34	1.4
35	4 53	19 17	0 29	1 45	7 58	2.5	21 28	1.5
30	5 5	19 5	0 27	1 35	8 4	2.4	21 23	1.6
20	5 26	18 44	0 24	1 23	8 15	2.2	21 13	1.7
10	5 45	18 25	0 23	1 17	8 25	2.1	21 5	1.8
0	6 1	18 9	0 22	1 15	8 34	2.0	20 57	2.0
10	6 18	17 52	0 23	1 15	8 43	1.9	20 50	2.1
20	6 36	17 34	0 24	1 18	8 53	1.8	20 41	2.2
30	6 56	17 14	0 26	1 25	9 4	1.6	20 32	2.3
35	7 8	17 2	0 28	1 30	9 10	1.6	20 26	2.4
40	7 21	16 49	0 30	1 37	9 17	1.5	20 20	2.5
45	7 37	16 33	0 33	1 46	9 26	1.4	20 12	2.6
50	7 57	16 13	0 38	1 58	9 36	1.2	20 3	2.8
55	8 22	15 48	0 44	2 15	9 48	1.1	19 52	2.9
60	8 58	15 12	0 56	2 42	10 4	.9	19 37	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	145 58.8	104	13 21.2	-75	116 2.6	5 51.8	35 52.1	-20 21.0
2	174 57.6	105	13 6.1	-77	146 6.8	5 51.5	65 57.3	-20 20.9
4	203 56.7	107	12 50.8	-78	176 11.1	5 51.2	96 2.5	-20 20.9
6	232 56.0	108	12 35.3	-79	206 15.3	5 50.9	126 7.8	-20 20.9
8	261 55.7	110	12 19.5	-80	236 19.6	5 50.6	156 13.0	-20 20.9
10	290 55.7	111	12 3.5	-81	266 23.8	5 50.4	186 18.2	-20 20.9
12	319 55.9	113	11 47.4	-82	296 28.1	5 50.1	216 23.4	-20 20.8
14	348 56.4	114	11 31.0	-83	326 32.3	5 49.8	246 28.6	-20 20.8
16	17 57.2	115	11 14.4	-84	356 36.6	5 49.5	276 33.8	-20 20.8
18	46 58.3	117	10 57.6	-85	26 40.8	5 49.2	306 39.0	-20 20.8
20	75 59.7	118	10 40.6	-86	56 45.1	5 48.9	336 44.2	-20 20.7
22	105 1.3	119	10 23.5	-86	86 49.3	5 48.6	6 49.5	-20 20.7
Δ					21	-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	- 4 55.2	-.4	15.8	T _m	14 46	2.0	57.2 15.6
12	- 4 60.0	T _{m☉}	12 h 5.0 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	'	°	
♂	12 42	.1	244	-2.8	♄	16 14	.0	191	-1.4
♂	20 17	.1	130	-1.6	♂	21 33	.0	110	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 43.8	22 26.6	286 22.5	169 26.5	22 14.5	56 .3	-21 17.1	
2	208 43.6	22 26.0	316 27.4	199 24.9	22 13.5	86 4.7	-21 17.3	
4	238 43.4	22 25.5	346 32.3	229 23.3	22 12.5	116 9.0	-21 17.5	
6	268 43.2	22 24.9	16 37.2	259 21.7	22 11.6	146 13.4	-21 17.7	
8	298 43.1	22 24.3	46 42.2	289 20.0	22 10.6	176 17.8	-21 17.9	
10	328 42.9	22 23.7	76 47.1	319 18.4	22 9.6	206 22.1	-21 18.1	
12	358 42.7	22 23.1	106 52.0	349 16.8	22 8.6	236 26.5	-21 18.3	
14	28 42.5	22 22.5	136 56.9	19 15.2	22 7.6	266 30.8	-21 18.5	
16	58 42.3	22 21.9	167 1.9	49 13.6	22 6.6	296 35.2	-21 18.7	
18	88 42.1	22 21.3	197 6.8	79 12.0	22 5.6	326 39.5	-21 18.9	
20	118 41.9	22 20.7	227 11.7	109 10.3	22 4.5	356 43.9	-21 19.1	
22	148 41.7	22 20.1	257 16.7	139 8.7	22 3.5	26 48.2	-21 19.3	
Δ	-1	-3		-8	-5	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 52	21 17	1 27	:	8 18	3.1	22 32	.7
55	3 33	20 37	0 55	:	8 30	2.9	22 24	.9
50	4 1	20 9	0 43	:	8 38	2.7	22 17	1.1
45	4 22	19 48	0 37	2 25	8 46	2.6	22 12	1.2
40	4 39	19 31	0 32	1 60	8 52	2.5	22 8	1.3
35	4 53	19 17	0 29	1 45	8 57	2.4	22 4	1.4
30	5 6	19 4	0 27	1 35	9 1	2.3	22 1	1.5
20	5 27	18 44	0 24	1 23	9 9	2.2	21 55	1.6
10	5 45	18 25	0 23	1 17	9 16	2.0	21 49	1.7
0	6 2	18 9	0 22	1 14	9 22	1.9	21 44	1.9
10	6 18	17 52	0 23	1 15	9 29	1.8	21 39	2.0
20	6 36	17 35	0 24	1 18	9 35	1.7	21 34	2.1
30	6 56	17 15	0 26	1 25	9 43	1.5	21 28	2.3
35	7 8	17 3	0 28	1 30	9 48	1.4	21 24	2.3
40	7 21	16 49	0 30	1 37	9 53	1.3	21 20	2.4
45	7 37	16 34	0 33	1 46	9 58	1.2	21 15	2.6
50	7 56	16 14	0 38	1 58	10 5	1.1	21 10	2.7
55	8 22	15 49	0 44	2 15	10 14	.9	21 3	2.9
60	8 57	15 13	0 55	2 42	10 25	.7	20 53	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	134 3.2	121	10 6.2	-87	116 53.6	5 48.3	36 54.7	-20 20.7
2	163 5.3	122	9 48.8	-88	146 57.8	5 48.0	66 59.9	-20 20.7
4	192 7.7	123	9 31.2	-89	177 2.1	5 47.7	97 5.1	-20 20.7
6	221 10.4	124	9 13.4	-89	207 6.3	5 47.3	127 10.3	-20 20.6
8	250 13.2	126	8 55.6	-90	237 10.6	5 47.0	157 15.5	-20 20.6
10	279 16.4	127	8 37.6	-91	267 14.8	5 46.7	187 20.7	-20 20.6
12	308 19.8	128	8 19.4	-91	297 19.1	5 46.4	217 25.9	-20 20.6
14	337 23.4	129	8 1.2	-92	327 23.3	5 46.1	247 31.1	-20 20.5
16	6 27.2	130	7 42.8	-92	357 27.5	5 45.8	277 36.3	-20 20.5
18	35 31.3	131	7 24.4	-93	27 31.8	5 45.5	307 41.5	-20 20.5
20	64 35.5	132	7 5.8	-93	57 36.0	5 45.2	337 46.7	-20 20.5
22	93 40.0	133	6 47.2	-94	87 40.3	5 44.9	7 51.9	-20 20.5
Δ					21	-2	26	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	- 5 4.7	-.4	15.8	T _m	15 33	1.9	56.4 15.4
12	- 5 9.3	T _{m☉}	12 h 5.2 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	'	°	
♂	12 43	.1	243	-2.8	♄	16 10	.0	191	-1.4
♂	20 13	.1	130	-1.6	♂	21 29	.0	111	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 41.6	22 19.5	287 21.6	169 7.1	22 2.5	56 52.5	-21 19.5
2	208 41.4	22 18.9	317 26.5	199 5.5	22 1.5	86 56.8	-21 19.8
4	238 41.2	22 18.3	347 31.4	229 3.9	22 .4	117 1.1	-21 20.0
6	268 41.0	22 17.7	17 36.4	259 2.3	21 59.4	147 5.4	-21 20.2
8	298 40.8	22 17.1	47 41.3	289 .7	21 58.3	177 9.7	-21 20.4
10	328 40.6	22 16.5	77 46.2	318 59.1	21 57.3	207 14.0	-21 20.6
12	358 40.5	22 15.8	107 51.2	348 57.5	21 56.2	237 18.3	-21 20.8
14	28 40.3	22 15.2	137 56.1	18 55.9	21 55.2	267 22.6	-21 21.0
16	58 40.1	22 14.6	168 1.0	48 54.3	21 54.1	297 26.9	-21 21.3
18	88 39.9	22 14.0	198 5.9	78 52.7	21 53.1	327 31.1	-21 21.5
20	118 39.7	22 13.3	228 10.9	108 51.1	21 52.0	357 35.4	-21 21.7
22	148 39.6	22 12.7	258 15.8	138 49.5	21 50.9	27 39.7	-21 21.9
Δ	-1	-3		-8	-5	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 54	21 16	1 25	: : :	9 33	3.0	22 49	1.7
55	3 34	20 36	0 54	: : :	9 39	2.8	22 46	1.7
50	4 2	20 8	0 43	: : :	9 44	2.7	22 43	1.7
45	4 23	19 47	0 36	2 25	9 48	2.5	22 41	1.7
40	4 40	19 31	0 32	1 59	9 51	2.4	22 39	1.7
35	4 54	19 16	0 29	1 45	9 54	2.3	22 37	1.8
30	5 6	19 4	0 27	1 35	9 56	2.2	22 36	1.8
20	5 27	18 43	0 24	1 23	10 1	2.1	22 34	1.8
10	5 45	18 26	0 23	1 17	10 4	2.0	22 31	1.8
0	6 2	18 9	0 22	1 14	10 8	1.8	22 29	1.8
10	6 18	17 52	0 23	1 15	10 11	1.7	22 27	1.8
20	6 36	17 35	0 24	1 18	10 15	1.6	22 25	1.8
30	6 56	17 15	0 26	1 25	10 20	1.4	22 22	1.9
35	7 7	17 3	0 28	1 30	10 22	1.4	22 21	1.9
40	7 21	16 50	0 30	1 37	10 25	1.3	22 19	1.9
45	7 37	16 34	0 33	1 46	10 28	1.2	22 17	1.9
50	7 56	16 15	0 38	1 58	10 32	1.0	22 14	1.9
55	8 21	15 50	0 44	2 15	10 37	.9	22 11	2.0
60	8 56	15 15	0 55	2 41	10 43	.7	22 7	2.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	122 44.7	134	6 28.5	-94	117 44.5	5 44.6	37 57.1	-20 20.4
2	151 49.6	135	6 9.7	-94	147 48.7	5 44.3	68 2.4	-20 20.4
4	180 54.7	136	5 50.8	-95	177 53.0	5 44.0	98 7.6	-20 20.4
6	210 .0	137	5 31.8	-95	207 57.2	5 43.7	128 12.8	-20 20.4
8	239 5.4	138	5 12.8	-95	238 1.5	5 43.4	158 18.0	-20 20.3
10	268 11.1	139	4 53.8	-96	268 5.7	5 43.1	188 23.2	-20 20.3
12	297 16.9	140	4 34.7	-96	298 9.9	5 42.8	218 28.4	-20 20.3
14	326 22.9	141	4 15.5	-96	328 14.2	5 42.5	248 33.6	-20 20.3
16	355 29.0	141	3 56.4	-96	358 18.4	5 42.2	278 38.8	-20 20.3
18	24 35.3	142	3 37.1	-96	28 22.6	5 41.9	308 44.0	-20 20.2
20	53 41.7	143	3 17.9	-96	58 26.9	5 41.6	338 49.2	-20 20.2
22	82 48.3	144	2 58.6	-96	88 31.1	5 41.3	8 54.4	-20 20.2
Δ					21	-2	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	- 5 13.8	-.4	15.8	T _m	16 19	1.8	55.7 15.2
12	- 5 18.1	T _{m☉}	12 h 5.3 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 / ' / "	°	°	°	h min / ' / "	h min / ' / "	°	°	°
♀ 12 44 .1 242	-2.8	♀	16 7 .0 190	-1.4					
♂ 20 10 .1 130	-1.5	♂	21 24 .0 111	.4					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 39.4	22 12.1	288 20.7	168 47.9	21 49.8	57 43.9	-21 22.1
2	208 39.2	22 11.4	318 25.7	198 46.3	21 48.8	87 48.2	-21 22.4
4	238 39.0	22 10.8	348 30.6	228 44.8	21 47.7	117 52.4	-21 22.6
6	268 38.9	22 10.1	18 35.5	258 43.2	21 46.6	147 56.7	-21 22.8
8	298 38.7	22 9.5	48 40.4	288 41.6	21 45.5	178 .9	-21 23.0
10	328 38.5	22 8.8	78 45.4	318 40.0	21 44.4	208 5.1	-21 23.3
12	358 38.4	22 8.2	108 50.3	348 38.4	21 43.3	238 9.3	-21 23.5
14	28 38.2	22 7.5	138 55.2	18 36.9	21 42.2	268 13.5	-21 23.7
16	58 38.0	22 6.9	169 .2	48 35.3	21 41.1	298 17.8	-21 24.0
18	88 37.8	22 6.2	199 5.1	78 33.7	21 39.9	328 22.0	-21 24.2
20	118 37.7	22 5.5	229 10.0	108 32.1	21 38.8	358 26.2	-21 24.4
22	148 37.5	22 4.9	259 14.9	138 30.6	21 37.7	28 30.4	-21 24.7
Δ	-1	-3		-8	-6	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 55	21 14	1 24	: : :	10 46	1.2	23 30	2.5
55	3 35	20 35	0 54	: : :	10 47	1.3	23 27	2.4
50	4 3	20 8	0 43	: : :	10 48	1.4	23 24	2.3
45	4 24	19 47	0 36	2 24	10 48	1.4	23 22	2.2
40	4 40	19 30	0 32	1 59	10 49	1.5	23 21	2.1
35	4 54	19 16	0 29	1 44	10 49	1.5	23 20	2.1
30	5 7	19 4	0 27	1 35	10 50	1.6	23 18	2.0
20	5 27	18 43	0 24	1 23	10 51	1.7	23 16	1.9
10	5 45	18 26	0 23	1 17	10 51	1.7	23 14	1.9
0	6 2	18 9	0 22	1 14	10 52	1.8	23 13	1.8
10	6 18	17 53	0 23	1 15	10 53	1.9	23 11	1.7
20	6 36	17 35	0 24	1 18	10 53	1.9	23 9	1.6
30	6 56	17 15	0 26	1 25	10 54	2.0	23 7	1.5
35	7 7	17 4	0 28	1 30	10 55	2.0	23 6	1.5
40	7 20	16 51	0 30	1 36	10 55	2.1	23 4	1.4
45	7 36	16 35	0 33	1 45	10 56	2.2	23 3	1.3
50	7 55	16 16	0 38	1 58	10 57	2.2	23 1	1.3
55	8 20	15 51	0 44	2 15	10 57	2.3	22 59	1.1
60	8 55	15 16	0 55	2 41	10 59	2.4	22 56	1.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	111 55.0	144	2 39.4	-96	118 35.3	5 41.0	38 59.6	-20 20.2
2	141 1.9	145	2 20.1	-97	148 39.6	5 40.6	69 4.8	-20 20.2
4	170 8.9	145	2 .8	-97	178 43.8	5 40.3	99 9.9	-20 20.1
6	199 16.0	146	1 41.5	-96	208 48.0	5 40.0	129 15.1	-20 20.1
8	228 23.2	147	1 22.2	-96	238 52.3	5 39.7	159 20.3	-20 20.1
10	257 30.5	147	1 2.9	-96	268 56.5	5 39.4	189 25.5	-20 20.1
12	286 37.9	147	0 43.6	-96	299 .7	5 39.1	219 30.7	-20 20.1
14	315 45.4	148	0 24.3	-96	329 4.9	5 38.8	249 35.9	-20 20.0
16	344 53.0	148	0 5.1	45	359 9.2	5 38.5	279 41.1	-20 20.0
18	14 .6	149	0 14.1	96	29 13.4	5 38.2	309 46.3	-20 20.0
20	43 8.4	149	0 33.3	96	59 17.6	5 37.9	339 51.5	-20 20.0
22	72 16.2	149	0 52.5	96	89 21.8	5 37.6	9 56.7	-20 20.0
Δ					21	-2	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	- 5 22.4	-.3	15.8	T _m	17 2	1.8	55.1 15.0
12	- 5 26.5	T _{m☉}	12 h 5.4 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 / ' / "	°	°	°	h min / ' / "	h min / ' / "	°	°	°
♀ 12 45 .1 240	-2.8	♀	16 3 .0 190	-1.4					
♂ 20 6 .1 129	-1.5	♂	21 20 .0 111	.4					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	37.3	22	4.2	289	19.9	168	29.0	21	36.6	58	34.5	-21	24.9	
2	208	37.2	22	3.5	319	24.8	198	27.4	21	35.4	88	38.7	-21	25.1	
4	238	37.0	22	2.9	349	29.7	228	25.9	21	34.3	118	42.9	-21	25.4	
6	268	36.9	22	2.2	19	34.7	258	24.3	21	33.1	148	47.1	-21	25.6	
8	298	36.7	22	1.5	49	39.6	288	22.7	21	32.0	178	51.2	-21	25.8	
10	328	36.5	22	.8	79	44.5	318	21.2	21	30.8	208	55.4	-21	26.1	
12	358	36.4	22	.1	109	49.4	348	19.6	21	29.7	238	59.6	-21	26.3	
14	28	36.2	21	59.5	139	54.4	18	18.1	21	28.5	269	3.7	-21	26.6	
16	58	36.0	21	58.8	169	59.3	48	16.5	21	27.4	299	7.8	-21	26.8	
18	88	35.9	21	58.1	200	4.2	78	14.9	21	26.2	329	12.0	-21	27.0	
20	118	35.7	21	57.4	230	9.2	108	13.4	21	25.0	359	16.1	-21	27.3	
22	148	35.6	21	56.7	260	14.1	138	11.8	21	23.8	29	20.2	-21	27.5	
Δ		-1		-3				-8		-6		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 57	21 13	1 22	:::	11 14	.7	...	.0
55	3 36	20 34	0 54	:::	11 18	.9	...	.0
50	4 4	20 7	0 43	3 45	11 20	1.0	...	.0
45	4 24	19 46	0 36	2 23	11 23	1.1	...	.0
40	4 41	19 30	0 32	1 58	11 25	1.2	...	.0
35	4 55	19 16	0 29	1 44	11 26	1.3	...	.0
30	5 7	19 4	0 27	1 34	11 28	1.4	...	.0
20	5 28	18 43	0 24	1 23	11 30	1.5	...	.0
10	5 46	18 26	0 23	1 17	11 33	1.7	23 59	1.9
0	6 2	18 9	0 22	1 14	11 35	1.8	23 55	1.8
10	6 18	17 53	0 23	1 15	11 37	1.9	23 52	1.7
20	6 36	17 36	0 24	1 18	11 39	2.0	23 48	1.6
30	6 55	17 16	0 26	1 25	11 42	2.2	23 44	1.4
35	7 7	17 5	0 28	1 30	11 44	2.2	23 41	1.3
40	7 20	16 51	0 30	1 36	11 46	2.3	23 38	1.3
45	7 35	16 36	0 33	1 45	11 48	2.4	23 35	1.2
50	7 55	16 17	0 38	1 57	11 50	2.6	23 31	1.0
55	8 19	15 52	0 44	2 14	11 53	2.7	23 26	.9
60	8 54	15 18	0 55	2 40	11 57	2.9	23 20	.7
S								

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	101	24.0	150	1 11.6	95	119	26.1	5	37.2	40	1.9	-20	19.9
2	130	32.0	150	1 30.7	95	149	30.3	5	36.9	70	7.1	-20	19.9
4	159	39.9	150	1 49.7	95	179	34.5	5	36.6	100	12.3	-20	19.9
6	188	48.0	150	2 8.6	95	209	38.7	5	36.3	130	17.5	-20	19.9
8	217	56.0	150	2 27.6	94	239	43.0	5	36.0	160	22.6	-20	19.9
10	247	4.1	151	2 46.4	94	269	47.2	5	35.7	190	27.8	-20	19.8
12	276	12.2	151	3 5.2	94	299	51.4	5	35.4	220	33.0	-20	19.8
14	305	20.4	151	3 23.9	93	329	55.6	5	35.1	250	38.2	-20	19.8
16	334	28.5	151	3 42.6	93	359	59.8	5	34.7	280	43.4	-20	19.8
18	3 36.7	151	4 1.2	92	30	4.1	5	34.4	310	48.6	-20	19.8	
20	32 44.8	151	4 19.7	92	60	8.3	5	34.1	340	53.8	-20	19.7	
22	61 53.0	151	4 38.1	92	90	12.5	5	33.8	10	59.0	-20	19.7	
Δ						21		-2		26			0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	- 5 30.6	-.3	15.8	T _m	17 45	1.8	54.7	14.9	
12	- 5 34.5	T _{m☉}	12 h 5.6 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	'	°	
♂	12 47	.1	239	-2.8	♄	16 0	.0	190	-1.4
	20 3	.1	129	-1.5	♅	21 16	.0	111	.4

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	35.4	21	56.0	290	19.0	168	10.3	21	22.7	59	24.4	-21	27.8	
2	208	35.3	21	55.3	320	23.9	198	8.7	21	21.5	89	28.5	-21	28.0	
4	238	35.1	21	54.6	350	28.9	228	7.2	21	20.3	119	32.6	-21	28.3	
6	268	35.0	21	53.9	20	33.8	258	5.7	21	19.1	149	36.7	-21	28.5	
8	298	34.8	21	53.1	50	38.7	288	4.1	21	17.9	179	40.8	-21	28.8	
10	328	34.7	21	52.4	80	43.6	318	2.6	21	16.7	209	44.9	-21	29.0	
12	358	34.5	21	51.7	110	48.6	348	1.0	21	15.5	239	49.0	-21	29.3	
14	28	34.4	21	51.0	140	53.5	17	59.5	21	14.3	269	53.1	-21	29.5	
16	58	34.2	21	50.3	170	58.4	47	58.0	21	13.0	299	57.2	-21	29.8	
18	88	34.1	21	49.6	201	3.4	77	56.4	21	11.8	330	1.2	-21	30.0	
20	118	33.9	21	48.8	231	8.3	107	54.9	21	10.6	0	5.3	-21	30.3	
22	148	33.8	21	48.1	261	13.2	137	53.4	21	9.4	30	9.4	-21	30.5	
Δ		-1		-4				-8		-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 59	21 11	1 21	:::	11 30	.7	0 31	2.9
55	3 38	20 33	0 53	:::	11 38	.9	0 25	2.7
50	4 5	20 6	0 42	3 35	11 45	1.1	0 20	2.6
45	4 25	19 46	0 36	2 22	11 50	1.2	0 16	2.4
40	4 42	19 29	0 32	1 58	11 54	1.3	0 13	2.3
35	4 56	19 15	0 29	1 44	11 58	1.4	0 10	2.2
30	5 8	19 3	0 27	1 34	12 2	1.5	0 7	2.2
20	5 28	18 43	0 24	1 23	12 7	1.6	0 3	2.0
10	5 46	18 26	0 23	1 17	12 13	1.7	...	.0
0	6 2	18 9	0 22	1 14	12 18	1.8	...	.0
10	6 18	17 53	0 23	1 15	12 23	1.9	...	.0
20	6 35	17 36	0 24	1 18	12 28	2.0	...	.0
30	6 55	17 16	0 26	1 24	12 34	2.2	...	.0
35	7 6	17 5	0 28	1 30	12 37	2.2	...	.0
40	7 20	16 52	0 30	1 36	12 41	2.3	...	.0
45	7 35	16 37	0 33	1 45	12 46	2.4	...	.0
50	7 54	16 18	0 37	1 57	12 52	2.5	23 56	1.1
55	8 18	15 54	0 44	2 14	12 59	2.7	23 48	1.0
60	8 52	15 20	0 54	2 40	13 8	2.9	23 37	.8
S								

UT	MESEC				JUPITER			SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	91	1.1	151	4 56.4	91	120	16.7	5	33.5	41	4.1	-20	19.7
2	120	9.3	151	5 14.6	91	150	20.9	5	33.2	71	9.3	-20	19.7
4	149	17.4	150	5 32.7	90	180	25.1	5	32.9	101	14.5	-20	19.7
6	178	25.5	150	5 50.8	90	210	29.4	5	32.5	131	19.7	-20	19.6
8	207	33.5	150	6 8.7	89	240	33.6	5	32.2	161	24.9	-20	19.6
10	236	41.5	150	6 26.5	89	270	37.8	5	31.9	191	30.1	-20	19.6
12	265	49.5	150	6 44.2	88	300	42.0	5	31.6	221	35.2	-20	19.6
14	294	57.4	149	7 1.8	87	330	46.2	5	31.3	251	40.4	-20	19.6
16	324	5.3	149	7 19.3	87	0	50.4	5	31.0	281	45.6	-20	19.6
18	353	13.1	149	7 36.6	86	30	54.6	5	30.7	311	50.8	-20	19.5
20	22 20.8	148	7 53.9	85	60	58.8	5	30.3	341	56.0	-20	19.5	
22	51 28.5	148	8 11.0	85	91	3.0	5	30.0	12	1.1	-20	19.5	
Δ						21		-2		26			0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	- 5 38.3	-.3	15.8	T _m	18 28	1.8	54.4	14.8
12	- 5 41.9	T _{m☉}	12 h 5.7 min	Starost	7.5 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	178 33.6	21 47.4	291 18.1	167 51.9	21 8.1	60 13.4	-21 30.8	
2	208 33.5	21 46.6	321 23.1	197 50.3	21 6.9	90 17.5	-21 31.1	
4	238 33.3	21 45.9	351 28.0	227 48.8	21 5.7	120 21.5	-21 31.3	
6	268 33.2	21 45.2	21 32.9	257 47.3	21 4.4	150 25.6	-21 31.6	
8	298 33.0	21 44.4	51 37.9	287 45.8	21 3.2	180 29.6	-21 31.8	
10	328 32.9	21 43.7	81 42.8	317 44.3	21 1.9	210 33.6	-21 32.1	
12	358 32.8	21 42.9	111 47.7	347 42.7	21 .7	240 37.7	-21 32.4	
14	28 32.6	21 42.2	141 52.6	17 41.2	20 59.4	270 41.7	-21 32.6	
16	58 32.5	21 41.4	171 57.6	47 39.7	20 58.1	300 45.7	-21 32.9	
18	88 32.3	21 40.7	202 2.5	77 38.2	20 56.9	330 49.7	-21 33.2	
20	118 32.2	21 39.9	232 7.4	107 36.7	20 55.6	0 53.7	-21 33.4	
22	148 32.1	21 39.1	262 12.4	137 35.2	20 54.3	30 57.7	-21 33.7	
Δ	-1	-4		-8	-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	3 1	21 10	1 19	:	11 47	.8	1 41	2.9
55	3 39	20 32	0 53	:	12 0	1.0	1 30	2.7
50	4 6	20 5	0 42	3 28	12 10	1.2	1 21	2.5
45	4 26	19 45	0 36	2 21	12 19	1.3	1 14	2.4
40	4 43	19 29	0 32	1 58	12 25	1.4	1 8	2.3
35	4 56	19 15	0 29	1 43	12 31	1.5	1 3	2.2
30	5 8	19 3	0 27	1 34	12 36	1.5	0 59	2.2
20	5 29	18 43	0 24	1 22	12 45	1.7	0 51	2.0
10	5 46	18 26	0 23	1 17	12 53	1.8	0 45	1.9
0	6 2	18 9	0 22	1 14	13 1	1.9	0 38	1.8
10	6 18	17 53	0 23	1 15	13 8	1.9	0 32	1.7
20	6 35	17 36	0 24	1 18	13 16	2.1	0 25	1.6
30	6 55	17 17	0 26	1 24	13 26	2.2	0 18	1.5
35	7 6	17 6	0 28	1 29	13 31	2.2	0 14	1.4
40	7 19	16 53	0 30	1 36	13 37	2.3	0 9	1.3
45	7 34	16 38	0 33	1 45	13 44	2.4	0 3	1.2
50	7 53	16 19	0 37	1 57	13 53	2.5	...	.0
55	8 17	15 55	0 44	2 14	14 4	2.9	...	.0
60	8 51	15 21	0 54	2 39	14 18	2.7	23 55	.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	80 36.1	148	8 27.9	84	121 7.3	5 29.7	42 6.3	-20 19.5
2	109 43.6	147	8 44.7	83	151 11.5	5 29.4	72 11.5	-20 19.5
4	138 51.0	147	9 1.4	83	181 15.7	5 29.1	102 16.7	-20 19.4
6	167 58.3	146	9 17.9	82	211 19.9	5 28.8	132 21.8	-20 19.4
8	197 5.6	146	9 34.3	81	241 24.1	5 28.4	162 27.0	-20 19.4
10	226 12.7	145	9 50.5	80	271 28.3	5 28.1	192 32.2	-20 19.4
12	255 19.8	145	10 6.5	79	301 32.5	5 27.8	222 37.4	-20 19.4
14	284 26.7	144	10 22.4	79	331 36.7	5 27.5	252 42.5	-20 19.4
16	313 33.5	143	10 38.1	78	1 40.9	5 27.2	282 47.7	-20 19.3
18	342 40.2	143	10 53.7	77	31 45.1	5 26.8	312 52.9	-20 19.3
20	11 46.8	142	11 9.0	76	61 49.3	5 26.5	342 58.1	-20 19.3
22	40 53.2	142	11 24.2	75	91 53.5	5 26.2	13 3.2	-20 19.3
Δ					21	-2	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 45.6	-.3	15.8	T _m	19 11	1.9	54.2 14.8
12	- 5 48.9	T _{m☉}	12 h 5.8 min	Starost	8.5 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°	°	h min	'	°	°	°
♀	12 49	.1	237	-2.8	♃	15 53	.0	190	-1.4
♂	19 56	.1	129	-1.5	♄	21 8	.0	111	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 31.9	21 38.4	292 17.3	167 33.7	20 53.0	61 1.7	-21 34.0	
2	208 31.8	21 37.6	322 22.2	197 32.2	20 51.7	91 5.7	-21 34.2	
4	238 31.7	21 36.9	352 27.1	227 30.7	20 50.4	121 9.7	-21 34.5	
6	268 31.5	21 36.1	22 32.1	257 29.2	20 49.1	151 13.7	-21 34.8	
8	298 31.4	21 35.3	52 37.0	287 27.7	20 47.8	181 17.6	-21 35.0	
10	328 31.3	21 34.5	82 41.9	317 26.2	20 46.5	211 21.6	-21 35.3	
12	358 31.1	21 33.8	112 46.9	347 24.7	20 45.2	241 25.6	-21 35.6	
14	28 31.0	21 33.0	142 51.8	17 23.2	20 43.9	271 29.5	-21 35.9	
16	58 30.9	21 32.2	172 56.7	47 21.7	20 42.6	301 33.5	-21 36.1	
18	88 30.7	21 31.4	203 1.6	77 20.2	20 41.3	331 37.4	-21 36.4	
20	118 30.6	21 30.6	233 6.6	107 18.8	20 40.0	1 41.4	-21 36.7	
22	148 30.5	21 29.8	263 11.5	137 17.3	20 38.6	31 45.3	-21 37.0	
Δ	-1	-4		-7	-7	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	3 2	21 8	1 18	:	12 8	1.0	2 51	2.8
55	3 40	20 31	0 53	:	12 25	1.2	2 35	2.7
50	4 7	20 4	0 42	3 23	12 39	1.3	2 22	2.5
45	4 27	19 44	0 36	2 20	12 50	1.4	2 12	2.4
40	4 43	19 28	0 32	1 57	12 59	1.5	2 4	2.3
35	4 57	19 15	0 29	1 43	13 6	1.6	1 57	2.2
30	5 9	19 3	0 27	1 34	13 13	1.7	1 51	2.2
20	5 29	18 43	0 24	1 22	13 25	1.8	1 40	2.1
10	5 46	18 26	0 23	1 16	13 35	1.8	1 31	2.0
0	6 2	18 10	0 22	1 14	13 45	1.9	1 22	1.9
10	6 18	17 54	0 23	1 14	13 55	2.0	1 13	1.8
20	6 35	17 37	0 24	1 18	14 6	2.1	1 4	1.7
30	6 55	17 18	0 26	1 24	14 18	2.2	0 54	1.6
35	7 6	17 6	0 28	1 29	14 25	2.2	0 48	1.5
40	7 19	16 54	0 30	1 36	14 33	2.3	0 41	1.4
45	7 34	16 38	0 33	1 45	14 42	2.4	0 33	1.4
50	7 52	16 20	0 37	1 57	14 54	2.5	0 23	1.3
55	8 16	15 56	0 43	2 13	15 8	2.6	0 11	1.1
60	8 49	15 23	0 54	2 39	15 27	2.8	...	.0

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	69 59.5	141	11 39.2	74	121 57.7	5 25.9	43 8.4	-20 19.3
2	99 5.7	140	11 54.0	73	152 1.9	5 25.6	73 13.6	-20 19.3
4	128 11.8	140	12 8.6	72	182 6.1	5 25.2	103 18.7	-20 19.2
6	157 17.7	139	12 23.1	71	212 10.3	5 24.9	133 23.9	-20 19.2
8	186 23.4	138	12 37.3	70	242 14.5	5 24.6	163 29.1	-20 19.2
10	215 29.0	137	12 51.3	69	272 18.7	5 24.3	193 34.3	-20 19.2
12	244 34.5	136	13 5.1	68	302 22.9	5 23.9	223 39.4	-20 19.2
14	273 39.8	136	13 18.6	67	332 27.1	5 23.6	253 44.6	-20 19.2
16	302 44.9	135	13 32.0	66	2 31.3	5 23.3	283 49.8	-20 19.1
18	331 49.9	134	13 45.1	65	32 35.5	5 23.0	313 54.9	-20 19.1
20	0 54.7	133	13 58.0	63	62 39.7	5 22.7	344 .1	-20 19.1
22	29 59.4	132	14 10.7	62	92 43.9	5 22.3	14 5.3	-20 19.1
Δ					21	-2	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 52.3	-.3	15.8	T _m	19 56	2.0	54.3 14.8
12	- 5 55.4	T _{m☉}	12 h 5.9 min	Starost	9.5 d	Faza ☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°	°	h min	'	°	°	°
♀	12 50	.1	235	-2.8	♃	15 50	.0	190	-1.4
♂	19 53	.1	129	-1.5	♄	21 4	.0	111	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 30.4	21 29.0	293 16.4	167 15.8	20 37.3	61 49.2	-21 37.3	
2	208 30.2	21 28.2	323 21.4	197 14.3	20 36.0	91 53.2	-21 37.5	
4	238 30.1	21 27.4	353 26.3	227 12.8	20 34.6	121 57.1	-21 37.8	
6	268 30.0	21 26.6	23 31.2	257 11.4	20 33.3	152 1.0	-21 38.1	
8	298 29.9	21 25.8	53 36.1	287 9.9	20 31.9	182 4.9	-21 38.4	
10	328 29.8	21 25.0	83 41.1	317 8.4	20 30.6	212 8.8	-21 38.7	
12	358 29.6	21 24.2	113 46.0	347 6.9	20 29.2	242 12.7	-21 39.0	
14	28 29.5	21 23.4	143 50.9	17 5.5	20 27.9	272 16.6	-21 39.2	
16	58 29.4	21 22.6	173 55.8	47 4.0	20 26.5	302 20.5	-21 39.5	
18	88 29.3	21 21.8	204 .8	77 2.5	20 25.1	332 24.4	-21 39.8	
20	118 29.2	21 21.0	234 5.7	107 1.1	20 23.8	2 28.3	-21 40.1	
22	148 29.1	21 20.1	264 10.6	136 59.6	20 22.4	32 32.2	-21 40.4	
Δ	-1	-4		-7	-7	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	3 4	21 6	1 17	:::	12 33	1.3	3 59	2.7
55	3 42	20 29	0 52	:::	12 55	1.5	3 38	2.6
50	4 8	20 3	0 42	3 18	13 11	1.6	3 22	2.5
45	4 28	19 44	0 36	2 20	13 24	1.6	3 10	2.4
40	4 44	19 28	0 32	1 57	13 35	1.7	2 60	2.3
35	4 58	19 14	0 29	1 43	13 45	1.8	2 51	2.2
30	5 9	19 2	0 27	1 34	13 53	1.8	2 43	2.2
20	5 29	18 43	0 24	1 22	14 7	1.9	2 30	2.1
10	5 46	18 26	0 23	1 16	14 20	1.9	2 18	2.0
0	6 2	18 10	0 22	1 14	14 31	2.0	2 7	2.0
10	6 18	17 54	0 22	1 14	14 43	2.1	1 56	1.9
20	6 35	17 37	0 24	1 18	14 56	2.1	1 45	1.8
30	6 54	17 18	0 26	1 24	15 10	2.2	1 32	1.7
35	7 5	17 7	0 28	1 29	15 19	2.2	1 24	1.7
40	7 18	16 54	0 30	1 36	15 28	2.3	1 15	1.6
45	7 33	16 39	0 33	1 45	15 40	2.3	1 5	1.5
50	7 51	16 21	0 37	1 56	15 53	2.4	0 53	1.4
55	8 15	15 58	0 43	2 13	16 11	2.5	0 38	1.3
60	8 48	15 25	0 53	2 38	16 34	2.7	0 18	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	59 3.8	132 14	23.1 61	122 48.1	5 22.0	44 10.4	-20 19.1	
2	88 8.1	131 14	35.3 60	152 52.3	5 21.7	74 15.6	-20 19.1	
4	117 12.3	130 14	47.2 58	182 56.5	5 21.4	104 20.7	-20 19.0	
6	146 16.2	129 14	58.9 57	213 .7	5 21.0	134 25.9	-20 19.0	
8	175 20.0	128 15	10.4 56	243 4.9	5 20.7	164 31.1	-20 19.0	
10	204 23.6	127 15	21.5 54	273 9.1	5 20.4	194 36.2	-20 19.0	
12	233 27.0	126 15	32.4 53	303 13.2	5 20.1	224 41.4	-20 19.0	
14	262 30.3	125 15	43.0 52	333 17.4	5 19.7	254 46.6	-20 19.0	
16	291 33.3	124 15	53.4 50	3 21.6	5 19.4	284 51.7	-20 19.0	
18	320 36.2	123 16	3.5 49	33 25.8	5 19.1	314 56.9	-20 18.9	
20	349 38.9	122 16	13.2 47	63 30.0	5 18.8	345 2.0	-20 18.9	
22	18 41.4	122 16	22.7 46	93 34.2	5 18.4	15 7.2	-20 18.9	
Δ				21	-2	26	0	

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min	s	'	h min	min	'	'
00	- 5 58.5	-.2	15.8	T _m	20 43	2.0	54.5 14.8
12	- 6 1.4	T _{m☉}	12 h 6.0 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	'	°	
♂	12 52	.1	234	-2.8	♄	15 47	.0	190	-1.4
♂	19 50	.1	129	-1.5	♂	20 60	.0	111	.4

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 28.9	21 19.3	294 15.6	166 58.2	20 21.0	62 36.0	-21 40.7	
2	208 28.8	21 18.5	324 20.5	196 56.7	20 19.6	92 39.9	-21 41.0	
4	238 28.7	21 17.7	354 25.4	226 55.3	20 18.2	122 43.8	-21 41.3	
6	268 28.6	21 16.8	24 30.3	256 53.8	20 16.8	152 47.6	-21 41.6	
8	298 28.5	21 16.0	54 35.3	286 52.4	20 15.4	182 51.5	-21 41.8	
10	328 28.4	21 15.2	84 40.2	316 50.9	20 14.0	212 55.3	-21 42.1	
12	358 28.3	21 14.3	114 45.1	346 49.5	20 12.6	242 59.2	-21 42.4	
14	28 28.2	21 13.5	144 50.1	16 48.0	20 11.2	273 3.0	-21 42.7	
16	58 28.1	21 12.6	174 55.0	46 46.6	20 9.8	303 6.8	-21 43.0	
18	88 28.0	21 11.8	204 59.9	76 45.1	20 8.4	333 10.7	-21 43.3	
20	118 27.9	21 11.0	235 4.8	106 43.7	20 7.0	3 14.5	-21 43.6	
22	148 27.8	21 10.1	265 9.8	136 42.3	20 5.5	33 18.3	-21 43.9	
Δ	-1	-4		-7	-7	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	3 6	21 5	1 16	:::	13 4	1.7	5 5	2.6
55	3 43	20 28	0 52	:::	13 30	1.8	4 40	2.4
50	4 9	20 2	0 42	3 14	13 49	1.8	4 21	2.4
45	4 29	19 43	0 36	2 19	14 4	1.9	4 7	2.3
40	4 45	19 27	0 32	1 56	14 16	1.9	3 55	2.3
35	4 58	19 14	0 29	1 43	14 27	1.9	3 45	2.2
30	5 10	19 2	0 27	1 33	14 36	2.0	3 36	2.2
20	5 30	18 42	0 24	1 22	14 52	2.0	3 20	2.1
10	5 47	18 25	0 23	1 16	15 6	2.0	3 7	2.1
0	6 3	18 10	0 22	1 14	15 19	2.1	2 54	2.0
10	6 18	17 54	0 22	1 14	15 33	2.1	2 42	2.0
20	6 35	17 38	0 24	1 17	15 47	2.1	2 28	1.9
30	6 54	17 19	0 26	1 24	16 3	2.2	2 13	1.9
35	7 5	17 8	0 28	1 29	16 13	2.2	2 4	1.8
40	7 17	16 55	0 30	1 36	16 23	2.2	1 54	1.8
45	7 32	16 40	0 33	1 44	16 36	2.3	1 42	1.8
50	7 50	16 22	0 37	1 56	16 52	2.3	1 28	1.7
55	8 14	15 59	0 43	2 13	17 11	2.4	1 10	1.6
60	8 46	15 27	0 53	2 38	17 38	2.4	0 45	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	47 43.7	121 16	31.9 45	123 38.4	5 18.1	45 12.3	-20 18.9	
2	76 45.8	120 16	40.9 43	153 42.6	5 17.8	75 17.5	-20 18.9	
4	105 47.7	119 16	49.5 41	183 46.8	5 17.5	105 22.7	-20 18.9	
6	134 49.5	118 16	57.7 40	213 50.9	5 17.1	135 27.8	-20 18.9	
8	163 51.1	117 17	5.7 38	243 55.1	5 16.8	165 33.0	-20 18.8	
10	192 52.5	116 17	13.4 37	273 59.3	5 16.5	195 38.1	-20 18.8	
12	221 53.7	115 17	20.7 35	304 3.5	5 16.1	225 43.3	-20 18.8	
14	250 54.7	114 17	27.8 33	334 7.7	5 15.8	255 48.4	-20 18.8	
16	279 55.5	113 17	34.5 32	4 11.9	5 15.5	285 53.6	-20 18.8	
18	308 56.2	112 17	40.8 30	34 16.0	5 15.2	315 58.7	-20 18.8	
20	337 56.7	112 17	46.8 28	64 20.2	5 14.8	346 3.9	-20 18.8	
22	6 57.0	111 17	52.5 27	94 24.4	5 14.5	16 9.0	-20 18.7	
Δ				21	-2	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 4.2	-.2	15.8	T _m	21 31	2.1	54.8 14.9
12	- 6 6.8	T _{m☉}	12 h 6.1 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	'	°	
♂	12 53	.1	233	-2.8	♄	15 43	.0	189	-1.4
♂	19 47	.1	128	-1.4	♂	20 56	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	27.6	21	9.2	295	14.7	166	40.8	20	4.1	63	22.1	-21	44.2	
2	208	27.5	21	8.4	325	19.6	196	39.4	20	2.7	93	25.9	-21	44.5	
4	238	27.4	21	7.5	355	24.6	226	38.0	20	1.3	123	29.7	-21	44.8	
6	268	27.3	21	6.7	25	29.5	256	36.5	19	59.8	153	33.5	-21	45.1	
8	298	27.2	21	5.8	55	34.4	286	35.1	19	58.4	183	37.3	-21	45.4	
10	328	27.1	21	4.9	85	39.3	316	33.7	19	56.9	213	41.1	-21	45.7	
12	358	27.1	21	4.1	115	44.3	346	32.3	19	55.5	243	44.9	-21	46.0	
14	28	27.0	21	3.2	145	49.2	16	30.8	19	54.0	273	48.7	-21	46.3	
16	58	26.9	21	2.3	175	54.1	46	29.4	19	52.6	303	52.4	-21	46.6	
18	88	26.8	21	1.5	205	59.1	76	28.0	19	51.1	333	56.2	-21	46.9	
20	118	26.7	21	.6	236	4.0	106	26.6	19	49.6	3	60.0	-21	47.3	
22	148	26.6	20	59.7	266	8.9	136	25.2	19	48.1	34	3.7	-21	47.6	
Δ		0		-4				-7		-7		19			-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 8	21 3	1 14	:::	13 44	2.1	6 6	2.3
55	3 45	20 27	0 52	:::	14 12	2.1	5 39	2.2
50	4 10	20 1	0 41	3 10	14 33	2.1	5 18	2.2
45	4 30	19 42	0 36	2 18	14 49	2.1	5 2	2.2
40	4 46	19 26	0 32	1 56	15 2	2.1	4 49	2.2
35	4 59	19 13	0 29	1 42	15 13	2.1	4 38	2.2
30	5 10	19 2	0 27	1 33	15 23	2.1	4 28	2.2
20	5 30	18 42	0 24	1 22	15 40	2.1	4 12	2.1
10	5 47	18 25	0 23	1 16	15 55	2.1	3 57	2.1
0	6 3	18 10	0 22	1 14	16 9	2.1	3 43	2.1
10	6 18	17 54	0 22	1 14	16 23	2.1	3 30	2.1
20	6 35	17 38	0 24	1 17	16 38	2.1	3 15	2.1
30	6 53	17 19	0 26	1 24	16 55	2.1	2 58	2.1
35	7 4	17 8	0 28	1 29	17 5	2.1	2 48	2.0
40	7 17	16 56	0 30	1 36	17 17	2.1	2 37	2.0
45	7 32	16 41	0 33	1 44	17 30	2.1	2 24	2.0
50	7 49	16 23	0 37	1 56	17 47	2.1	2 8	2.0
55	8 13	16 0	0 43	2 12	18 8	2.1	1 48	1.9
60	8 44	15 28	0 53	2 37	18 37	2.1	1 21	1.9
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	35	57.1	110	17	57.8	25	124	28.6	5	14.2	46	14.2	-20	18.7	
2	64	57.1	109	18	2.8	23	154	32.8	5	13.8	76	19.3	-20	18.7	
4	93	56.9	108	18	7.5	21	184	36.9	5	13.5	106	24.5	-20	18.7	
6	122	56.5	107	18	11.7	20	214	41.1	5	13.2	136	29.6	-20	18.7	
8	151	56.0	107	18	15.6	18	244	45.3	5	12.9	166	34.8	-20	18.7	
10	180	55.3	106	18	19.2	16	274	49.5	5	12.5	196	39.9	-20	18.7	
12	209	54.4	105	18	22.4	14	304	53.7	5	12.2	226	45.1	-20	18.6	
14	238	53.4	104	18	25.2	12	334	57.8	5	11.9	256	50.2	-20	18.6	
16	267	52.2	103	18	27.6	10	5	2.0	5	11.5	286	55.4	-20	18.6	
18	296	50.9	103	18	29.7	8	35	6.2	5	11.2	317	.5	-20	18.6	
20	325	49.5	102	18	31.4	6	65	10.4	5	10.9	347	5.7	-20	18.6	
22	354	47.9	101	18	32.6	5	95	14.5	5	10.5	17	10.8	-20	18.6	
Δ							21			-2		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	9.4	- .2	15.8	T _m	22 22	2.1	55.3	15.1
12	- 6	11.7	T _{m☉}	12 h 6.2 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	'	°	°
♂	12 54	.1	231	-2.8	♃	15 40	.0	189	-1.4
♂	19 44	.1	128	-1.4	♄	20 51	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	26.5	20	58.8	296	13.8	166	23.8	19	46.7	64	7.5	-21	47.9	
2	208	26.4	20	57.9	326	18.8	196	22.4	19	45.2	94	11.2	-21	48.2	
4	238	26.3	20	57.0	356	23.7	226	21.0	19	43.7	124	15.0	-21	48.5	
6	268	26.2	20	56.1	26	28.6	256	19.6	19	42.2	154	18.7	-21	48.8	
8	298	26.1	20	55.3	56	33.6	286	18.2	19	40.7	184	22.4	-21	49.1	
10	328	26.0	20	54.4	86	38.5	316	16.8	19	39.2	214	26.2	-21	49.4	
12	358	26.0	20	53.5	116	43.4	346	15.4	19	37.7	244	29.9	-21	49.7	
14	28	25.9	20	52.6	146	48.3	16	14.0	19	36.2	274	33.6	-21	50.1	
16	58	25.8	20	51.7	176	53.3	46	12.6	19	34.7	304	37.3	-21	50.4	
18	88	25.7	20	50.8	206	58.2	76	11.2	19	33.2	334	41.0	-21	50.7	
20	118	25.6	20	49.8	237	3.1	106	9.8	19	31.7	4	44.7	-21	51.0	
22	148	25.5	20	48.9	267	8.1	136	8.4	19	30.2	34	48.4	-21	51.3	
Δ		0		-4				-7		-8		19			-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 10	21 1	1 13	:::	14 35	2.6	7 1	1.9
55	3 46	20 25	0 51	:::	15 3	2.5	6 32	2.0
50	4 11	20 0	0 41	3 7	15 24	2.4	6 11	2.0
45	4 31	19 41	0 35	2 17	15 40	2.4	5 55	2.0
40	4 46	19 26	0 31	1 55	15 54	2.4	5 42	2.1
35	4 60	19 13	0 29	1 42	16 5	2.3	5 30	2.1
30	5 11	19 1	0 27	1 33	16 15	2.3	5 20	2.1
20	5 30	18 42	0 24	1 22	16 32	2.3	5 3	2.1
10	5 47	18 25	0 23	1 16	16 47	2.2	4 48	2.1
0	6 3	18 10	0 22	1 14	17 1	2.2	4 34	2.2
10	6 18	17 55	0 22	1 14	17 15	2.1	4 20	2.2
20	6 34	17 38	0 24	1 17	17 30	2.1	4 5	2.2
30	6 53	17 20	0 26	1 24	17 47	2.1	3 47	2.2
35	7 4	17 9	0 27	1 29	17 57	2.0	3 37	2.2
40	7 16	16 57	0 30	1 35	18 8	2.0	3 26	2.2
45	7 31	16 42	0 33	1 44	18 21	2.0	3 12	2.3
50	7 48	16 24	0 37	1 56	18 38	1.9	2 56	2.3
55	8 11	16 2	0 43	2 12	18 59	1.8	2 35	2.3
60	8 43	15 30	0 52	2 36	19 27	1.7	2 6	2.3
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	23	46.2	101	18	33.6	3	125	18.7	5	10.2	47	15.9	-20	18.6	
2	52	44.3	100	18	34.1	1	155	22.9	5	9.9	77	21.1	-20	18.6	
4	81	42.4	100	18	34.2	-1	185	27.0	5	9.5	107	26.2	-20	18.5	
6	110	40.3	99	18	33.9	-3	215	31.2	5	9.2	137	31.4	-20	18.5	
8	139	38.0	98	18	33.3	-5	245	35.4	5	8.9	167	36.5	-20	18.5	
10	168	35.7	98	18	32.2	-7	275	39.6	5	8.5	197	41.7	-20	18.5	
12	197	33.3	97	18	30.8	-9	305	43.7	5	8.2	227	46.8	-20	18.5	
14	226	30.8	97	18	28.9	-11	335	47.9	5	7.9	257	51.9	-20	18.5	
16	255	28.1	96	18	26.7	-13	5	52.1	5	7.5	287	57.1	-20	18.5	
18	284	25.4	96	18	24.0	-15	35	56.2	5	7.2	318	2.2	-20	18.5	
20	313	22.6	96	18	21.0	-17	66	.4	5	6.9	348	7.3	-20	18.4	
22	342	19.7	95	18	17.5	-19	96	4.6	5	6.5	18	12.5	-20	18.4	
Δ							21			-2		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	14.0	- .2	15.8	T _m		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	25.5	20	48.0	297	13.0	166	7.0	19	28.7	64	52.1	-21	51.6	
2	208	25.4	20	47.1	327	17.9	196	5.6	19	27.1	94	55.8	-21	52.0	
4	238	25.3	20	46.2	357	22.8	226	4.2	19	25.6	124	59.5	-21	52.3	
6	268	25.2	20	45.3		27	27.8	256	2.9	19	24.1	155	3.2	-21	52.6
8	298	25.2	20	44.4		57	32.7	286	1.5	19	22.6	185	6.9	-21	52.9
10	328	25.1	20	43.4		87	37.6	316	.1	19	21.0	215	10.5	-21	53.2
12	358	25.0	20	42.5		117	42.5	345	58.7	19	19.5	245	14.2	-21	53.6
14	28	24.9	20	41.6		147	47.5	15	57.4	19	17.9	275	17.9	-21	53.9
16	58	24.9	20	40.6		177	52.4	45	56.0	19	16.4	305	21.5	-21	54.2
18	88	24.8	20	39.7		207	57.3	75	54.6	19	14.8	335	25.2	-21	54.5
20	118	24.7	20	38.8		238	2.3	105	53.3	19	13.3	5	28.8	-21	54.9
22	148	24.7	20	37.8		268	7.2	135	51.9	19	11.7	35	32.4	-21	55.2
Δ		0		-5					-7		-8		18		-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 12	20 59	1 12	:::	15 37	3.0	7 46	1.5
55	3 48	20 24	0 51	:::	16 3	2.8	7 19	1.7
50	4 13	19 59	0 41	3 4	16 22	2.7	6 60	1.8
45	4 32	19 40	0 35	2 16	16 37	2.6	6 44	1.9
40	4 47	19 25	0 31	1 55	16 50	2.5	6 31	1.9
35	5 0	19 12	0 29	1 42	17 1	2.5	6 20	2.0
30	5 12	19 1	0 27	1 33	17 10	2.4	6 11	2.0
20	5 31	18 42	0 24	1 22	17 26	2.3	5 54	2.1
10	5 47	18 25	0 23	1 16	17 40	2.3	5 39	2.1
0	6 3	18 10	0 22	1 14	17 53	2.2	5 26	2.2
10	6 18	17 55	0 22	1 14	18 6	2.1	5 12	2.2
20	6 34	17 39	0 24	1 17	18 20	2.0	4 58	2.3
30	6 53	17 20	0 26	1 24	18 36	2.0	4 41	2.4
35	7 3	17 10	0 27	1 29	18 45	1.9	4 31	2.4
40	7 16	16 57	0 30	1 35	18 56	1.8	4 20	2.4
45	7 30	16 43	0 33	1 44	19 8	1.8	4 7	2.5
50	7 47	16 26	0 37	1 56	19 23	1.7	3 51	2.6
55	8 10	16 3	0 43	2 12	19 43	1.6	3 30	2.6
60	8 41	15 32	0 52	2 36	20 8	1.4	3 2	2.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	11	16.8	95	18	13.6	-21	126	8.7	5	6.2	48	17.6	-20	18.4		
2	40	13.7	95	18	9.4	-23	156	12.9	5	5.9	78	22.8	-20	18.4		
4	69	10.6	94	18	4.7	-25	186	17.1	5	5.5	108	27.9	-20	18.4		
6	98	7.5	94	17	59.6	-27	216	21.2	5	5.2	138	33.0	-20	18.4		
8	127	4.3	94	17	54.1	-29	246	25.4	5	4.8	168	38.2	-20	18.4		
10	156	1.0	94	17	48.2	-31	276	29.6	5	4.5	198	43.3	-20	18.4		
12	184	57.7	93	17	41.9	-33	306	33.7	5	4.2	228	48.4	-20	18.4		
14	213	54.4	93	17	35.3	-35	336	37.9	5	3.8	258	53.6	-20	18.3		
16	242	51.0	93	17	28.2	-37	6	42.1	5	3.5	288	58.7	-20	18.3		
18	271	47.6	93	17	20.7	-39	36	46.2	5	3.2	319	3.8	-20	18.3		
20	300	44.2	93	17	12.8	-41	66	50.4	5	2.8	349	9.0	-20	18.3		
22	329	40.8	93	17	4.5	-43	96	54.5	5	2.5	19	14.1	-20	18.3		
Δ							21		-2		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 18.1	-.1	15.8	T _m	1.0	56.4	15.4
12	- 6 19.9	T _{m☉}	12 h 6.3 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	'	°	
♂	12 56	.1	229	-2.8	♄	15 33	.0	189	-1.4
	19 38	.1	128	-1.4	♅	20 43	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	178	24.6	20	36.9	298	12.1	165	50.5	19	10.1	65	36.1	-21	55.5	
2	208	24.5	20	35.9	328	17.0	195	49.2	19	8.6	95	39.7	-21	55.8	
4	238	24.4	20	35.0	358	22.0	225	47.8	19	7.0	125	43.3	-21	56.2	
6	268	24.4	20	34.0		28	26.9	255	46.5	19	5.4	155	47.0	-21	56.5
8	298	24.3	20	33.1		58	31.8	285	45.1	19	3.8	185	50.6	-21	56.8
10	328	24.3	20	32.1		88	36.8	315	43.8	19	2.2	215	54.2	-21	57.2
12	358	24.2	20	31.2		118	41.7	345	42.4	19	.7	245	57.8	-21	57.5
14	28	24.1	20	30.2		148	46.6	15	41.1	18	59.1	276	1.4	-21	57.8
16	58	24.1	20	29.3		178	51.5	45	39.7	18	57.5	306	5.0	-21	58.2
18	88	24.0	20	28.3		208	56.5	75	38.4	18	55.9	336	8.6	-21	58.5
20	118	24.0	20	27.3		239	1.4	105	37.0	18	54.3	6	12.2	-21	58.8
22	148	23.9	20	26.4		269	6.3	135	35.7	18	52.7	36	15.8	-21	59.2
Δ		0		-5					-7		-8		18		-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 14	20 57	1 11	:::	16 48	3.2	8 23	1.2
55	3 49	20 23	0 50	:::	17 10	3.0	8 0	1.4
50	4 14	19 58	0 41	3 1	17 27	2.9	7 43	1.6
45	4 33	19 39	0 35	2 15	17 40	2.7	7 29	1.7
40	4 48	19 24	0 31	1 54	17 51	2.7	7 17	1.8
35	5 1	19 11	0 29	1 41	17 60	2.6	7 7	1.8
30	5 12	19 0	0 27	1 32	18 8	2.5	6 59	1.9
20	5 31	18 41	0 24	1 21	18 22	2.4	6 44	2.0
10	5 48	18 25	0 23	1 16	18 34	2.3	6 31	2.1
0	6 3	18 10	0 22	1 13	18 46	2.2	6 18	2.2
10	6 18	17 55	0 22	1 14	18 57	2.1	6 6	2.3
20	6 34	17 39	0 23	1 17	19 9	2.0	5 53	2.4
30	6 52	17 21	0 26	1 24	19 23	1.9	5 37	2.5
35	7 3	17 10	0 27	1 29	19 31	1.8	5 29	2.5
40	7 15	16 58	0 30	1 35	19 40	1.7	5 18	2.6
45	7 29	16 44	0 33	1 44	19 51	1.6	5 7	2.7
50	7 46	16 27	0 37	1 55	20 4	1.5	4 52	2.8
55	8 9	16 5	0 43	2 11	20 20	1.3	4 34	2.9
60	8 39	15 34	0 52	2 35	20 41	1.1	4 9	3.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	358	37.3	93	16	55.8	-45	126	58.7	5	2.1	49	19.2	-20	18.3		
2	27	33.9	93	16	46.7	-47	157	2.9	5	1.8	79	24.3	-20	18.3		
4	56	30.4	93	16	37.2	-49	187	7.0	5	1.5	109	29.5	-20	18.3		
6	85	26.9	93	16	27.4	-51	217	11.2	5	1.1	139	34.6	-20	18.3		
8	114	23.5	93	16	17.1	-53	247	15.3	5	.8	169	39.7	-20	18.2		
10	143	20.0	93	16	6.5	-55	277	19.5	5	.5	199	44.8	-20	18.2		
12	172	16.6	93	15	55.5	-57	307	23.6	5	.1	229	50.0	-20	18.2		
14	201	13.2	93	15	44.1	-59	337	27.8	4	59.8	259	55.1	-20	18.2		
16	230	9.8	93	15	32.4	-61	7	32.0	4	59.4	290	.2	-20	18.2		
18	259	6.4	93	15	20.3	-62	37	36.1	4	59.1	320	5.3	-20	18.2		
20	288	3.1	93	15	7.8	-64	67	40.3	4	58.8	350	10.5	-20	18.2		
22	316	59.8	94	14	55.0	-66	97	44.4	4	58.4	20	15.6	-20	18.2		
Δ																

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.8	20 25.4	299 11.3	165 34.4	18 51.0	66 19.4	-21 59.5
2	208 23.8	20 24.4	329 16.2	195 33.0	18 49.4	96 22.9	-21 59.8
4	238 23.7	20 23.5	359 21.1	225 31.7	18 47.8	126 26.5	-22 .2
6	268 23.7	20 22.5	29 26.0	255 30.4	18 46.2	156 30.1	-22 .5
8	298 23.6	20 21.5	59 31.0	285 29.0	18 44.6	186 33.7	-22 .8
10	328 23.6	20 20.5	89 35.9	315 27.7	18 42.9	216 37.2	-22 1.2
12	358 23.5	20 19.5	119 40.8	345 26.4	18 41.3	246 40.8	-22 1.5
14	28 23.5	20 18.5	149 45.8	15 25.1	18 39.7	276 44.3	-22 1.9
16	58 23.4	20 17.6	179 50.7	45 23.8	18 38.0	306 47.9	-22 2.2
18	88 23.4	20 16.6	209 55.6	75 22.4	18 36.4	336 51.4	-22 2.5
20	118 23.3	20 15.6	240 .5	105 21.1	18 34.7	6 54.9	-22 2.9
22	148 23.3	20 14.6	270 5.5	135 19.8	18 33.1	36 58.5	-22 3.2
Δ	0	-5		-7	-8	18	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	345 56.5	94 14 41.8	-68	127 48.6	4 58.1	50 20.7	-20 18.2	
2	14 53.3	94 14 28.2	-69	157 52.7	4 57.7	80 25.8	-20 18.2	
4	43 50.1	94 14 14.3	-71	187 56.9	4 57.4	110 31.0	-20 18.2	
6	72 47.0	95 14 .1	-73	218 1.0	4 57.0	140 36.1	-20 18.1	
8	101 43.9	95 13 45.5	-74	248 5.2	4 56.7	170 41.2	-20 18.1	
10	130 40.8	95 13 30.6	-76	278 9.3	4 56.4	200 46.3	-20 18.1	
12	159 37.8	95 13 15.4	-78	308 13.5	4 56.0	230 51.4	-20 18.1	
14	188 34.9	96 12 59.9	-79	338 17.6	4 55.7	260 56.5	-20 18.1	
16	217 32.0	96 12 44.0	-81	8 21.8	4 55.3	291 1.7	-20 18.1	
18	246 29.1	96 12 27.9	-82	38 25.9	4 55.0	321 6.8	-20 18.1	
20	275 26.3	96 12 11.4	-84	68 30.1	4 54.7	351 11.9	-20 18.1	
22	304 23.6	97 11 54.6	-85	98 34.2	4 54.3	21 17.0	-20 18.1	
Δ				21	-2	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 17	20 55	1 10	: : :	18 5	3.4	8 53	1.0
55	3 51	20 21	0 50	: : :	18 22	3.2	8 35	1.2
50	4 15	19 57	0 41	2 58	18 35	3.0	8 21	1.4
45	4 34	19 39	0 35	2 14	18 46	2.8	8 9	1.5
40	4 49	19 24	0 31	1 54	18 54	2.7	7 60	1.6
35	5 2	19 11	0 29	1 41	19 2	2.6	7 52	1.7
30	5 13	18 60	0 27	1 32	19 8	2.5	7 44	1.8
20	5 32	18 41	0 24	1 21	19 19	2.4	7 32	1.9
10	5 48	18 25	0 23	1 16	19 29	2.3	7 21	2.1
0	6 3	18 10	0 22	1 13	19 38	2.2	7 11	2.2
10	6 18	17 55	0 22	1 14	19 47	2.0	7 0	2.3
20	6 34	17 39	0 23	1 17	19 57	1.9	6 49	2.4
30	6 52	17 21	0 26	1 24	20 8	1.8	6 37	2.5
35	7 2	17 11	0 27	1 29	20 14	1.7	6 29	2.6
40	7 14	16 59	0 30	1 35	20 21	1.6	6 21	2.7
45	7 28	16 45	0 32	1 44	20 30	1.5	6 11	2.8
50	7 45	16 28	0 36	1 55	20 40	1.3	5 59	2.9
55	8 7	16 6	0 42	2 11	20 52	1.2	5 44	3.1
60	8 37	15 36	0 52	2 35	21 8	.9	5 24	3.3
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min s	s / ' / "		h min	min	' / "	' / "		
00	- 6 24.6	-.1 15.8	T _m	0 58	2.2	57.6	15.7		
12	- 6 25.8	T _{m☉} 12 h 6.4 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	'	°	
♂	12 58	.1	226	-2.8	♃	15 27	.0	189	-1.3
♄	19 32	.1	127	-1.4	♄	20 35	.0	111	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.2	20 13.6	300 10.4	165 18.5	18 31.4	67 2.0	-22 3.6
2	208 23.2	20 12.6	330 15.3	195 17.2	18 29.8	97 5.5	-22 3.9
4	238 23.2	20 11.6	0 20.3	225 15.9	18 28.1	127 9.0	-22 4.3
6	268 23.1	20 10.6	30 25.2	255 14.6	18 26.5	157 12.5	-22 4.6
8	298 23.1	20 9.6	60 30.1	285 13.3	18 24.8	187 16.1	-22 4.9
10	328 23.0	20 8.5	90 35.0	315 12.0	18 23.1	217 19.6	-22 5.3
12	358 23.0	20 7.5	120 40.0	345 10.7	18 21.4	247 23.1	-22 5.6
14	28 23.0	20 6.5	150 44.9	15 9.4	18 19.8	277 26.5	-22 6.0
16	58 22.9	20 5.5	180 49.8	45 8.1	18 18.1	307 30.0	-22 6.3
18	88 22.9	20 4.5	210 54.8	75 6.8	18 16.4	337 33.5	-22 6.7
20	118 22.8	20 3.5	240 59.7	105 5.5	18 14.7	7 37.0	-22 7.0
22	148 22.8	20 2.4	271 4.6	135 4.2	18 13.0	37 40.5	-22 7.4
Δ	0	-5		-6	-8	17	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	333 20.9	97 11 37.6	-87	128 38.4	4 54.0	51 22.1	-20 18.1	
2	2 18.3	97 11 20.3	-88	158 42.5	4 53.6	81 27.2	-20 18.1	
4	31 15.7	97 11 2.7	-89	188 46.7	4 53.3	111 32.3	-20 18.0	
6	60 13.2	98 10 44.8	-91	218 50.8	4 52.9	141 37.5	-20 18.0	
8	89 10.8	98 10 26.7	-92	248 55.0	4 52.6	171 42.6	-20 18.0	
10	118 8.4	98 10 8.3	-93	278 59.1	4 52.2	201 47.7	-20 18.0	
12	147 6.1	99 9 49.7	-94	309 3.2	4 51.9	231 52.8	-20 18.0	
14	176 3.8	99 9 30.8	-96	339 7.4	4 51.6	261 57.9	-20 18.0	
16	205 1.5	99 9 11.7	-97	9 11.5	4 51.2	292 3.0	-20 18.0	
18	233 59.4	99 8 52.3	-98	39 15.7	4 50.9	322 8.1	-20 18.0	
20	262 57.2	100 8 32.8	-99	69 19.8	4 50.5	352 13.2	-20 18.0	
22	291 55.2	100 8 13.0	-100	99 24.0	4 50.2	22 18.3	-20 18.0	
Δ				21	-2	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 19	20 53	1 9	: : :	19 27	3.5	9 18	.9
55	3 52	20 20	0 50	: : :	19 38	3.2	9 5	1.1
50	4 16	19 56	0 40	2 55	19 47	3.1	8 54	1.3
45	4 35	19 38	0 35	2 13	19 54	2.9	8 46	1.4
40	4 50	19 23	0 31	1 53	19 60	2.8	8 39	1.5
35	5 2	19 10	0 28	1 41	20 5	2.7	8 33	1.6
30	5 13	18 59	0 26	1 32	20 9	2.6	8 28	1.7
20	5 32	18 41	0 24	1 21	20 17	2.4	8 19	1.9
10	5 48	18 25	0 22	1 16	20 24	2.3	8 11	2.0
0	6 3	18 10	0 22	1 13	20 30	2.1	8 3	2.1
10	6 18	17 55	0 22	1 14	20 36	2.0	7 55	2.3
20	6 33	17 40	0 23	1 17	20 43	1.9	7 47	2.4
30	6 51	17 22	0 26	1 23	20 50	1.7	7 37	2.6
35	7 2	17 12	0 27	1 28	20 54	1.6	7 32	2.7
40	7 13	16 60	0 29	1 35	20 59	1.5	7 25	2.8
45	7 27	16 46	0 32	1 43	21 5	1.4	7 18	2.9
50	7 44	16 29	0 36	1 55	21 12	1.2	7 9	3.0
55	8 6	16 8	0 42	2 11	21 20	1.1	6 58	3.2
60	8 35	15 38	0 51	2 34	21 31	.8	6 44	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	- 6 27.0	-.1 15.8	T _m	1 50	2.2	58.1	15.8		
12	- 6 28.0	T _{m☉} 12 h 6.5 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	'	°	
♂	12 59	.1	225	-2.8	♃	15 23	.0	188	-1.3
♄	19 30	.1	127	-1.4	♄	20 31	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	22.8	20	1.4	301	9.5	165	2.9	18	11.3	67	44.0	-22	7.7
2	208	22.7	20	.4	331	14.5	195	1.6	18	9.6	97	47.4	-22	8.1
4	238	22.7	19	59.3	1	19.4	225	.3	18	7.9	127	50.9	-22	8.4
6	268	22.7	19	58.3	31	24.3	254	59.1	18	6.2	157	54.3	-22	8.8
8	298	22.7	19	57.3	61	29.2	284	57.8	18	4.5	187	57.8	-22	9.1
10	328	22.6	19	56.2	91	34.2	314	56.5	18	2.8	218	1.2	-22	9.5
12	358	22.6	19	55.2	121	39.1	344	55.2	18	1.1	248	4.7	-22	9.8
14	28	22.6	19	54.2	151	44.0	14	54.0	17	59.4	278	8.1	-22	10.2
16	58	22.6	19	53.1	181	49.0	44	52.7	17	57.6	308	11.6	-22	10.6
18	88	22.5	19	52.1	211	53.9	74	51.4	17	55.9	338	15.0	-22	10.9
20	118	22.5	19	51.0	241	58.8	104	50.2	17	54.2	8	18.4	-22	11.3
22	148	22.5	19	50.0	272	3.7	134	48.9	17	52.4	38	21.9	-22	11.6
Δ	0	-5					-6	-9			17	-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 21	20 50	1 8	:::	20 51	3.3	9 39	.8
55	3 54	20 18	0 49	:::	20 56	3.1	9 31	1.0
50	4 18	19 55	0 40	2 53	21 0	2.9	9 25	1.2
45	4 36	19 37	0 35	2 12	21 4	2.8	9 20	1.4
40	4 51	19 22	0 31	1 53	21 7	2.7	9 16	1.5
35	5 3	19 10	0 28	1 40	21 9	2.6	9 13	1.6
30	5 14	18 59	0 26	1 32	21 11	2.5	9 9	1.7
20	5 32	18 41	0 24	1 21	21 15	2.4	9 4	1.8
10	5 48	18 25	0 22	1 15	21 18	2.2	8 59	2.0
0	6 3	18 10	0 22	1 13	21 21	2.1	8 54	2.1
10	6 18	17 55	0 22	1 14	21 24	2.0	8 50	2.3
20	6 33	17 40	0 23	1 17	21 27	1.9	8 45	2.4
30	6 51	17 22	0 26	1 23	21 31	1.8	8 39	2.6
35	7 1	17 12	0 27	1 28	21 33	1.7	8 35	2.7
40	7 13	17 1	0 29	1 35	21 35	1.6	8 32	2.8
45	7 26	16 47	0 32	1 43	21 38	1.5	8 27	2.9
50	7 43	16 30	0 36	1 55	21 41	1.4	8 22	3.1
55	8 4	16 9	0 42	2 10	21 46	1.3	8 15	3.3
60	8 33	15 40	0 51	2 33	21 51	1.1	8 7	3.5

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	320	53.1	100	7 53.1	-101	129	28.1	4 49.8	52	23.4	-20	18.0
2	349	51.1	100	7 32.9	-102	159	32.2	4 49.5	82	28.6	-20	18.0
4	18	49.2	100	7 12.6	-103	189	36.4	4 49.1	112	33.7	-20	18.0
6	47	47.3	101	6 52.0	-103	219	40.5	4 48.8	142	38.8	-20	17.9
8	76	45.4	101	6 31.3	-104	249	44.7	4 48.4	172	43.9	-20	17.9
10	105	43.6	101	6 10.5	-105	279	48.8	4 48.1	202	49.0	-20	17.9
12	134	41.8	101	5 49.5	-106	309	52.9	4 47.7	232	54.1	-20	17.9
14	163	40.0	101	5 28.3	-107	339	57.1	4 47.4	262	59.2	-20	17.9
16	192	38.3	101	5 7.0	-107	10	1.2	4 47.0	293	4.3	-20	17.9
18	221	36.6	102	4 45.6	-108	40	5.3	4 46.7	323	9.4	-20	17.9
20	250	34.9	102	4 24.0	-108	70	9.5	4 46.3	353	14.5	-20	17.9
22	279	33.2	102	4 2.3	-109	100	13.6	4 46.0	23	19.6	-20	17.9
Δ						21	-2		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 28.9	.1	15.8	T _m	2 42	2.1	58.5	15.9
12	- 6 29.5	T _{m☉}	12 h 6.5 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 0	.1	224	-2.9	♃	15 20	.0	188	-1.3
♂	19 27	.1	127	-1.3	♄	20 27	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	22.5	19	48.9	302	8.7	164	47.6	17	50.7	68	25.3	-22	12.0
2	208	22.4	19	47.9	332	13.6	194	46.4	17	49.0	98	28.7	-22	12.3
4	238	22.4	19	46.8	2	18.5	224	45.1	17	47.2	128	32.1	-22	12.7
6	268	22.4	19	45.7	32	23.5	254	43.9	17	45.5	158	35.5	-22	13.1
8	298	22.4	19	44.7	62	28.4	284	42.6	17	43.7	188	38.9	-22	13.4
10	328	22.4	19	43.6	92	33.3	314	41.4	17	42.0	218	42.3	-22	13.8
12	358	22.4	19	42.5	122	38.2	344	40.1	17	40.2	248	45.7	-22	14.1
14	28	22.3	19	41.5	152	43.2	14	38.9	17	38.5	278	49.1	-22	14.5
16	58	22.3	19	40.4	182	48.1	44	37.6	17	36.7	308	52.5	-22	14.9
18	88	22.3	19	39.3	212	53.0	74	36.4	17	34.9	338	55.8	-22	15.2
20	118	22.3	19	38.2	242	58.0	104	35.1	17	33.2	8	59.2	-22	15.6
22	148	22.3	19	37.2	273	2.9	134	33.9	17	31.4	39	2.6	-22	16.0
Δ	0	-5					-6	-9			17	-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 23	20 48	1 7	:::	22 10	.8	9 58	2.4
55	3 56	20 16	0 49	:::	22 10	1.0	9 56	2.4
50	4 19	19 53	0 40	2 50	22 10	1.2	9 54	2.3
45	4 37	19 36	0 35	2 11	22 11	1.4	9 53	2.3
40	4 51	19 21	0 31	1 52	22 11	1.5	9 52	2.3
35	5 4	19 9	0 28	1 40	22 11	1.6	9 51	2.2
30	5 14	18 58	0 26	1 31	22 11	1.7	9 50	2.2
20	5 33	18 40	0 24	1 21	22 11	1.9	9 48	2.2
10	5 48	18 25	0 22	1 15	22 12	2.0	9 47	2.2
0	6 3	18 10	0 22	1 13	22 12	2.1	9 45	2.1
10	6 17	17 56	0 22	1 14	22 13	2.3	9 44	2.1
20	6 33	17 40	0 23	1 17	22 13	2.4	9 42	2.1
30	6 50	17 23	0 26	1 23	22 14	2.6	9 41	2.1
35	7 0	17 13	0 27	1 28	22 14	2.7	9 40	2.0
40	7 12	17 2	0 29	1 35	22 14	2.8	9 39	2.0
45	7 25	16 48	0 32	1 43	22 15	2.9	9 37	2.0
50	7 42	16 32	0 36	1 54	22 15	3.1	9 36	2.0
55	8 3	16 11	0 42	2 10	22 16	3.3	9 34	1.9
60	8 31	15 42	0 51	2 33	22 17	3.5	9 31	1.9

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	308	31.5	102	3 40.6	-109	130	17.8	4 45.6	53	24.7	-20	17.9
2	337	29.9	102	3 18.7	-110	160	21.9	4 45.3	83	29.8	-20	17.9
4	6	28.2	102	2 56.8	-110	190	26.0	4 44.9	113	34.9	-20	17.9
6	35	26.5	102	2 34.7	-111	220	30.2	4 44.6	143	40.0	-20	17.9
8	64	24.9	102	2 12.6	-111	250	34.3	4 44.2	173	45.1	-20	17.9
10	93	23.2	102	1 50.4	-111	280	38.4	4 43.9	203	50.2	-20	17.9
12	122	21.5	102	1 28.2	-111	310	42.5	4 43.5	233	55.3	-20	17.9
14	151	19.8	101	1 5.9	-112	340	46.7	4 43.2	264	.4	-20	17.8
16	180	18.1	101	0 43.6	-112	10	50.8	4 42.8	294	5.5	-20	17.8
18	209	16.4	101	0 21.3	-101	40	54.9	4 42.5	324	10.5	-20	17.8
20	238	14.6	101	0 1.0	112	70	59.1	4 42.1	354	15.6	-20	17.8
22	267	12.8	101	0 23.4	112	101	3.2	4 41.8	24	20.7	-20	17.8
Δ						21	-2		25	0		

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s	'	h min	min	'	'	
00	- 6 30.2	.0	15.8	T _m	3 33	2.1	58.8	16.0
12	- 6 30.5	T _{m☉}	12 h 6.5 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	'		

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.3	19 36.1	303 7.8	164 32.7	17 29.6	69 6.0	-22 16.3	
2	208 22.3	19 35.0	333 12.7	194 31.4	17 27.8	99 9.3	-22 16.7	
4	238 22.3	19 33.9	3 17.7	224 30.2	17 26.0	129 12.7	-22 17.0	
6	268 22.3	19 32.8	33 22.6	254 29.0	17 24.2	159 16.0	-22 17.4	
8	298 22.3	19 31.7	63 27.5	284 27.7	17 22.5	189 19.4	-22 17.8	
10	328 22.3	19 30.6	93 32.5	314 26.5	17 20.7	219 22.7	-22 18.1	
12	358 22.3	19 29.5	123 37.4	344 25.3	17 18.9	249 26.1	-22 18.5	
14	28 22.3	19 28.4	153 42.3	14 24.0	17 17.1	279 29.4	-22 18.9	
16	58 22.3	19 27.3	183 47.2	44 22.8	17 15.3	309 32.7	-22 19.2	
18	88 22.3	19 26.2	213 52.2	74 21.6	17 13.5	339 36.1	-22 19.6	
20	118 22.3	19 25.1	243 57.1	104 20.4	17 11.6	9 39.4	-22 20.0	
22	148 22.3	19 24.0	274 2.0	134 19.2	17 9.8	39 42.7	-22 20.4	
Δ	0	-5		-6	-9	17	-2	

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	3 25	20 46	1 6	:::	22 29	.9	10 56	3.6
55	3 57	20 15	0 48	:::	22 35	1.1	10 53	3.3
50	4 20	19 52	0 40	2 48	22 39	1.3	10 50	3.1
45	4 38	19 34	0 34	2 11	22 43	1.4	10 48	3.0
40	4 52	19 20	0 31	1 52	22 46	1.6	10 46	2.8
35	5 4	19 8	0 28	1 40	22 49	1.7	10 44	2.7
30	5 15	18 58	0 26	1 31	22 52	1.8	10 43	2.6
20	5 33	18 40	0 24	1 21	22 56	1.9	10 41	2.4
10	5 49	18 24	0 22	1 15	23 0	2.1	10 39	2.3
0	6 3	18 10	0 22	1 13	23 4	2.2	10 37	2.2
10	6 17	17 56	0 22	1 13	23 7	2.2	10 35	2.0
20	6 32	17 41	0 23	1 17	23 11	2.2	10 32	1.9
30	6 50	17 24	0 25	1 23	23 16	2.2	10 30	1.7
35	6 60	17 14	0 27	1 28	23 19	2.2	10 29	1.6
40	7 11	17 2	0 29	1 34	23 21	2.2	10 27	1.5
45	7 24	16 49	0 32	1 43	23 25	2.2	10 25	1.4
50	7 41	16 33	0 36	1 54	23 29	2.2	10 23	1.2
55	8 1	16 12	0 42	2 10	23 34	2.2	10 20	1.1
60	8 29	15 44	0 50	2 32	23 41	2.3	10 17	.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	296 11.0	101	0 45.8	112	131 7.3	4 41.4	54 25.8	-20 17.8
2	325 9.1	100	1 8.1	112	161 11.5	4 41.1	84 30.9	-20 17.8
4	354 7.1	100	1 30.5	112	191 15.6	4 40.7	114 36.0	-20 17.8
6	23 5.2	100	1 52.8	111	221 19.7	4 40.4	144 41.1	-20 17.8
8	52 3.1	99	2 15.1	111	251 23.8	4 40.0	174 46.2	-20 17.8
10	81 1.0	99	2 37.3	111	281 28.0	4 39.7	204 51.3	-20 17.8
12	109 58.9	99	2 59.5	111	311 32.1	4 39.3	234 56.4	-20 17.8
14	138 56.6	98	3 21.6	110	341 36.2	4 39.0	265 1.4	-20 17.8
16	167 54.3	98	3 43.7	110	11 40.3	4 38.6	295 6.5	-20 17.8
18	196 51.9	98	4 5.7	109	41 44.5	4 38.3	325 11.6	-20 17.8
20	225 49.4	97	4 27.5	109	71 48.6	4 37.9	355 16.7	-20 17.8
22	254 46.9	97	4 49.3	108	101 52.7	4 37.6	25 21.8	-20 17.8
Δ					21	-2	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s		h min	min	'	'
00	- 6 30.8	.0	15.8	T _m	4 24	2.2	59.1 16.1
12	- 6 30.9	T _{m☉}	12 h 6.5 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 2	.1	221	-2.9	♄	15 13	.0	188	-1.3
♂	19 21	.1	126	-1.3	♂	20 19	.0	111	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	178 22.3	19 22.9	304 7.0	164 18.0	17 8.0	69 46.0	-22 20.7	
2	208 22.3	19 21.8	334 11.9	194 16.8	17 6.2	99 49.3	-22 21.1	
4	238 22.3	19 20.7	4 16.8	224 15.5	17 4.4	129 52.6	-22 21.5	
6	268 22.3	19 19.6	34 21.7	254 14.3	17 2.5	159 55.9	-22 21.8	
8	298 22.3	19 18.5	64 26.7	284 13.1	17 .7	189 59.2	-22 22.2	
10	328 22.3	19 17.3	94 31.6	314 11.9	16 58.9	220 2.5	-22 22.6	
12	358 22.3	19 16.2	124 36.5	344 10.7	16 57.0	250 5.8	-22 23.0	
14	28 22.3	19 15.1	154 41.4	14 9.5	16 55.2	280 9.1	-22 23.3	
16	58 22.3	19 14.0	184 46.4	44 8.3	16 53.4	310 12.4	-22 23.7	
18	88 22.3	19 12.8	214 51.3	74 7.1	16 51.5	340 15.6	-22 24.1	
20	118 22.3	19 11.7	244 56.2	104 6.0	16 49.7	10 18.9	-22 24.4	
22	148 22.4	19 10.6	275 1.2	134 4.8	16 47.8	40 22.2	-22 24.8	
Δ	0	-6		-6	-9	16	-2	

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	3 28	20 44	1 5	:::	22 50	1.0	12 22	3.5
55	3 59	20 13	0 48	:::	23 1	1.3	12 12	3.3
50	4 22	19 51	0 40	2 46	23 10	1.4	12 5	3.1
45	4 39	19 33	0 34	2 10	23 18	2.2	11 59	3.0
40	4 53	19 19	0 31	1 51	23 24	2.2	11 54	2.8
35	5 5	19 7	0 28	1 39	23 29	2.2	11 50	2.7
30	5 16	18 57	0 26	1 31	23 34	2.2	11 46	2.6
20	5 33	18 39	0 24	1 20	23 42	2.2	11 40	2.5
10	5 49	18 24	0 22	1 15	23 49	2.2	11 34	2.3
0	6 3	18 10	0 22	1 13	23 56	2.2	11 29	2.2
10	6 17	17 56	0 22	1 13	...	.0	11 23	2.1
20	6 32	17 41	0 23	1 17	...	.0	11 18	2.0
30	6 49	17 24	0 25	1 23	...	.0	11 11	1.8
35	6 59	17 14	0 27	1 28	...	.0	11 7	1.7
40	7 10	17 3	0 29	1 34	...	.0	11 3	1.6
45	7 23	16 50	0 32	1 43	...	.0	10 58	1.5
50	7 39	16 34	0 36	1 54	...	.0	10 53	1.3
55	7 60	16 14	0 41	2 9	...	.0	10 46	1.2
60	8 27	15 47	0 50	2 32	...	.0	10 37	.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	283 44.2	96	5 11.0	108	131 56.8	4 37.2	55 26.9	-20 17.8
2	312 41.5	96	5 32.6	107	162 1.0	4 36.8	85 32.0	-20 17.8
4	341 38.6	95	5 54.1	107	192 5.1	4 36.5	115 37.0	-20 17.8
6	10 35.7	95	6 15.4	106	222 9.2	4 36.1	145 42.1	-20 17.8
8	39 32.6	94	6 36.6	105	252 13.3	4 35.8	175 47.2	-20 17.8
10	68 29.4	94	6 57.6	104	282 17.4	4 35.4	205 52.3	-20 17.8
12	97 26.1	93	7 18.5	104	312 21.6	4 35.1	235 57.4	-20 17.7
14	126 22.7	92	7 39.2	103	342 25.7	4 34.7	266 2.4	-20 17.7
16	155 19.2	92	7 59.7	102	12 29.8	4 34.4	296 7.5	-20 17.7
18	184 15.5	91	8 20.1	101	42 33.9	4 34.0	326 12.6	-20 17.7
20	213 11.7	90	8 40.2	100	72 38.0	4 33.6	356 17.7	-20 17.7
22	242 7.8	90	9 .2	99	102 42.1	4 33.3	26 22.8	-20 17.7
Δ					21	-2	25	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s		h min	min	'	'
00	- 6 31.0	.0	15.8	T _m	5 16	2.2	59.2 16.1
12	- 6 30.7	T _{m☉}	12 h 6.5 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 3	.1	220	-2.9	♄	15 10	.0	188	-1.3
♂	19 19	.1	126	-1.3	♂	20 15	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}		S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	22.4	19	9.4	305	6.1	164	3.6	16	46.0	70	25.4 -22 25.2
2	208	22.4	19	8.3	335	11.0	194	2.4	16	44.1	100	28.7 -22 25.6
4	238	22.4	19	7.2	5	15.9	224	1.2	16	42.2	130	32.0 -22 26.0
6	268	22.4	19	6.0	35	20.9	254	.0	16	40.4	160	35.2 -22 26.3
8	298	22.4	19	4.9	65	25.8	283	58.8	16	38.5	190	38.4 -22 26.7
10	328	22.5	19	3.7	95	30.7	313	57.7	16	36.6	220	41.7 -22 27.1
12	358	22.5	19	2.6	125	35.7	343	56.5	16	34.8	250	44.9 -22 27.5
14	28	22.5	19	1.4	155	40.6	13	55.3	16	32.9	280	48.2 -22 27.8
16	58	22.5	19	.3	185	45.5	43	54.1	16	31.0	310	51.4 -22 28.2
18	88	22.6	18	59.1	215	50.4	73	53.0	16	29.1	340	54.6 -22 28.6
20	118	22.6	18	58.0	245	55.4	103	51.8	16	27.2	10	57.8 -22 29.0
22	148	22.6	18	56.8	276	.3	133	50.6	16	25.3	41	1.0 -22 29.4
Δ	0	-6					-6	-9		16	-2	

UT	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
h	h min	h min	h min	h min	h min	min	h min	min
60	3 30	20 41	1 4	:::	23 14	1.3	13 47	3.4
55	4 1	20 11	0 48	:::	23 31	2.3	13 31	3.2
50	4 23	19 49	0 39	2 43	23 45	2.3	13 19	3.0
45	4 40	19 32	0 34	2 9	...	.0	13 10	2.9
40	4 54	19 18	0 31	1 51	...	.0	13 2	2.8
35	5 6	19 7	0 28	1 39	...	.0	12 55	2.7
30	5 16	18 56	0 26	1 31	...	.0	12 49	2.6
20	5 34	18 39	0 24	1 20	...	.0	12 39	2.5
10	5 49	18 24	0 22	1 15	...	.0	12 30	2.4
0	6 3	18 10	0 22	1 13	...	.0	12 22	2.3
10	6 17	17 56	0 22	1 13	0 3	2.4	12 13	2.2
20	6 32	17 41	0 23	1 16	0 11	2.5	12 4	2.1
30	6 48	17 25	0 25	1 23	0 19	2.6	11 54	1.9
35	6 58	17 15	0 27	1 28	0 24	2.7	11 49	1.8
40	7 9	17 4	0 29	1 34	0 30	2.8	11 42	1.8
45	7 22	16 51	0 32	1 42	0 36	2.9	11 34	1.6
50	7 38	16 36	0 36	1 54	0 44	3.1	11 25	1.5
55	7 58	16 16	0 41	2 9	0 54	3.3	11 14	1.4
60	8 25	15 49	0 50	2 31	1 7	3.5	10 59	1.1

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{η}	δ_{η}	S_{θ}	δ_{θ}
h	°	'	°	'	°	'	°	'
0	271	3.7	89	9 19.9	132	46.3	4 32.9	56 27.8 -20 17.7
2	299	59.5	88	9 39.4	162	50.4	4 32.6	86 32.9 -20 17.7
4	328	55.2	88	9 58.7	192	54.5	4 32.2	116 38.0 -20 17.7
6	357	50.7	87	10 17.8	222	58.6	4 31.9	146 43.1 -20 17.7
8	26	46.1	86	10 36.6	253	2.7	4 31.5	176 48.1 -20 17.7
10	55	41.3	85	10 55.1	283	6.8	4 31.1	206 53.2 -20 17.7
12	84	36.4	85	11 13.4	313	10.9	4 30.8	236 58.3 -20 17.7
14	113	31.3	84	11 31.4	343	15.1	4 30.4	267 3.3 -20 17.7
16	142	26.1	83	11 49.2	13	19.2	4 30.1	297 8.4 -20 17.7
18	171	20.8	82	12 6.6	43	23.3	4 29.7	327 13.5 -20 17.7
20	200	15.3	82	12 23.8	73	27.4	4 29.3	357 18.6 -20 17.7
22	229	9.6	81	12 40.7	103	31.5	4 29.0	27 23.6 -20 17.7
Δ					21	-2		25 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	- 6 30.5	.0	15.8	T_m	6 9	2.3	59.3 16.2
12	- 6 30.0	$T_{m\odot}$	12 h 6.5 min	Starost	22.5 d	Faza	☉

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
h	h min	'	°		h min	'	°		
♀	13 4	.1	219	-2.9	♀	15 7	.0	188	-1.3
♂	19 16	.1	125	-1.3	♂	20 11	.0	111	.5

UT	SUNCE				PROLEĆ. TAČKA		VENERA			MARS		
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}		S_{σ}	δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	22.6	18	55.6	306	5.2	163	49.5	16	23.4	71	4.3 -22 29.7
2	208	22.7	18	54.5	336	10.2	193	48.3	16	21.5	101	7.5 -22 30.1
4	238	22.7	18	53.3	6	15.1	223	47.2	16	19.6	131	10.7 -22 30.5
6	268	22.7	18	52.2	36	20.0	253	46.0	16	17.7	161	13.9 -22 30.9
8	298	22.7	18	51.0	66	24.9	283	44.8	16	15.8	191	17.1 -22 31.3
10	328	22.8	18	49.8	96	29.9	313	43.7	16	13.9	221	20.3 -22 31.7
12	358	22.8	18	48.6	126	34.8	343	42.5	16	12.0	251	23.4 -22 32.0
14	28	22.8	18	47.5	156	39.7	13	41.4	16	10.1	281	26.6 -22 32.4
16	58	22.9	18	46.3	186	44.7	43	40.2	16	8.2	311	29.8 -22 32.8
18	88	22.9	18	45.1	216	49.6	73	39.1	16	6.3	341	33.0 -22 33.2
20	118	23.0	18	43.9	246	54.5	103	37.9	16	4.3	11	36.1 -22 33.6
22	148	23.0	18	42.7	276	59.4	133	36.8	16	2.4	41	39.3 -22 34.0
Δ	0	-6					-6	-10		16	-2	

UT	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	GRAĐ.	ASTR.	IZLAZ	$\Delta/24$	ZALAZ	$\Delta/24$
h	h min	h min	h min	h min	h min	min	h min	min
60	3 32	20 39	1 3	:::	23 45	2.3	15 9	3.2
55	4 2	20 9	0 47	:::	...	.0	14 48	3.0
50	4 24	19 48	0 39	2 41	...	.0	14 32	2.9
45	4 41	19 31	0 34	2 8	0 -5	1.8	14 20	2.8
40	4 55	19 17	0 31	1 50	0 4	1.8	14 9	2.7
35	5 7	19 6	0 28	1 38	0 12	1.9	14 0	2.7
30	5 17	18 56	0 26	1 30	0 19	2.0	13 53	2.6
20	5 34	18 39	0 24	1 20	0 30	2.1	13 39	2.5
10	5 49	18 24	0 22	1 15	0 41	2.2	13 27	2.4
0	6 3	18 10	0 22	1 13	0 50	2.3	13 16	2.3
10	6 17	17 56	0 22	1 13	0 60	2.4	13 6	2.3
20	6 31	17 42	0 23	1 16	1 10	2.5	12 54	2.2
30	6 48	17 25	0 25	1 23	1 23	2.6	12 41	2.1
35	6 57	17 16	0 27	1 28	1 30	2.7	12 33	2.0
40	7 8	17 5	0 29	1 34	1 38	2.8	12 24	1.9
45	7 21	16 52	0 32	1 42	1 47	2.9	12 14	1.9
50	7 37	16 37	0 36	1 53	1 58	3.0	12 2	1.8
55	7 56	16 17	0 41	2 8	2 12	3.1	11 46	1.6
60	8 23	15 51	0 49	2 31	2 31	3.4	11 26	1.4

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{η}	δ_{η}	S_{θ}	δ_{θ}
h	°	'	°	'	°	'	°	'
0	258	3.8	80	12 57.2	133	35.6	4 28.6	57 28.7 -20 17.7
2	286	57.8	79	13 13.4	163	39.7	4 28.3	87 33.8 -20 17.7
4	315	51.7	79	13 29.3	193	43.8	4 27.9	117 38.8 -20 17.7
6	344	45.4	78	13 44.9	223	47.9	4 27.5	147 43.9 -20 17.7
8	13	39.0	77	14 .1	253	52.1	4 27.2	177 49.0 -20 17.7
10	42	32.4	76	14 15.0	283	56.2	4 26.8	207 54.0 -20 17.7
12	71	25.7	76	14 29.5	314	.3	4 26.5	237 59.1 -20 17.7
14	100	18.9	75	14 43.7	344	4.4	4 26.1	268 4.1 -20 17.7
16	129	11.9	74	14 57.4	14	8.5	4 25.7	298 9.2 -20 17.7
18	158	4.7	74	15 10.8	44	12.6	4 25.4	328 14.3 -20 17.7
20	186	57.5	73	15 23.8	74	16.7	4 25.0	358 19.3 -20 17.7
22	215	50.1	72	15 36.5	104	20.8	4 24.7	28 24.4 -20 17.7
Δ					21	-2		25 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	- 6 29.5	.1	15.8	T_m	7 3	2.3	59.3 16.2
12	- 6 28.7	$T_{m\odot}$	12 h 6.5 min	Starost	23.5 d	Faza	☉

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
h	h min	'	°		h min	'	°		
♀	13 5	.1	218	-2.9	♀	15 4	.0	187	-1.3
♂	19 14	.1	125	-1.3	♂	20 7	.0	111	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.0	18 41.5	307 4.4	163 35.7	16 .5	71 42.5	-22 34.3
2	208 23.1	18 40.4	337 9.3	193 34.5	15 58.6	101 45.6	-22 34.7
4	238 23.1	18 39.2	7 14.2	223 33.4	15 56.6	131 48.8	-22 35.1
6	268 23.2	18 38.0	37 19.2	253 32.3	15 54.7	161 51.9	-22 35.5
8	298 23.2	18 36.8	67 24.1	283 31.1	15 52.7	191 55.1	-22 35.9
10	328 23.2	18 35.6	97 29.0	313 30.0	15 50.8	221 58.2	-22 36.3
12	358 23.3	18 34.4	127 33.9	343 28.9	15 48.8	252 1.4	-22 36.7
14	28 23.3	18 33.2	157 38.9	13 27.7	15 46.9	282 4.5	-22 37.1
16	58 23.4	18 32.0	187 43.8	43 26.6	15 44.9	312 7.6	-22 37.5
18	88 23.4	18 30.8	217 48.7	73 25.5	15 43.0	342 10.7	-22 37.8
20	118 23.5	18 29.5	247 53.7	103 24.4	15 41.0	12 13.9	-22 38.2
22	148 23.5	18 28.3	277 58.6	133 23.3	15 39.1	42 17.0	-22 38.6
Δ	0	-6		-6	-10	16	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	244 42.5	72 15 48.7	59	134 24.9	4 24.3	58 29.5	-20 17.7	
2	273 34.9	71 16 .5 57		164 29.0	4 23.9	88 34.5	-20 17.7	
4	302 27.1	71 16 11.9 55		194 33.1	4 23.6	118 39.6	-20 17.7	
6	331 19.2	70 16 22.9 53		224 37.2	4 23.2	148 44.6	-20 17.7	
8	0 11.2	69 16 33.5 51		254 41.3	4 22.8	178 49.7	-20 17.7	
10	29 3.1	69 16 43.7 49		284 45.4	4 22.5	208 54.7	-20 17.7	
12	57 54.9	69 16 53.4 46		314 49.5	4 22.1	238 59.8	-20 17.7	
14	86 46.7	68 17 2.7 44		344 53.6	4 21.8	269 4.9	-20 17.7	
16	115 38.3	68 17 11.5 42		14 57.7	4 21.4	299 9.9	-20 17.7	
18	144 29.8	67 17 19.9 40		45 1.8	4 21.0	329 15.0	-20 17.7	
20	173 21.3	67 17 27.9 37		75 5.9	4 20.7	359 20.0	-20 17.7	
22	202 12.7	67 17 35.3 35		105 10.0	4 20.3	29 25.1	-20 17.7	
Δ				21	-2	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 35	20 37	1 2	:::	. . .	.0	16 27	2.9
55	4 4	20 8	0 47	:::	0 7	1.8	16 1	2.8
50	4 26	19 46	0 39	2 39	0 24	1.9	15 42	2.7
45	4 42	19 30	0 34	2 7	0 37	2.0	15 27	2.6
40	4 56	19 16	0 30	1 50	0 49	2.1	15 15	2.6
35	5 7	19 5	0 28	1 38	0 58	2.1	15 4	2.6
30	5 17	18 55	0 26	1 30	1 6	2.2	14 55	2.5
20	5 34	18 38	0 24	1 20	1 21	2.2	14 39	2.5
10	5 49	18 24	0 22	1 15	1 34	2.3	14 26	2.4
0	6 3	18 10	0 22	1 13	1 46	2.4	14 13	2.4
10	6 17	17 56	0 22	1 13	1 58	2.4	13 60	2.3
20	6 31	17 42	0 23	1 16	2 11	2.5	13 46	2.3
30	6 47	17 26	0 25	1 23	2 26	2.6	13 30	2.2
35	6 57	17 17	0 27	1 27	2 34	2.6	13 21	2.2
40	7 7	17 6	0 29	1 34	2 44	2.7	13 11	2.2
45	7 20	16 53	0 32	1 42	2 56	2.7	12 59	2.1
50	7 35	16 38	0 36	1 53	3 10	2.8	12 44	2.0
55	7 55	16 19	0 41	2 8	3 28	2.9	12 25	2.0
60	8 21	15 53	0 49	2 30	3 52	3.1	11 60	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	- 6 27.9	.1	15.8	T _m	7 59	2.4	59.2 16.1
12	- 6 26.8	T _{m☉}	12 h 6.4 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 6	.1	217	-2.9	♄	15 0	.0	187	-1.3
♂	19 11	.1	125	-1.3	♅	20 3	.0	111	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 23.6	18 27.1	308 3.5	163 22.1	15 37.1	72 20.1	-22 39.0
2	208 23.6	18 25.9	338 8.4	193 21.0	15 35.1	102 23.2	-22 39.4
4	238 23.7	18 24.7	8 13.4	223 19.9	15 33.2	132 26.3	-22 39.8
6	268 23.7	18 23.5	38 18.3	253 18.8	15 31.2	162 29.4	-22 40.2
8	298 23.8	18 22.3	68 23.2	283 17.7	15 29.2	192 32.5	-22 40.6
10	328 23.9	18 21.0	98 28.1	313 16.6	15 27.2	222 35.6	-22 41.0
12	358 23.9	18 19.8	128 33.1	343 15.5	15 25.2	252 38.7	-22 41.4
14	28 24.0	18 18.6	158 38.0	13 14.4	15 23.3	282 41.8	-22 41.8
16	58 24.0	18 17.3	188 42.9	43 13.3	15 21.3	312 44.8	-22 42.1
18	88 24.1	18 16.1	218 47.9	73 12.2	15 19.3	342 47.9	-22 42.5
20	118 24.1	18 14.9	248 52.8	103 11.1	15 17.3	12 51.0	-22 42.9
22	148 24.2	18 13.6	278 57.7	133 10.0	15 15.3	42 54.1	-22 43.3
Δ	0	-6		-6	-10	15	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	231 4.0	66 17 42.4 33		135 14.1	4 19.9	59 30.1	-20 17.7	
2	259 55.3	66 17 49.0 31		165 18.2	4 19.6	89 35.2	-20 17.7	
4	288 46.5	66 17 55.1 28		195 22.3	4 19.2	119 40.2	-20 17.7	
6	317 37.7	66 18 .7 26		225 26.4	4 18.8	149 45.3	-20 17.7	
8	346 28.9	66 18 5.9 24		255 30.5	4 18.5	179 50.3	-20 17.7	
10	15 20.0	66 18 10.6 21		285 34.6	4 18.1	209 55.4	-20 17.7	
12	44 11.1	66 18 14.9 19		315 38.7	4 17.7	240 .4	-20 17.7	
14	73 2.2	66 18 18.6 16		345 42.8	4 17.4	270 5.5	-20 17.7	
16	101 53.4	66 18 21.9 14		15 46.9	4 17.0	300 10.5	-20 17.7	
18	130 44.5	66 18 24.7 12		45 51.0	4 16.6	330 15.6	-20 17.7	
20	159 35.6	66 18 27.1 9		75 55.1	4 16.3	0 20.6	-20 17.7	
22	188 26.8	66 18 29.0 7		105 59.2	4 15.9	30 25.7	-20 17.7	
Δ				20	-2	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 37	20 34	1 1	:::	0 24	2.1	17 35	2.4
55	4 6	20 6	0 47	:::	0 50	2.1	17 7	2.4
50	4 27	19 45	0 39	2 37	1 10	2.2	16 46	2.4
45	4 43	19 29	0 34	2 6	1 25	2.2	16 30	2.4
40	4 57	19 15	0 30	1 49	1 38	2.3	16 17	2.4
35	5 8	19 4	0 28	1 39	1 49	2.3	16 6	2.4
30	5 18	18 54	0 26	1 30	1 58	2.3	15 56	2.4
20	5 35	18 38	0 24	1 20	2 15	2.3	15 39	2.4
10	5 49	18 23	0 22	1 15	2 29	2.4	15 24	2.4
0	6 3	18 10	0 22	1 12	2 43	2.4	15 10	2.4
10	6 16	17 57	0 22	1 13	2 56	2.4	14 56	2.4
20	6 30	17 43	0 23	1 16	3 11	2.4	14 41	2.4
30	6 47	17 27	0 25	1 23	3 27	2.5	14 24	2.4
35	6 56	17 17	0 27	1 27	3 37	2.5	14 14	2.4
40	7 6	17 7	0 29	1 34	3 48	2.5	14 3	2.4
45	7 19	16 54	0 32	1 42	4 1	2.5	13 49	2.4
50	7 34	16 40	0 35	1 53	4 17	2.5	13 33	2.3
55	7 53	16 21	0 41	2 8	4 38	2.6	13 12	2.3
60	8 18	15 55	0 49	2 29	5 6	2.6	12 44	2.3

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 6 25.7	.1	15.8	T _m	8 56	2.4	59.0 16.1
12	- 6 24.3	T _{m☉}	12 h 6.4 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	'	°	
♂	13 7	.1	215	-2.9	♄	14 57	.0	187	-1.3
♂	19 9	.1	124	-1.2	♅	19 59	.0	111	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 24.3	18 12.4	309 2.6	163 8.9	15 13.3	72 57.1	-22 43.7
2	208 24.3	18 11.2	339 7.6	193 7.8	15 11.3	103 .2	-22 44.1
4	238 24.4	18 9.9	9 12.5	223 6.7	15 9.3	133 3.2	-22 44.5
6	268 24.5	18 8.7	39 17.4	253 5.7	15 7.3	163 6.3	-22 44.9
8	298 24.5	18 7.4	69 22.4	283 4.6	15 5.3	193 9.3	-22 45.3
10	328 24.6	18 6.2	99 27.3	313 3.5	15 3.2	223 12.4	-22 45.7
12	358 24.7	18 4.9	129 32.2	343 2.4	15 1.2	253 15.4	-22 46.1
14	28 24.8	18 3.7	159 37.1	13 1.3	14 59.2	283 18.5	-22 46.5
16	58 24.8	18 2.4	189 42.1	43 .3	14 57.2	313 21.5	-22 46.9
18	88 24.9	18 1.2	219 47.0	72 59.2	14 55.2	343 24.5	-22 47.3
20	118 25.0	17 59.9	249 51.9	102 58.1	14 53.1	13 27.5	-22 47.7
22	148 25.0	17 58.7	279 56.9	132 57.0	14 51.1	43 30.6	-22 48.1
Δ	0	-6		-5	-10	15	-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 39	20 32	1 0	:::	1 13	2.5	18 32	1.8
55	4 8	20 4	0 46	:::	1 42	2.5	18 4	2.0
50	4 28	19 43	0 39	2 35	2 2	2.5	17 43	2.0
45	4 45	19 27	0 34	2 5	2 19	2.5	17 27	2.1
40	4 58	19 14	0 30	1 49	2 32	2.4	17 14	2.1
35	5 9	19 3	0 28	1 37	2 44	2.4	17 3	2.2
30	5 19	18 54	0 26	1 30	2 54	2.4	16 53	2.2
20	5 35	18 37	0 23	1 20	3 11	2.4	16 36	2.2
10	5 50	18 23	0 22	1 14	3 26	2.4	16 21	2.3
0	6 3	18 10	0 22	1 12	3 40	2.4	16 7	2.3
10	6 16	17 57	0 22	1 13	3 54	2.3	15 53	2.4
20	6 30	17 43	0 23	1 16	4 9	2.3	15 38	2.4
30	6 46	17 27	0 25	1 22	4 26	2.3	15 21	2.5
35	6 55	17 18	0 27	1 27	4 36	2.3	15 11	2.5
40	7 5	17 8	0 29	1 33	4 48	2.3	14 59	2.5
45	7 18	16 56	0 32	1 42	5 2	2.2	14 46	2.5
50	7 32	16 41	0 35	1 53	5 18	2.2	14 29	2.6
55	7 51	16 22	0 41	2 7	5 39	2.2	14 8	2.7
60	8 16	15 57	0 49	2 29	6 8	2.1	13 39	2.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	217 18.0	66 18 30.4	5	136 3.3	4 15.5	60 30.7	-20 17.7	
2	246 9.3	67 18 31.3	2	166 7.4	4 15.2	90 35.7	-20 17.7	
4	275 .6	67 18 31.7	0	196 11.5	4 14.8	120 40.8	-20 17.7	
6	303 52.0	67 18 31.7	-3	226 15.5	4 14.4	150 45.8	-20 17.7	
8	332 43.4	68 18 31.2	-5	256 19.6	4 14.1	180 50.9	-20 17.7	
10	1 34.9	68 18 30.2	-7	286 23.7	4 13.7	210 55.9	-20 17.7	
12	30 26.5	69 18 28.7	-10	316 27.8	4 13.3	241 .9	-20 17.7	
14	59 18.3	69 18 26.8	-12	346 31.9	4 13.0	271 6.0	-20 17.7	
16	88 10.1	70 18 24.5	-14	16 36.0	4 12.6	301 11.0	-20 17.7	
18	117 2.0	70 18 21.6	-16	46 40.1	4 12.2	331 16.1	-20 17.7	
20	145 54.1	71 18 18.3	-19	76 44.2	4 11.9	1 21.1	-20 17.7	
22	174 46.3	72 18 14.6	-21	106 48.3	4 11.5	31 26.1	-20 17.7	
Δ				20	-2	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	- 6 22.9	.1	15.8	T _m	9 53	2.4	58.7 16.0		
12	- 6 21.2	T _{m☉}	12 h 6.4 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 8	.1	214	-2.9	♃	14 54	.0	187	-1.3
♄	19 6	.1	124	-1.2	♄	19 55	.0	111	.5

1. AVGUST

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 25.1	17 57.4	310 1.8	162 56.0	14 49.1	73 33.6	-22 48.5
2	208 25.2	17 56.1	340 6.7	192 54.9	14 47.0	103 36.6	-22 48.9
4	238 25.3	17 54.9	10 11.6	222 53.8	14 45.0	133 39.6	-22 49.3
6	268 25.4	17 53.6	40 16.6	252 52.8	14 42.9	163 42.6	-22 49.7
8	298 25.4	17 52.3	70 21.5	282 51.7	14 40.9	193 45.6	-22 50.1
10	328 25.5	17 51.0	100 26.4	312 50.7	14 38.9	223 48.6	-22 50.5
12	358 25.6	17 49.8	130 31.4	342 49.6	14 36.8	253 51.6	-22 50.9
14	28 25.7	17 48.5	160 36.3	12 48.5	14 34.8	283 54.6	-22 51.3
16	58 25.8	17 47.2	190 41.2	42 47.5	14 32.7	313 57.6	-22 51.7
18	88 25.9	17 45.9	220 46.1	72 46.4	14 30.6	344 .5	-22 52.1
20	118 25.9	17 44.7	250 51.1	102 45.4	14 28.6	14 3.5	-22 52.5
22	148 26.0	17 43.4	280 56.0	132 44.3	14 26.5	44 6.5	-22 52.9
Δ	0	-6		-5	-10	15	-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 42	20 29	0 59	:::	2 14	2.9	19 16	1.4
55	4 9	20 2	0 46	:::	2 42	2.8	18 51	1.6
50	4 30	19 42	0 38	2 34	3 2	2.7	18 32	1.7
45	4 46	19 26	0 34	2 5	3 18	2.6	18 17	1.8
40	4 59	19 13	0 30	1 48	3 31	2.6	18 5	1.9
35	5 10	19 2	0 28	1 37	3 42	2.5	17 55	1.9
30	5 19	18 53	0 26	1 29	3 52	2.5	17 46	2.0
20	5 36	18 37	0 23	1 19	4 8	2.4	17 30	2.1
10	5 50	18 23	0 22	1 14	4 23	2.3	17 16	2.2
0	6 3	18 10	0 22	1 12	4 36	2.3	17 3	2.2
10	6 16	17 57	0 22	1 13	4 50	2.2	16 50	2.3
20	6 30	17 43	0 23	1 16	5 5	2.2	16 36	2.4
30	6 45	17 28	0 25	1 22	5 21	2.1	16 20	2.5
35	6 54	17 19	0 27	1 27	5 31	2.1	16 10	2.5
40	7 4	17 9	0 29	1 33	5 42	2.0	15 60	2.6
45	7 16	16 57	0 32	1 41	5 55	1.9	15 47	2.7
50	7 31	16 42	0 35	1 52	6 11	1.9	15 31	2.8
55	7 49	16 24	0 40	2 7	6 31	1.8	15 12	2.9
60	8 14	15 60	0 48	2 28	6 58	1.6	14 45	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	203 38.6	72 18 10.4	-23	136 52.4	4 11.1	61 31.2	-20 17.7	
2	232 31.0	73 18 5.7	-25	166 56.4	4 10.8	91 36.2	-20 17.7	
4	261 23.7	74 18 .6	-28	197 .5	4 10.4	121 41.2	-20 17.7	
6	290 16.5	75 17 55.1	-30	227 4.6	4 10.0	151 46.3	-20 17.7	
8	319 9.4	76 17 49.1	-32	257 8.7	4 9.6	181 51.3	-20 17.8	
10	348 2.5	77 17 42.7	-34	287 12.8	4 9.3	211 56.3	-20 17.8	
12	16 55.8	77 17 35.9	-36	317 16.9	4 8.9	242 1.4	-20 17.8	
14	45 49.3	78 17 28.7	-38	347 21.0	4 8.5	272 6.4	-20 17.8	
16	74 43.0	79 17 21.0	-40	17 25.0	4 8.2	302 11.4	-20 17.8	
18	103 36.9	80 17 13.0	-42	47 29.1	4 7.8	332 16.5	-20 17.8	
20	132 31.0	82 17 4.5	-44	77 33.2	4 7.4	2 21.5	-20 17.8	
22	161 25.3	83 16 55.6	-46	107 37.3	4 7.1	32 26.5	-20 17.8	
Δ				20	-2	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	- 6 19.5	.2	15.8	T _m	10 50	2.3	58.3 15.9		
12	- 6 17.5	T _{m☉}	12 h 6.3 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 9	.1	213	-2.9	♃	14 50	.0	187	-1.3
♄	19 4	.1	124	-1.2	♄	19 51	.0	111	.5

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 26.1	17 42.1	311 .9	162 43.3	14 24.5	74 9.5	-22 53.3
2	208 26.2	17 40.8	341 5.9	192 42.3	14 22.4	104 12.4	-22 53.7
4	238 26.3	17 39.5	11 10.8	222 41.2	14 20.3	134 15.4	-22 54.1
6	268 26.4	17 38.2	41 15.7	252 40.2	14 18.2	164 18.3	-22 54.5
8	298 26.5	17 36.9	71 20.6	282 39.1	14 16.2	194 21.3	-22 54.9
10	328 26.6	17 35.6	101 25.6	312 38.1	14 14.1	224 24.2	-22 55.3
12	358 26.7	17 34.3	131 30.5	342 37.1	14 12.0	254 27.2	-22 55.7
14	28 26.8	17 33.0	161 35.4	12 36.0	14 9.9	284 30.1	-22 56.1
16	58 26.9	17 31.7	191 40.3	42 35.0	14 7.8	314 33.1	-22 56.5
18	88 27.0	17 30.4	221 45.3	72 34.0	14 5.7	344 36.0	-22 56.9
20	118 27.1	17 29.1	251 50.2	102 33.0	14 3.6	14 38.9	-22 57.3
22	148 27.2	17 27.8	281 55.1	132 31.9	14 1.5	44 41.8	-22 57.7
Δ	0	-6		-5	-10	15	-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 44	20 27	0 59	:	3 24	3.1	19 50	1.1
55	4 11	20 0	0 46	:	3 48	2.9	19 29	1.3
50	4 31	19 40	0 38	2 32	4 6	2.8	19 13	1.4
45	4 47	19 25	0 33	2 4	4 20	2.7	19 1	1.6
40	4 60	19 12	0 30	1 47	4 32	2.6	18 50	1.7
35	5 10	19 2	0 28	1 37	4 42	2.5	18 41	1.7
30	5 20	18 52	0 26	1 29	4 51	2.5	18 34	1.8
20	5 36	18 36	0 23	1 19	5 6	2.4	18 20	1.9
10	5 50	18 23	0 22	1 14	5 19	2.3	18 8	2.0
0	6 3	18 10	0 22	1 12	5 31	2.2	17 57	2.1
10	6 16	17 57	0 22	1 13	5 43	2.1	17 45	2.2
20	6 29	17 44	0 23	1 16	5 57	2.0	17 33	2.3
30	6 44	17 28	0 25	1 22	6 12	1.9	17 19	2.4
35	6 53	17 20	0 27	1 27	6 20	1.8	17 11	2.5
40	7 3	17 9	0 29	1 33	6 30	1.8	17 2	2.6
45	7 15	16 58	0 31	1 41	6 42	1.7	16 51	2.7
50	7 29	16 44	0 35	1 52	6 56	1.6	16 38	2.8
55	7 47	16 26	0 40	2 7	7 13	1.4	16 21	3.0
60	8 11	16 2	0 48	2 28	7 37	1.2	15 58	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	190 19.9	84	16 46.4	-48	137 41.4	4 6.7	62 31.5	-20 17.8
2	219 14.6	85	16 36.8	-50	167 45.5	4 6.3	92 36.6	-20 17.8
4	248 9.6	86	16 26.8	-52	197 49.5	4 5.9	122 41.6	-20 17.8
6	277 4.8	87	16 16.4	-54	227 53.6	4 5.6	152 46.6	-20 17.8
8	306 .2	88	16 5.7	-55	257 57.7	4 5.2	182 51.7	-20 17.8
10	334 55.9	90	15 54.6	-57	288 1.8	4 4.8	212 56.7	-20 17.8
12	3 51.8	91	15 43.2	-59	318 5.9	4 4.4	243 1.7	-20 17.8
14	32 47.9	92	15 31.4	-61	348 9.9	4 4.1	273 6.7	-20 17.8
16	61 44.3	93	15 19.3	-62	18 14.0	4 3.7	303 11.7	-20 17.8
18	90 41.0	94	15 6.9	-64	48 18.1	4 3.3	333 16.8	-20 17.8
20	119 37.9	96	14 54.1	-65	78 22.2	4 3.0	3 21.8	-20 17.8
22	148 35.0	97	14 41.0	-67	108 26.2	4 2.6	33 26.8	-20 17.8
Δ					20	-2	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	- 6 15.5	.2	15.8	T _m	11 44	2.2	57.8	15.8	
12	- 6 13.2	T _{m☉}	12 h 6.2 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 10	.1	212	-2.9	♃	14 47	.0	187	-1.3
♂	19 2	.1	123	-1.2	♄	19 47	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 27.3	17 26.5	312 .1	162 30.9	13 59.5	74 44.8	-22 58.1
2	208 27.4	17 25.2	342 5.0	192 29.9	13 57.4	104 47.7	-22 58.5
4	238 27.5	17 23.9	12 9.9	222 28.9	13 55.2	134 50.6	-22 58.9
6	268 27.6	17 22.5	42 14.8	252 27.9	13 53.1	164 53.5	-22 59.3
8	298 27.7	17 21.2	72 19.8	282 26.8	13 51.0	194 56.4	-22 59.7
10	328 27.8	17 19.9	102 24.7	312 25.8	13 48.9	224 59.3	-23 .2
12	358 27.9	17 18.6	132 29.6	342 24.8	13 46.8	255 2.2	-23 .6
14	28 28.0	17 17.3	162 34.6	12 23.8	13 44.7	285 5.1	-23 1.0
16	58 28.1	17 15.9	192 39.5	42 22.8	13 42.6	315 8.0	-23 1.4
18	88 28.2	17 14.6	222 44.4	72 21.8	13 40.5	345 10.9	-23 1.8
20	118 28.3	17 13.3	252 49.3	102 20.8	13 38.3	15 13.8	-23 2.2
22	148 28.4	17 11.9	282 54.3	132 19.8	13 36.2	45 16.6	-23 2.6
Δ	1	-7		-5	-11	14	-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 46	20 24	0 58	:	4 39	3.2	20 16	.9
55	4 13	19 58	0 45	:	4 58	3.0	20 0	1.1
50	4 33	19 39	0 38	2 30	5 13	2.8	19 48	1.3
45	4 48	19 24	0 33	2 3	5 25	2.7	19 38	1.4
40	5 0	19 11	0 30	1 47	5 34	2.6	19 30	1.5
35	5 11	19 1	0 28	1 36	5 43	2.5	19 23	1.6
30	5 20	18 51	0 26	1 29	5 50	2.4	19 17	1.7
20	5 36	18 36	0 23	1 19	6 2	2.3	19 6	1.8
10	5 50	18 22	0 22	1 14	6 13	2.2	18 57	1.9
0	6 3	18 10	0 22	1 12	6 24	2.1	18 48	2.0
10	6 15	17 57	0 22	1 13	6 34	2.0	18 39	2.1
20	6 29	17 44	0 23	1 16	6 45	1.9	18 29	2.3
30	6 44	17 29	0 25	1 22	6 57	1.7	18 18	2.4
35	6 52	17 20	0 27	1 27	7 4	1.6	18 11	2.5
40	7 2	17 10	0 29	1 33	7 12	1.6	18 4	2.6
45	7 14	16 59	0 31	1 41	7 22	1.5	17 55	2.7
50	7 28	16 45	0 35	1 52	7 33	1.3	17 45	2.8
55	7 45	16 27	0 40	2 6	7 47	1.2	17 32	3.0
60	8 9	16 4	0 48	2 27	8 6	1.0	17 15	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	177 32.4	98	14 27.7	-68	138 30.3	4 2.2	63 31.8	-20 17.8
2	206 30.1	100	14 14.0	-70	168 34.4	4 1.8	93 36.8	-20 17.9
4	235 28.0	101	14 .1	-71	198 38.5	4 1.5	123 41.9	-20 17.9
6	264 26.1	102	13 45.9	-72	228 42.6	4 1.1	153 46.9	-20 17.9
8	293 24.6	103	13 31.4	-74	258 46.6	4 .7	183 51.9	-20 17.9
10	322 23.2	105	13 16.6	-75	288 50.7	4 .3	213 56.9	-20 17.9
12	351 22.2	106	13 1.6	-76	318 54.8	3 60.0	244 1.9	-20 17.9
14	20 21.4	107	12 46.3	-78	348 58.9	3 59.6	274 6.9	-20 17.9
16	49 20.8	108	12 30.8	-79	19 2.9	3 59.2	304 12.0	-20 17.9
18	78 20.5	110	12 15.1	-80	49 7.0	3 58.8	334 17.0	-20 17.9
20	107 20.5	111	11 59.1	-81	79 11.1	3 58.5	4 22.0	-20 17.9
22	136 20.7	112	11 42.9	-82	109 15.1	3 58.1	34 27.0	-20 17.9
Δ					20	-2	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	- 6 11.0	.2	15.8	T _m	12 36	2.0	57.3	15.6	
12	- 6 8.4	T _{m☉}	12 h 6.1 min	Starost	.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	211	-2.9	♃	14 44	.0	186	-1.3
♂	18 59	.1	123	-1.2	♄	19 43	.0	112	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS			
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	28.6	17	10.6	312	59.2	162	18.8	13	34.1	75	19.5 -23 3.0
2	208	28.7	17	9.3	343	4.1	192	17.8	13	32.0	105	22.4 -23 3.4
4	238	28.8	17	7.9	13	9.1	222	16.8	13	29.8	135	25.3 -23 3.8
6	268	28.9	17	6.6	43	14.0	252	15.8	13	27.7	165	28.1 -23 4.2
8	298	29.0	17	5.2	73	18.9	282	14.8	13	25.5	195	31.0 -23 4.6
10	328	29.1	17	3.9	103	23.8	312	13.8	13	23.4	225	33.8 -23 5.0
12	358	29.3	17	2.6	133	28.8	342	12.8	13	21.3	255	36.7 -23 5.4
14	28	29.4	17	1.2	163	33.7	12	11.8	13	19.1	285	39.5 -23 5.9
16	58	29.5	16	59.9	193	38.6	42	10.9	13	17.0	315	42.4 -23 6.3
18	88	29.6	16	58.5	223	43.6	72	9.9	13	14.8	345	45.1 -23 6.7
20	118	29.8	16	57.2	253	48.5	102	8.9	13	12.7	15	48.2 -23 7.1
22	148	29.9	16	55.8	283	53.4	132	7.9	13	10.5	45	50.9 -23 7.5
Δ	1 -7						-5 -11			14 -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 49	20 22	0 57	:::	5 56	3.2	20 37	.8
55	4 15	19 56	0 45	3 53	6 10	2.9	20 26	1.0
50	4 34	19 37	0 38	2 29	6 21	2.8	20 18	1.1
45	4 49	19 22	0 33	2 2	6 29	2.6	20 11	1.2
40	5 1	19 10	0 30	1 46	6 36	2.5	20 6	1.4
35	5 12	18 60	0 27	1 36	6 43	2.4	20 1	1.5
30	5 21	18 51	0 26	1 29	6 48	2.3	19 57	1.5
20	5 37	18 35	0 23	1 19	6 57	2.2	19 49	1.7
10	5 50	18 22	0 22	1 14	7 6	2.1	19 42	1.8
0	6 3	18 10	0 22	1 12	7 13	2.0	19 36	1.9
10	6 15	17 57	0 22	1 12	7 21	1.8	19 30	2.0
20	6 28	17 44	0 23	1 16	7 29	1.7	19 23	2.2
30	6 43	17 29	0 25	1 22	7 38	1.6	19 15	2.3
35	6 51	17 21	0 27	1 27	7 44	1.5	19 11	2.4
40	7 1	17 11	0 29	1 33	7 50	1.4	19 6	2.5
45	7 13	17 0	0 31	1 41	7 57	1.3	18 60	2.6
50	7 26	16 46	0 35	1 52	8 5	1.2	18 52	2.7
55	7 44	16 29	0 40	2 6	8 16	1.0	18 43	2.9
60	8 7	16 6	0 47	2 27	8 29	.8	18 31	3.1
S								

UT	MESEC				JUPITER			SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'
0	165	21.1	113	11	26.5	-83	139	19.2	3	57.7	64	32.0 -20 17.9
2	194	21.8	115	11	10.0	-84	169	23.3	3	57.3	94	37.0 -20 17.9
4	223	22.7	116	10	53.2	-85	199	27.4	3	57.0	124	42.0 -20 17.9
6	252	23.9	117	10	36.2	-86	229	31.4	3	56.6	154	47.0 -20 17.9
8	281	25.4	118	10	19.0	-87	259	35.5	3	56.2	184	52.0 -20 17.9
10	310	27.0	119	10	1.7	-87	289	39.6	3	55.8	214	57.1 -20 18.0
12	339	28.9	121	9	44.2	-88	319	43.6	3	55.4	245	2.1 -20 18.0
14	8	31.1	122	9	26.6	-89	349	47.7	3	55.1	275	7.1 -20 18.0
16	37	33.4	123	9	8.8	-90	19	51.8	3	54.7	305	12.1 -20 18.0
18	66	36.0	124	8	50.9	-90	49	55.8	3	54.3	335	17.1 -20 18.0
20	95	38.8	125	8	32.8	-91	79	59.9	3	53.9	5	22.1 -20 18.0
22	124	41.8	126	8	14.6	-92	110	4.0	3	53.6	35	27.1 -20 18.0
Δ							20		-2		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	- 6 5.8	.2	15.8	T _m	13 25	1.9	56.7 15.4		
12	- 6 2.9	T _{m☉}	12 h 6.0 min	Starost	1.1 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 11	.1	209	-2.9	♄	14 41	.0	186	-1.3
♂	18 57	.1	122	-1.2	♄	19 39	.0	112	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS			
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'
0	178	30.0	16	54.4	313	58.3	162	6.9	13	8.4	75	53.7 -23 7.9
2	208	30.1	16	53.1	344	3.3	192	6.0	13	6.2	105	56.6 -23 8.3
4	238	30.3	16	51.7	14	8.2	222	5.0	13	4.0	135	59.4 -23 8.7
6	268	30.4	16	50.4	44	13.1	252	4.0	13	1.9	166	2.2 -23 9.1
8	298	30.5	16	49.0	74	18.1	282	3.0	12	59.7	196	5.0 -23 9.5
10	328	30.7	16	47.6	104	23.0	312	2.1	12	57.5	226	7.8 -23 9.9
12	358	30.8	16	46.3	134	27.9	342	1.1	12	55.4	256	10.6 -23 10.4
14	28	30.9	16	44.9	164	32.8	12	.1	12	53.2	286	13.4 -23 10.8
16	58	31.1	16	43.5	194	37.8	41	59.2	12	51.0	316	16.2 -23 11.2
18	88	31.2	16	42.1	224	42.7	71	58.2	12	48.8	346	19.0 -23 11.6
20	118	31.3	16	40.8	254	47.6	101	57.3	12	46.6	16	21.8 -23 12.0
22	148	31.5	16	39.4	284	52.6	131	56.3	12	44.5	46	24.6 -23 12.4
Δ	1 -7						-5 -11			14 -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 51	20 19	0 57	:::	7 12	3.1	20 55	.7
55	4 17	19 54	0 45	3 38	7 20	2.9	20 49	.9
50	4 35	19 35	0 38	2 27	7 27	2.7	20 45	1.0
45	4 50	19 21	0 33	2 1	7 33	2.6	20 41	1.2
40	5 2	19 9	0 30	1 46	7 37	2.5	20 38	1.3
35	5 13	18 59	0 27	1 36	7 41	2.4	20 36	1.4
30	5 22	18 50	0 26	1 28	7 44	2.3	20 33	1.5
20	5 37	18 35	0 23	1 19	7 50	2.1	20 29	1.6
10	5 50	18 22	0 22	1 14	7 56	2.0	20 26	1.7
0	6 2	18 9	0 22	1 12	8 0	1.9	20 22	1.9
10	6 15	17 57	0 22	1 12	8 5	1.8	20 19	2.0
20	6 28	17 45	0 23	1 16	8 11	1.6	20 15	2.1
30	6 42	17 30	0 25	1 22	8 16	1.5	20 11	2.3
35	6 51	17 22	0 27	1 27	8 20	1.4	20 8	2.3
40	7 0	17 12	0 29	1 33	8 24	1.3	20 6	2.4
45	7 11	17 1	0 31	1 41	8 28	1.2	20 2	2.5
50	7 25	16 48	0 35	1 51	8 34	1.1	19 58	2.7
55	7 42	16 31	0 40	2 6	8 40	.9	19 53	2.9
60	8 4	16 9	0 47	2 26	8 49	.7	19 47	3.1
S								

UT	MESEC				JUPITER			SATURN				
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃		S _♄	δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'
0	153	45.1	127	7	56.3	-92	140	8.0	3	53.2	65	32.1 -20 18.0
2	182	48.5	128	7	37.8	-93	170	12.1	3	52.8	95	37.1 -20 18.0
4	211	52.2	129	7	19.3	-93	200	16.2	3	52.4	125	42.1 -20 18.0
6	240	56.0	130	7	.6	-94	230	20.2	3	52.0	155	47.1 -20 18.0
8	270	.1	131	6	41.9	-94	260	24.3	3	51.7	185	52.1 -20 18.0
10	299	4.3	132	6	23.1	-95	290	28.4	3	51.3	215	57.1 -20 18.0
12	328	8.8	133	6	4.2	-95	320	32.4	3	50.9	246	2.1 -20 18.1
14	357	13.4	134	5	45.2	-95	350	36.5	3	50.5	276	7.1 -20 18.1
16	26	18.2	135	5	26.1	-96	20	40.6	3	50.2	306	12.1 -20 18.1
18	55	23.2	136	5	7.0	-96	50	44.6	3	49.8	336	17.1 -20 18.1
20	84	28.3	137	4	47.8	-96	80	48.7	3	49.4	6	22.1 -20 18.1
22	113	33.6	137	4	28.6	-96	110	52.8	3	49.0	36	27.1 -20 18.1
Δ							20		-2		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	- 5 60.0	.3	15.8	T _m	14 11	1.9	56.0 15.3		
12	- 5 56.8	T _{m☉}	12 h 5.9 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	'	°	
♂	13 12	.1	208	-2.9	♄	14 37	.0	186	-1.3
♂	18 55								

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 31.6	16 38.0	314 57.5	161 55.4	12 42.3	76 27.4	-23 12.8
2	208 31.8	16 36.6	345 2.4	191 54.4	12 40.1	106 30.2	-23 13.2
4	238 31.9	16 35.3	15 7.3	221 53.4	12 37.9	136 33.0	-23 13.6
6	268 32.0	16 33.9	45 12.3	251 52.5	12 35.7	166 35.7	-23 14.1
8	298 32.2	16 32.5	75 17.2	281 51.5	12 33.5	196 38.5	-23 14.5
10	328 32.3	16 31.1	105 22.1	311 50.6	12 31.3	226 41.3	-23 14.9
12	358 32.5	16 29.7	135 27.0	341 49.7	12 29.1	256 44.1	-23 15.3
14	28 32.6	16 28.3	165 32.0	11 48.7	12 26.9	286 46.8	-23 15.7
16	58 32.8	16 26.9	195 36.9	41 47.8	12 24.7	316 49.6	-23 16.1
18	88 32.9	16 25.5	225 41.8	71 46.8	12 22.5	346 52.3	-23 16.5
20	118 33.1	16 24.1	255 46.8	101 45.9	12 20.3	16 55.1	-23 16.9
22	148 33.2	16 22.7	285 51.7	131 45.0	12 18.1	46 57.8	-23 17.3
Δ	1	-7		-5	-11	14	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	142 39.1	138	4 9.3	-97	140 56.8	3 48.6	66 32.1	-20 18.1
2	171 44.7	139	3 50.0	-97	171 .9	3 48.3	96 37.1	-20 18.1
4	200 50.5	140	3 30.7	-97	201 4.9	3 47.9	126 42.1	-20 18.1
6	229 56.4	140	3 11.3	-97	231 9.0	3 47.5	156 47.0	-20 18.1
8	259 2.5	141	2 51.9	-97	261 13.1	3 47.1	186 52.0	-20 18.1
10	288 8.7	142	2 32.5	-97	291 17.1	3 46.7	216 57.0	-20 18.2
12	317 15.0	142	2 13.1	-97	321 21.2	3 46.3	247 2.0	-20 18.2
14	346 21.5	143	1 53.7	-97	351 25.2	3 46.0	277 7.0	-20 18.2
16	15 28.0	143	1 34.3	-97	21 29.3	3 45.6	307 12.0	-20 18.2
18	44 34.7	144	1 14.9	-97	51 33.4	3 45.2	337 17.0	-20 18.2
20	73 41.5	144	0 55.5	-97	81 37.4	3 44.8	7 22.0	-20 18.2
22	102 48.4	145	0 36.1	-97	111 41.5	3 44.4	37 27.0	-20 18.2
Δ					20	-2	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 53	20 17	0 56	:	8 26	2.3	21 11	2.6
55	4 18	19 52	0 44	3 29	8 30	2.2	21 11	2.4
50	4 37	19 34	0 37	2 25	8 32	2.1	21 10	2.3
45	4 51	19 19	0 33	2 1	8 34	2.1	21 10	2.2
40	5 3	19 8	0 30	1 45	8 36	2.0	21 9	2.2
35	5 13	18 58	0 27	1 35	8 38	2.0	21 9	2.1
30	5 22	18 49	0 26	1 28	8 39	2.0	21 8	2.1
20	5 37	18 34	0 23	1 19	8 42	1.9	21 8	2.0
10	5 50	18 21	0 22	1 14	8 44	1.9	21 7	1.9
0	6 2	18 9	0 22	1 12	8 46	1.8	21 7	1.8
10	6 14	17 57	0 22	1 12	8 48	1.8	21 6	1.7
20	6 27	17 45	0 23	1 15	8 50	1.7	21 6	1.7
30	6 41	17 31	0 25	1 22	8 52	1.7	21 5	1.6
35	6 50	17 22	0 27	1 26	8 54	1.6	21 4	1.5
40	6 59	17 13	0 29	1 33	8 55	1.6	21 4	1.5
45	7 10	17 2	0 31	1 41	8 57	1.6	21 3	1.4
50	7 23	16 49	0 35	1 51	8 59	1.5	21 3	1.3
55	7 40	16 33	0 40	2 5	9 2	1.5	21 2	1.2
60	8 2	16 11	0 47	2 26	9 5	1.4	21 1	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	- 5 53.6	.3	15.8	T _m	14 56	1.8	55.5 15.1
12	- 5 50.0	T _{m☉}	12 h 5.8 min	Starost	3.1 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 13	.1	207	-2.9	♄	14 34	.0	186	-1.3
♂	18 52	.1	121	-1.1	♄	19 31	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 33.4	16 21.3	315 56.6	161 44.0	12 15.9	77 .6	-23 17.8
2	208 33.5	16 19.9	346 1.5	191 43.1	12 13.6	107 3.3	-23 18.2
4	238 33.7	16 18.5	16 6.5	221 42.2	12 11.4	137 6.0	-23 18.6
6	268 33.8	16 17.1	46 11.4	251 41.2	12 9.2	167 8.8	-23 19.0
8	298 34.0	16 15.7	76 16.3	281 40.3	12 7.0	197 11.5	-23 19.4
10	328 34.1	16 14.3	106 21.3	311 39.4	12 4.8	227 14.2	-23 19.8
12	358 34.3	16 12.9	136 26.2	341 38.5	12 2.5	257 16.9	-23 20.2
14	28 34.5	16 11.5	166 31.1	11 37.5	12 .3	287 19.7	-23 20.6
16	58 34.6	16 10.0	196 36.0	41 36.6	11 58.1	317 22.4	-23 21.0
18	88 34.8	16 8.6	226 41.0	71 35.7	11 55.8	347 25.1	-23 21.5
20	118 34.9	16 7.2	256 45.9	101 34.8	11 53.6	17 27.8	-23 21.9
22	148 35.1	16 5.8	286 50.8	131 33.9	11 51.4	47 30.5	-23 22.3
Δ	1	-7		-5	-11	14	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	131 55.4	145	0 16.7	-70	141 45.5	3 44.1	67 31.9	-20 18.2
2	161 2.5	146	0 2.6	97	171 49.6	3 43.7	97 36.9	-20 18.2
4	190 9.7	146	0 22.0	96	201 53.7	3 43.3	127 41.9	-20 18.2
6	219 16.9	147	0 41.2	96	231 57.7	3 42.9	157 46.9	-20 18.3
8	248 24.2	147	1 .5	96	262 1.8	3 42.5	187 51.9	-20 18.3
10	277 31.6	147	1 19.7	96	292 5.8	3 42.1	217 56.9	-20 18.3
12	306 39.1	148	1 38.8	95	322 9.9	3 41.8	248 1.8	-20 18.3
14	335 46.6	148	1 57.9	95	352 13.9	3 41.4	278 6.8	-20 18.3
16	4 54.2	148	2 16.9	95	22 18.0	3 41.0	308 11.8	-20 18.3
18	34 1.8	148	2 35.9	95	52 22.0	3 40.6	338 16.8	-20 18.3
20	63 9.5	148	2 54.8	94	82 26.1	3 40.2	8 21.8	-20 18.3
22	92 17.2	149	3 13.6	94	112 30.1	3 39.8	38 26.7	-20 18.3
Δ					20	-2	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 56	20 14	0 55	:	9 21	.7	22 13	3.0
55	4 20	19 50	0 44	3 22	9 23	.9	22 9	2.7
50	4 38	19 32	0 37	2 24	9 24	1.0	22 6	2.6
45	4 53	19 18	0 33	1 60	9 25	1.1	22 3	2.5
40	5 4	19 7	0 30	1 45	9 25	1.2	22 1	2.3
35	5 14	18 57	0 27	1 35	9 26	1.3	21 59	2.3
30	5 23	18 48	0 26	1 28	9 27	1.4	21 58	2.2
20	5 38	18 34	0 23	1 18	9 28	1.6	21 55	2.0
10	5 50	18 21	0 22	1 14	9 28	1.7	21 52	1.9
0	6 2	18 9	0 22	1 12	9 29	1.8	21 50	1.8
10	6 14	17 58	0 22	1 12	9 30	1.9	21 48	1.7
20	6 26	17 45	0 23	1 15	9 31	2.0	21 45	1.6
30	6 40	17 31	0 25	1 22	9 32	2.2	21 43	1.4
35	6 49	17 23	0 26	1 26	9 33	2.3	21 41	1.3
40	6 58	17 14	0 28	1 32	9 34	2.4	21 39	1.3
45	7 9	17 3	0 31	1 40	9 35	2.5	21 37	1.1
50	7 21	16 51	0 35	1 51	9 36	2.6	21 34	1.0
55	7 38	16 34	0 39	2 5	9 37	2.8	21 31	.9
60	7 59	16 13	0 47	2 25	9 39	3.0	21 27	.7

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 5 46.5	.3	15.8	T _m	15 40	1.8	55.0 15.0
12	- 5 42.7	T _{m☉}	12 h 5.7 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	'	°	
♂	13 13	.1	206	-2.9	♄	14 31	.0	186	-1.3
♂	18 50	.1	121	-1.1	♄	19 27	.0	112	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	35.3	16	4.4	316	55.8	161	32.9	11	49.1	77	33.2	-23	22.7
2	208	35.4	16	2.9	347	.7	191	32.0	11	46.9	107	35.9	-23	23.1
4	238	35.6	16	1.5	17	5.6	221	31.1	11	44.6	137	38.6	-23	23.5
6	268	35.8	16	.1	47	10.5	251	30.2	11	42.4	167	41.3	-23	23.9
8	298	35.9	15	58.6	77	15.5	281	29.3	11	40.1	197	43.9	-23	24.3
10	328	36.1	15	57.2	107	20.4	311	28.4	11	37.9	227	46.6	-23	24.8
12	358	36.3	15	55.8	137	25.3	341	27.5	11	35.6	257	49.3	-23	25.2
14	28	36.5	15	54.3	167	30.3	11	26.6	11	33.4	287	52.0	-23	25.6
16	58	36.6	15	52.9	197	35.2	41	25.7	11	31.1	317	54.7	-23	26.0
18	88	36.8	15	51.5	227	40.1	71	24.8	11	28.9	347	57.3	-23	26.4
20	118	37.0	15	50.0	257	45.0	101	23.9	11	26.6	17	60.0	-23	26.8
22	148	37.2	15	48.6	287	50.0	131	23.0	11	24.3	48	2.6	-23	27.2
Δ		1		-7				-5		-11		13		-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 58	20 11	0 55	:	9 37	.7	23 24	2.9
55	4 22	19 48	0 44	3 16	9 43	.9	23 15	2.7
50	4 40	19 30	0 37	2 23	9 48	1.0	23 8	2.5
45	4 54	19 17	0 33	1 59	9 52	1.2	23 2	2.4
40	5 5	19 5	0 30	1 45	9 55	1.3	22 57	2.3
35	5 15	18 56	0 27	1 35	9 58	1.4	22 53	2.2
30	5 23	18 47	0 25	1 27	10 0	1.4	22 50	2.2
20	5 38	18 33	0 23	1 18	10 5	1.6	22 44	2.0
10	5 50	18 21	0 22	1 13	10 9	1.7	22 38	1.9
0	6 2	18 9	0 21	1 11	10 12	1.8	22 33	1.8
10	6 14	17 58	0 22	1 12	10 16	1.9	22 28	1.7
20	6 26	17 46	0 23	1 15	10 20	2.0	22 23	1.6
30	6 40	17 32	0 25	1 22	10 25	2.2	22 17	1.5
35	6 48	17 24	0 26	1 26	10 27	2.2	22 13	1.4
40	6 57	17 15	0 28	1 32	10 31	2.3	22 9	1.3
45	7 7	17 5	0 31	1 40	10 34	2.4	22 4	1.2
50	7 20	16 52	0 34	1 51	10 38	2.6	21 59	1.1
55	7 36	16 36	0 39	2 5	10 44	2.7	21 52	.9
60	7 57	16 15	0 46	2 25	10 50	2.9	21 43	.7

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	121	24.9	149	3	32.4	93	142	34.2	3	39.5	68	31.7	-20	18.4
2	150	32.7	149	3	51.1	93	172	38.3	3	39.1	98	36.7	-20	18.4
4	179	40.4	149	4	9.6	93	202	42.3	3	38.7	128	41.7	-20	18.4
6	208	48.2	149	4	28.1	92	232	46.4	3	38.3	158	46.7	-20	18.4
8	237	56.0	149	4	46.6	92	262	50.4	3	37.9	188	51.6	-20	18.4
10	267	3.8	149	5	4.9	91	292	54.5	3	37.5	218	56.6	-20	18.4
12	296	11.7	149	5	23.1	91	322	58.5	3	37.1	249	1.6	-20	18.4
14	325	19.4	149	5	41.2	90	353	2.6	3	36.8	279	6.5	-20	18.4
16	354	27.2	149	5	59.2	89	23	6.6	3	36.4	309	11.5	-20	18.5
18	23	35.0	149	6	17.1	89	53	10.7	3	36.0	339	16.5	-20	18.5
20	52	42.8	149	6	34.8	88	83	14.7	3	35.6	9	21.5	-20	18.5
22	81	50.5	148	6	52.5	88	113	18.8	3	35.2	39	26.4	-20	18.5
Δ							20			-2	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	- 5 38.9	.3	15.8	T _m	16 23	1.8	54.6	14.9
12	- 5 34.8	T _{m☉}	12 h 5.6 min	Starost	5.1 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 14	.1	205	-2.9	♄	14 28	.0	186	-1.3
♂	18 48	.1	121	-1.1	♂	19 23	.0	112	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉	δ _☉				S _♀	δ _♀			S _♂	δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	178	37.3	15	47.1	317	54.9	161	22.1	11	22.1	78	5.3	-23	27.7
2	208	37.5	15	45.7	347	59.8	191	21.2	11	19.8	108	8.0	-23	28.1
4	238	37.7	15	44.2	18	4.8	221	20.3	11	17.5	138	10.6	-23	28.5
6	268	37.9	15	42.8	48	9.7	251	19.4	11	15.3	168	13.3	-23	28.9
8	298	38.0	15	41.3	78	14.6	281	18.6	11	13.0	198	15.9	-23	29.3
10	328	38.2	15	39.9	108	19.5	311	17.7	11	10.7	228	18.5	-23	29.7
12	358	38.4	15	38.4	138	24.5	341	16.8	11	8.4	258	21.2	-23	30.1
14	28	38.6	15	37.0	168	29.4	11	15.9	11	6.2	288	23.8	-23	30.5
16	58	38.8	15	35.5	198	34.3	41	15.0	11	3.9	318	26.4	-23	31.0
18	88	39.0	15	34.1	228	39.2	71	14.1	11	1.6	348	29.1	-23	31.4
20	118	39.2	15	32.6	258	44.2	101	13.3	10	59.3	18	31.7	-23	31.8
22	148	39.3	15	31.1	288	49.1	131	12.4	10	57.0	48	34.3	-23	32.2
Δ		1		-7				-4		-11		13		-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 1	20 9	0 54	:	9 54	.8	...	.0
55	4 24	19 46	0 43	3 11	10 5	1.0	...	.0
50	4 41	19 29	0 37	2 21	10 13	1.1	...	.0
45	4 55	19 15	0 33	1 58	10 20	1.2	...	.0
40	5 6	19 4	0 29	1 44	10 26	1.3	23 53	2.3
35	5 16	18 55	0 27	1 34	10 30	1.4	23 47	2.2
30	5 24	18 46	0 25	1 27	10 35	1.5	23 42	2.2
20	5 38	18 32	0 23	1 18	10 42	1.6	23 32	2.0
10	5 51	18 20	0 22	1 13	10 49	1.7	23 24	1.9
0	6 2	18 9	0 21	1 11	10 56	1.8	23 17	1.8
10	6 13	17 58	0 22	1 12	11 2	1.9	23 9	1.8
20	6 25	17 46	0 23	1 15	11 9	2.0	23 1	1.7
30	6 39	17 32	0 25	1 21	11 17	2.2	22 52	1.5
35	6 47	17 25	0 26	1 26	11 21	2.2	22 46	1.5
40	6 55	17 16	0 28	1 32	11 26	2.3	22 40	1.4
45	7 6	17 6	0 31	1 40	11 32	2.4	22 33	1.3
50	7 18	16 53	0 34	1 50	11 40	2.5	22 25	1.2
55	7 34	16 38	0 39	2 5	11 49	2.7	22 14	1.0
60	7 54	16 18	0 46	2 24	12 1	2.9	22 1	.9

UT	MESEC				JUPITER			SATURN						
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃			S _♄	δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	110	58.2	148	7	10.0	87	143	22.8	3	34.8	69	31.4	-20	18.5
2	140	5.8	148	7	27.4	86	173	26.8	3	34.4	99	36.4	-20	18.5
4	169	13.4	148	7	44.6	86	203	30.9	3	34.1	129	41.3	-20	18.5
6	198	21.0	148	8	1.7	85	233	34.9	3	33.7	159	46.3	-20	18.5
8	227	28.5	147	8	18.7	84	263	39.0	3	33.3	189	51.3	-20	18.6
10	256	36.0	147	8	35.6	83	293	43.0	3	32.9	219	56.2	-20	18.6
12	285	43.3	147	8	52.2	83	323	47.1	3	32.5	250	1.2	-20	18.6
14	314	50.7	146	9	8.8	82	353	51.1	3	32.1	280	6.2	-20	18.6
16	343	57.9	146	9	25.2	81	23	55.2	3	31.7	310	11.1	-20	18.6
18	13	5.1	145	9	41.4	80	53	59.2	3	31.3	340	16.1	-20	18.6
20	42	12.2	145	9	57.4	79	84	3.3	3	31.0	10	21.1	-20	18.6
22	71	19.2	145	10	13.3	79	114	7.3	3	30.6	40	26.0	-20	18.7
Δ							20			-2	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	- 5 30.7	.4	15.8	T _m	17 6	1.8	54.3	14.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 39.5	15 29.7	318 54.0	161 11.5	10 54.7	78 36.9	-23 32.6
2	208 39.7	15 28.2	348 59.0	191 10.7	10 52.4	108 39.5	-23 33.0
4	238 39.9	15 26.7	19 3.9	221 9.8	10 50.1	138 42.1	-23 33.4
6	268 40.1	15 25.3	49 8.8	251 8.9	10 47.9	168 44.7	-23 33.8
8	298 40.3	15 23.8	79 13.7	281 8.0	10 45.6	198 47.3	-23 34.3
10	328 40.5	15 22.3	109 18.7	311 7.2	10 43.3	228 49.9	-23 34.7
12	358 40.7	15 20.8	139 23.6	341 6.3	10 41.0	258 52.5	-23 35.1
14	28 40.9	15 19.4	169 28.5	11 5.5	10 38.7	288 55.1	-23 35.5
16	58 41.1	15 17.9	199 33.5	41 4.6	10 36.3	318 57.7	-23 35.9
18	88 41.3	15 16.4	229 38.4	71 3.7	10 34.0	349 .3	-23 36.3
20	118 41.5	15 14.9	259 43.3	101 2.9	10 31.7	19 2.9	-23 36.7
22	148 41.7	15 13.4	289 48.2	131 2.0	10 29.4	49 5.5	-23 37.1
Δ	1	-7		-4	-12	13	-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 3	20 6	0 53	:	10 13	.9	0 34	2.9
55	4 26	19 43	0 43	3 7	10 28	1.1	0 20	2.7
50	4 43	19 27	0 37	2 20	10 40	1.3	0 9	2.5
45	4 56	19 14	0 32	1 58	10 50	1.4	0 0	2.4
40	5 7	19 3	0 29	1 44	10 58	1.5	...	.0
35	5 16	18 54	0 27	1 34	11 5	1.5	...	.0
30	5 25	18 46	0 25	1 27	11 11	1.6	...	.0
20	5 39	18 32	0 23	1 18	11 21	1.7	...	.0
10	5 51	18 20	0 22	1 13	11 31	1.8	...	.0
0	6 2	18 9	0 21	1 11	11 39	1.9	...	.0
10	6 13	17 58	0 22	1 12	11 48	2.0	23 51	1.8
20	6 25	17 46	0 23	1 15	11 58	2.1	23 40	1.7
30	6 38	17 33	0 25	1 21	12 9	2.2	23 28	1.6
35	6 46	17 25	0 26	1 26	12 15	2.2	23 22	1.6
40	6 54	17 17	0 28	1 32	12 22	2.3	23 14	1.5
45	7 4	17 7	0 31	1 40	12 30	2.4	23 4	1.4
50	7 16	16 55	0 34	1 50	12 41	2.5	22 53	1.3
55	7 31	16 40	0 39	2 4	12 53	2.6	22 40	1.2
60	7 51	16 20	0 46	2 24	13 10	2.8	22 22	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	100 26.1	144	10 29.0	78	144 11.4	3 30.2	70 31.0	-20 18.7
2	129 32.9	144	10 44.5	77	174 15.4	3 29.8	100 35.9	-20 18.7
4	158 39.6	143	10 59.9	76	204 19.4	3 29.4	130 40.9	-20 18.7
6	187 46.3	143	11 15.1	75	234 23.5	3 29.0	160 45.9	-20 18.7
8	216 52.8	142	11 30.0	74	264 27.5	3 28.6	190 50.8	-20 18.7
10	245 59.2	141	11 44.8	73	294 31.6	3 28.2	220 55.8	-20 18.7
12	275 5.5	141	11 59.4	72	324 35.6	3 27.9	251 .7	-20 18.8
14	304 11.6	140	12 13.8	71	354 39.6	3 27.5	281 5.7	-20 18.8
16	333 17.7	140	12 28.0	70	24 43.7	3 27.1	311 10.6	-20 18.8
18	2 23.6	139	12 42.0	69	54 47.7	3 26.7	341 15.6	-20 18.8
20	31 29.4	138	12 55.7	68	84 51.8	3 26.3	11 20.5	-20 18.8
22	60 35.0	138	13 9.3	67	114 55.8	3 25.9	41 25.5	-20 18.8
Δ					20	-2	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	- 5 21.9	.4	15.8	T _m	17 50	1.9	54.2 14.8
12	- 5 17.2	T _{m☉}	12 h 5.3 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	'	°	
♂	13 16	.1	202	-2.9	♄	14 21	.0	185	-1.3
♂	18 44	.1	120	-1.1	♂	19 15	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 41.9	15 12.0	319 53.2	161 1.2	10 27.1	79 8.0	-23 37.5
2	208 42.1	15 10.5	349 58.1	191 .3	10 24.8	109 10.6	-23 38.0
4	238 42.3	15 9.0	20 3.0	220 59.5	10 22.5	139 13.2	-23 38.4
6	268 42.5	15 7.5	50 8.0	250 58.6	10 20.2	169 15.7	-23 38.8
8	298 42.7	15 6.0	80 12.9	280 57.8	10 17.8	199 18.3	-23 39.2
10	328 42.9	15 4.5	110 17.8	310 56.9	10 15.5	229 20.9	-23 39.6
12	358 43.1	15 3.0	140 22.7	340 56.1	10 13.2	259 23.4	-23 40.0
14	28 43.3	15 1.5	170 27.7	10 55.2	10 10.9	289 26.0	-23 40.4
16	58 43.5	15 .0	200 32.6	40 54.4	10 8.5	319 28.5	-23 40.8
18	88 43.7	14 58.5	230 37.5	70 53.5	10 6.2	349 31.1	-23 41.2
20	118 44.0	14 57.0	260 42.5	100 52.7	10 3.9	19 33.6	-23 41.7
22	148 44.2	14 55.5	290 47.4	130 51.9	10 1.5	49 36.2	-23 42.1
Δ	1	-7		-4	-12	13	-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 5	20 3	0 53	:	10 35	1.2	1 43	2.8
55	4 28	19 41	0 43	3 3	10 55	1.3	1 24	2.6
50	4 44	19 25	0 36	2 18	11 10	1.4	1 9	2.5
45	4 57	19 12	0 32	1 57	11 22	1.5	0 58	2.4
40	5 8	19 2	0 29	1 43	11 33	1.6	0 49	2.3
35	5 17	18 53	0 27	1 34	11 41	1.7	0 41	2.2
30	5 25	18 45	0 25	1 27	11 49	1.7	0 34	2.2
20	5 39	18 31	0 23	1 18	12 2	1.8	0 21	2.1
10	5 51	18 19	0 22	1 13	12 14	1.9	0 11	2.0
0	6 2	18 9	0 21	1 11	12 24	1.9	0 1	1.9
10	6 13	17 58	0 22	1 12	12 35	2.0	...	.0
20	6 24	17 46	0 23	1 15	12 47	2.1	...	.0
30	6 37	17 34	0 25	1 21	13 1	2.2	...	.0
35	6 44	17 26	0 26	1 26	13 8	2.2	23 60	1.7
40	6 53	17 18	0 28	1 32	13 17	2.3	23 50	1.7
45	7 3	17 8	0 31	1 40	13 28	2.4	23 39	1.6
50	7 15	16 56	0 34	1 50	13 40	2.4	23 26	1.6
55	7 29	16 42	0 39	2 4	13 56	2.6	23 9	1.5
60	7 49	16 22	0 46	2 24	14 18	2.7	22 46	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	89 40.5	137	13 22.6	66	144 59.8	3 25.5	71 30.4	-20 18.8
2	118 45.9	136	13 35.7	64	175 3.9	3 25.1	101 35.4	-20 18.9
4	147 51.1	135	13 48.6	63	205 7.9	3 24.7	131 40.3	-20 18.9
6	176 56.2	135	14 1.3	62	235 12.0	3 24.3	161 45.3	-20 18.9
8	206 1.1	134	14 13.7	61	265 16.0	3 24.0	191 50.2	-20 18.9
10	235 5.9	133	14 25.8	60	295 20.0	3 23.6	221 55.2	-20 18.9
12	264 10.5	132	14 37.8	58	325 24.1	3 23.2	252 .1	-20 18.9
14	293 15.0	131	14 49.4	57	355 28.1	3 22.8	282 5.1	-20 18.9
16	322 19.3	131	15 .8	56	25 32.1	3 22.4	312 10.0	-20 19.0
18	351 23.4	130	15 12.0	54	55 36.2	3 22.0	342 15.0	-20 19.0
20	20 27.4	129	15 22.9	53	85 40.2	3 21.6	12 19.9	-20 19.0
22	49 31.2	128	15 33.5	52	115 44.3	3 21.2	42 24.9	-20 19.0
Δ					20	-2	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	- 5 12.5	.4	15.8	T _m	18 36	2.0	54.3 14.8
12	- 5 7.5	T _{m☉}	12 h 5.1 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	'	°	
♂	13 16	.1	201	-2.9	♄	14 18	.0	185	-1.3
♂	18 42	.1	119	-1.1	♂	19 11	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 44.4	14 54.0	320 52.3	160 51.0	9 59.2	79 38.7	-23 42.5
2	208 44.6	14 52.5	350 57.2	190 50.2	9 56.9	109 41.2	-23 42.9
4	238 44.8	14 51.0	21 2.2	220 49.4	9 54.5	139 43.7	-23 43.3
6	268 45.0	14 49.5	51 7.1	250 48.5	9 52.2	169 46.3	-23 43.7
8	298 45.2	14 48.0	81 12.0	280 47.7	9 49.8	199 48.8	-23 44.1
10	328 45.5	14 46.4	111 17.0	310 46.9	9 47.5	229 51.3	-23 44.5
12	358 45.7	14 44.9	141 21.9	340 46.0	9 45.1	259 53.8	-23 44.9
14	28 45.9	14 43.4	171 26.8	10 45.2	9 42.8	289 56.3	-23 45.4
16	58 46.1	14 41.9	201 31.7	40 44.4	9 40.4	319 58.9	-23 45.8
18	88 46.3	14 40.4	231 36.7	70 43.6	9 38.1	350 1.4	-23 46.2
20	118 46.6	14 38.9	261 41.6	100 42.7	9 35.7	20 3.9	-23 46.6
22	148 46.8	14 37.3	291 46.5	130 41.9	9 33.4	50 6.4	-23 47.0
Δ	1	-8		-4	-12	13	-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 8	20 0	0 52	:	11 3	1.5	2 49	2.6
55	4 30	19 39	0 42	2 59	11 27	1.6	2 26	2.5
50	4 46	19 23	0 36	2 17	11 45	1.7	2 9	2.4
45	4 58	19 11	0 32	1 56	11 59	1.8	1 55	2.3
40	5 9	19 0	0 29	1 43	12 11	1.8	1 44	2.3
35	5 18	18 51	0 27	1 33	12 21	1.8	1 34	2.2
30	5 26	18 44	0 25	1 26	12 30	1.9	1 26	2.2
20	5 39	18 30	0 23	1 18	12 45	1.9	1 11	2.1
10	5 51	18 19	0 22	1 13	12 59	2.0	0 59	2.0
0	6 2	18 8	0 21	1 11	13 11	2.0	0 47	2.0
10	6 12	17 58	0 22	1 12	13 24	2.1	0 35	1.9
20	6 23	17 47	0 23	1 15	13 37	2.1	0 22	1.9
30	6 36	17 34	0 25	1 21	13 53	2.2	0 8	1.8
35	6 43	17 27	0 26	1 26	14 2	2.2	...	0
40	6 52	17 19	0 28	1 32	14 12	2.2	...	0
45	7 1	17 9	0 31	1 40	14 24	2.3	...	0
50	7 13	16 58	0 34	1 50	14 39	2.3	...	0
55	7 27	16 43	0 39	2 4	14 58	2.4	23 44	1.8
60	7 46	16 25	0 45	2 23	15 23	2.5	23 18	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	78 34.8	127 15	43.9	50	145 48.3	3 20.8	72 29.8	-20 19.0
2	107 38.3	126 15	54.0	49	175 52.3	3 20.4	102 34.8	-20 19.0
4	136 41.6	126 16	3.8	48	205 56.4	3 20.0	132 39.7	-20 19.1
6	165 44.7	125 16	13.3	46	236 .4	3 19.6	162 44.6	-20 19.1
8	194 47.6	124 16	22.6	45	266 4.4	3 19.3	192 49.6	-20 19.1
10	223 50.4	123 16	31.5	43	296 8.5	3 18.9	222 54.5	-20 19.1
12	252 52.9	122 16	40.2	42	326 12.5	3 18.5	252 59.5	-20 19.1
14	281 55.4	121 16	48.5	40	356 16.5	3 18.1	283 4.4	-20 19.1
16	310 57.6	120 16	56.6	39	26 20.6	3 17.7	313 9.3	-20 19.2
18	339 59.6	119 17	4.3	37	56 24.6	3 17.3	343 14.3	-20 19.2
20	9 1.5	118 17	11.8	36	86 28.6	3 16.9	13 19.2	-20 19.2
22	38 3.2	118 17	18.9	34	116 32.7	3 16.5	43 24.1	-20 19.2
Δ					20	-2	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	- 5 2.5	.4	15.8	T _m	19 23	2.0	54.6 14.9		
12	- 4 57.2	T _{m☉}	12 h 5.0 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	'	°	°
♂	13 17	.1	200	-2.9	♃	14 15	.0	185	-1.3
♂	18 40	.1	119	-1.1	♄	19 7	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 47.0	14 35.8	321 51.5	160 41.1	9 31.0	80 8.9	-23 47.4
2	208 47.2	14 34.3	351 56.4	190 40.3	9 28.7	110 11.3	-23 47.8
4	238 47.5	14 32.7	22 1.3	220 39.5	9 26.3	140 13.8	-23 48.2
6	268 47.7	14 31.2	52 6.2	250 38.7	9 23.9	170 16.3	-23 48.6
8	298 47.9	14 29.7	82 11.2	280 37.8	9 21.6	200 18.8	-23 49.0
10	328 48.2	14 28.2	112 16.1	310 37.0	9 19.2	230 21.3	-23 49.4
12	358 48.4	14 26.6	142 21.0	340 36.2	9 16.9	260 23.8	-23 49.9
14	28 48.6	14 25.1	172 25.9	10 35.4	9 14.5	290 26.2	-23 50.3
16	58 48.9	14 23.5	202 30.9	40 34.6	9 12.1	320 28.7	-23 50.7
18	88 49.1	14 22.0	232 35.8	70 33.8	9 9.7	350 31.2	-23 51.1
20	118 49.3	14 20.5	262 40.7	100 33.0	9 7.4	20 33.6	-23 51.5
22	148 49.6	14 18.9	292 45.7	130 32.2	9 5.0	50 36.1	-23 51.9
Δ	1	-8		-4	-12	12	-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 10	19 58	0 52	:	11 39	1.9	3 52	2.4
55	4 31	19 37	0 42	2 56	12 6	1.9	3 25	2.3
50	4 47	19 21	0 36	2 16	12 26	2.0	3 6	2.3
45	4 60	19 9	0 32	1 55	12 41	2.0	2 51	2.2
40	5 10	18 59	0 29	1 42	12 54	2.0	2 38	2.2
35	5 19	18 50	0 27	1 33	13 5	2.0	2 27	2.2
30	5 26	18 43	0 25	1 26	13 15	2.0	2 18	2.2
20	5 39	18 30	0 23	1 17	13 32	2.1	2 2	2.1
10	5 51	18 19	0 22	1 13	13 46	2.1	1 48	2.1
0	6 1	18 8	0 21	1 11	13 60	2.1	1 34	2.1
10	6 12	17 58	0 22	1 12	14 13	2.1	1 21	2.0
20	6 23	17 47	0 23	1 15	14 28	2.1	1 7	2.0
30	6 35	17 35	0 25	1 21	14 45	2.1	0 51	2.0
35	6 42	17 28	0 26	1 26	14 55	2.2	0 42	1.9
40	6 50	17 20	0 28	1 32	15 6	2.2	0 31	1.9
45	6 60	17 10	0 31	1 39	15 19	2.2	0 18	1.9
50	7 11	16 59	0 34	1 50	15 35	2.2	0 3	1.8
55	7 25	16 45	0 39	2 3	15 56	2.2	...	0
60	7 44	16 27	0 45	2 23	16 23	2.2	23 58	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	67 4.7	117 17	25.7	32	146 36.7	3 16.1	73 29.1	-20 19.2
2	96 6.0	116 17	32.1	31	176 40.7	3 15.7	103 34.0	-20 19.3
4	125 7.1	115 17	38.3	29	206 44.7	3 15.3	133 38.9	-20 19.3
6	154 8.1	114 17	44.1	27	236 48.8	3 14.9	163 43.9	-20 19.3
8	183 8.9	113 17	49.6	26	266 52.8	3 14.5	193 48.8	-20 19.3
10	212 9.5	112 17	54.7	24	296 56.8	3 14.1	223 53.7	-20 19.3
12	241 10.0	111 17	59.5	22	327 .9	3 13.7	253 58.7	-20 19.3
14	270 10.2	110 18	3.9	20	357 4.9	3 13.3	284 3.6	-20 19.4
16	299 10.3	110 18	8.0	19	27 8.9	3 13.0	314 8.5	-20 19.4
18	328 10.2	109 18	11.7	17	57 12.9	3 12.6	344 13.5	-20 19.4
20	357 10.0	108 18	15.1	15	87 17.0	3 12.2	14 18.4	-20 19.4
22	26 9.5	107 18	18.1	13	117 21.0	3 11.8	44 23.3	-20 19.4
Δ					20	-2	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 51.9	.5	15.8	T _m	20 12	2.1	55.0 15.0		
12	- 4 46.4	T _{m☉}	12 h 4.8 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	'	°	°
♂	13 18	.1	199	-2.9	♃	14 12	.0	185	-1.3
♂	18 38	.1	118	-1.0	♄	19 3	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 49.8	14 17.4	322 50.6	160 31.4	9 2.6	80 38.6	-23 52.3
2	208 50.0	14 15.8	352 55.5	190 30.6	9 .2	110 41.0	-23 52.7
4	238 50.3	14 14.3	23 .4	220 29.8	8 57.9	140 43.5	-23 53.1
6	268 50.5	14 12.7	53 5.4	250 29.0	8 55.5	170 45.9	-23 53.5
8	298 50.8	14 11.2	83 10.3	280 28.2	8 53.1	200 48.4	-23 53.9
10	328 51.0	14 9.6	113 15.2	310 27.4	8 50.7	230 50.8	-23 54.3
12	358 51.2	14 8.1	143 20.2	340 26.6	8 48.3	260 53.2	-23 54.7
14	28 51.5	14 6.5	173 25.1	10 25.8	8 45.9	290 55.7	-23 55.1
16	58 51.7	14 5.0	203 30.0	40 25.0	8 43.5	320 58.1	-23 55.5
18	88 52.0	14 3.4	233 34.9	70 24.2	8 41.1	351 .5	-23 56.0
20	118 52.2	14 1.8	263 39.9	100 23.5	8 38.7	21 3.0	-23 56.4
22	148 52.5	14 .3	293 44.8	130 22.7	8 36.4	51 5.4	-23 56.8
Δ	1	-8		-4	-12	12	-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 13	19 55	0 51	: : :	12 24	2.4	4 49	2.1
55	4 33	19 35	0 42	2 53	12 53	2.3	4 21	2.1
50	4 49	19 20	0 36	2 15	13 13	2.3	4 0	2.1
45	5 1	19 8	0 32	1 55	13 29	2.3	3 44	2.1
40	5 11	18 58	0 29	1 42	13 43	2.3	3 31	2.1
35	5 19	18 49	0 27	1 33	13 54	2.2	3 19	2.1
30	5 27	18 42	0 25	1 26	14 4	2.2	3 10	2.1
20	5 40	18 29	0 23	1 17	14 21	2.2	2 53	2.1
10	5 51	18 18	0 22	1 13	14 36	2.2	2 38	2.1
0	6 1	18 8	0 21	1 11	14 50	2.2	2 24	2.1
10	6 11	17 58	0 22	1 12	15 4	2.1	2 10	2.1
20	6 22	17 47	0 23	1 15	15 19	2.1	1 55	2.1
30	6 34	17 35	0 25	1 21	15 36	2.1	1 38	2.1
35	6 41	17 28	0 26	1 26	15 46	2.1	1 28	2.1
40	6 49	17 21	0 28	1 31	15 58	2.1	1 17	2.1
45	6 58	17 11	0 31	1 39	16 11	2.0	1 3	2.1
50	7 9	17 1	0 34	1 49	16 28	2.0	0 47	2.1
55	7 23	16 47	0 38	2 3	16 49	2.0	0 26	2.1
60	7 41	16 29	0 45	2 22	17 17	1.9	...	.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	55 9.0	106	18 20.8	11	147 25.0	3 11.4	74 28.2	-20 19.5
2	84 8.2	105	18 23.1	10	177 29.1	3 11.0	104 33.2	-20 19.5
4	113 7.3	105	18 25.0	8	207 33.1	3 10.6	134 38.1	-20 19.5
6	142 6.2	104	18 26.5	6	237 37.1	3 10.2	164 43.0	-20 19.5
8	171 5.0	103	18 27.7	4	267 41.1	3 9.8	194 47.9	-20 19.5
10	200 3.7	102	18 28.4	2	297 45.2	3 9.4	224 52.9	-20 19.5
12	229 2.1	102	18 28.8	0	327 49.2	3 9.0	254 57.8	-20 19.6
14	258 .5	101	18 28.8	-2	357 53.2	3 8.6	285 2.7	-20 19.6
16	286 58.7	100	18 28.5	-4	27 57.2	3 8.2	315 7.6	-20 19.6
18	315 56.7	100	18 27.7	-6	58 1.3	3 7.8	345 12.6	-20 19.6
20	344 54.6	99	18 26.5	-8	88 5.3	3 7.4	15 17.5	-20 19.6
22	13 52.4	98	18 25.0	-10	118 9.3	3 7.0	45 22.4	-20 19.7
Δ					20	-2	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 40.8	.5	15.8	T _m	21 3	2.2	55.6 15.1		
12	- 4 35.0	T _{m☉}	12 h 4.6 min	Starost	11.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 18	.1	198	-3.0	♄	14 8	.0	185	-1.3
♂	18 36	.1	118	-1.0	♅	18 59	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 52.7	13 58.7	323 49.7	160 21.9	8 34.0	81 7.8	-23 57.2
2	208 53.0	13 57.2	353 54.7	190 21.1	8 31.6	111 10.2	-23 57.6
4	238 53.2	13 55.6	23 59.6	220 20.3	8 29.2	141 12.6	-23 58.0
6	268 53.5	13 54.0	54 4.5	250 19.5	8 26.8	171 15.0	-23 58.4
8	298 53.7	13 52.5	84 9.4	280 18.8	8 24.4	201 17.5	-23 58.8
10	328 54.0	13 50.9	114 14.4	310 18.0	8 22.0	231 19.9	-23 59.2
12	358 54.2	13 49.3	144 19.3	340 17.2	8 19.5	261 22.3	-23 59.6
14	28 54.5	13 47.7	174 24.2	10 16.4	8 17.1	291 24.7	-23 60.0
16	58 54.7	13 46.2	204 29.2	40 15.6	8 14.7	321 27.1	-24 .4
18	88 55.0	13 44.6	234 34.1	70 14.9	8 12.3	351 29.4	-24 .8
20	118 55.2	13 43.0	264 39.0	100 14.1	8 9.9	21 31.8	-24 1.2
22	148 55.5	13 41.4	294 43.9	130 13.3	8 7.5	51 34.2	-24 1.6
Δ	1	-8		-4	-12	12	-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 15	19 52	0 51	: : :	13 21	2.8	5 39	1.7
55	4 35	19 32	0 42	2 50	13 48	2.7	5 11	1.8
50	4 50	19 18	0 36	2 14	14 8	2.6	4 51	1.9
45	5 2	19 6	0 32	1 54	14 24	2.5	4 35	2.0
40	5 12	18 56	0 29	1 41	14 37	2.5	4 21	2.0
35	5 20	18 48	0 27	1 32	14 48	2.4	4 10	2.0
30	5 28	18 41	0 25	1 26	14 57	2.4	4 0	2.1
20	5 40	18 28	0 23	1 17	15 14	2.3	3 44	2.1
10	5 51	18 18	0 22	1 13	15 29	2.3	3 29	2.1
0	6 1	18 8	0 21	1 11	15 42	2.2	3 15	2.2
10	6 11	17 58	0 22	1 11	15 56	2.1	3 1	2.2
20	6 21	17 48	0 23	1 15	16 10	2.1	2 46	2.3
30	6 33	17 36	0 25	1 21	16 27	2.0	2 29	2.3
35	6 40	17 29	0 26	1 25	16 36	2.0	2 19	2.3
40	6 48	17 22	0 28	1 31	16 47	1.9	2 8	2.4
45	6 57	17 13	0 30	1 39	17 0	1.9	1 54	2.4
50	7 7	17 2	0 34	1 49	17 16	1.8	1 38	2.4
55	7 21	16 49	0 38	2 3	17 36	1.7	1 17	2.5
60	7 38	16 31	0 45	2 22	18 3	1.5	0 49	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	42 50.1	98	18 23.0	-12	148 13.3	3 6.6	75 27.3	-20 19.7
2	71 47.6	97	18 20.6	-14	178 17.3	3 6.2	105 32.2	-20 19.7
4	100 45.0	97	18 17.9	-16	208 21.4	3 5.8	135 37.1	-20 19.7
6	129 42.3	96	18 14.7	-18	238 25.4	3 5.4	165 42.1	-20 19.7
8	158 39.5	95	18 11.2	-20	268 29.4	3 5.0	195 47.0	-20 19.8
10	187 36.6	95	18 7.2	-22	298 33.4	3 4.6	225 51.9	-20 19.8
12	216 33.6	94	18 2.8	-24	328 37.5	3 4.2	255 56.8	-20 19.8
14	245 30.5	94	17 58.0	-26	358 41.5	3 3.8	286 1.7	-20 19.8
16	274 27.3	94	17 52.8	-28	28 45.5	3 3.4	316 6.6	-20 19.9
18	303 24.0	93	17 47.3	-30	58 49.5	3 3.0	346 11.5	-20 19.9
20	332 20.6	93	17 41.3	-32	88 53.5	3 2.6	16 16.4	-20 19.9
22	1 17.2	92	17 34.8	-34	118 57.6	3 2.2	46 21.4	-20 19.9
Δ					20	-2	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 29.1	.5	15.8	T _m	21 55	2.2	56.2 15.3		
12	- 4 23.0	T _{m☉}	12 h 4.4 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	'	°	
♂	13 19	.1	197	-3.0	♄	14 5	.0	184	-1.3
♂	18 34	.1	117	-1.0	♅	18 55	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 55.8	13 39.8	324 48.9	160 12.6	8 5.1	81 36.6	-24 2.0
2	208 56.0	13 38.3	354 53.8	190 11.8	8 2.7	111 39.0	-24 2.4
4	238 56.3	13 36.7	24 58.7	220 11.0	8 .2	141 41.4	-24 2.8
6	268 56.6	13 35.1	55 3.7	250 10.3	7 57.8	171 43.7	-24 3.2
8	298 56.8	13 33.5	85 8.6	280 9.5	7 55.4	201 46.1	-24 3.6
10	328 57.1	13 31.9	115 13.5	310 8.7	7 53.0	231 48.5	-24 4.0
12	358 57.3	13 30.3	145 18.4	340 8.0	7 50.6	261 50.8	-24 4.4
14	28 57.6	13 28.7	175 23.4	10 7.2	7 48.1	291 53.2	-24 4.8
16	58 57.9	13 27.1	205 28.3	40 6.4	7 45.7	321 55.6	-24 5.2
18	88 58.1	13 25.6	235 33.2	70 5.7	7 43.3	351 57.9	-24 5.6
20	118 58.4	13 24.0	265 38.1	100 4.9	7 40.8	22 .3	-24 6.0
22	148 58.7	13 22.4	295 43.1	130 4.2	7 38.4	52 2.6	-24 6.4
Δ	1	-8		-4	-12	12	-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 17	19 49	0 50	: : :	14 28	3.2	6 20	1.4
55	4 37	19 30	0 41	2 47	14 52	3.0	5 55	1.6
50	4 52	19 16	0 36	2 13	15 10	2.8	5 36	1.7
45	5 3	19 4	0 32	1 53	15 24	2.7	5 22	1.8
40	5 13	18 55	0 29	1 41	15 36	2.6	5 9	1.9
35	5 21	18 47	0 27	1 32	15 46	2.6	4 59	1.9
30	5 28	18 40	0 25	1 25	15 55	2.5	4 50	2.0
20	5 40	18 28	0 23	1 17	16 10	2.4	4 34	2.1
10	5 51	18 17	0 22	1 12	16 23	2.3	4 20	2.1
0	6 1	18 8	0 21	1 11	16 35	2.2	4 7	2.2
10	6 11	17 58	0 22	1 11	16 47	2.1	3 54	2.3
20	6 21	17 48	0 23	1 14	17 0	2.0	3 40	2.4
30	6 32	17 36	0 25	1 21	17 15	1.9	3 24	2.4
35	6 39	17 30	0 26	1 25	17 24	1.9	3 15	2.5
40	6 46	17 22	0 28	1 31	17 33	1.8	3 4	2.6
45	6 55	17 14	0 30	1 39	17 45	1.7	2 52	2.6
50	7 6	17 3	0 34	1 49	17 59	1.6	2 37	2.7
55	7 19	16 51	0 38	2 3	18 16	1.5	2 17	2.8
60	7 36	16 34	0 45	2 22	18 40	1.3	1 51	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	30 13.6	92	17 28.0	-36	149 1.6	3 1.8	76 26.3	-20 19.9
2	59 10.0	92	17 20.8	-38	179 5.6	3 1.4	106 31.2	-20 20.0
4	88 6.4	91	17 13.2	-40	209 9.6	3 1.0	136 36.1	-20 20.0
6	117 2.7	91	17 5.2	-42	239 13.6	3 .6	166 41.0	-20 20.0
8	145 58.9	91	16 56.7	-44	269 17.6	3 .2	196 45.9	-20 20.0
10	174 55.1	91	16 47.9	-46	299 21.7	2 59.8	226 50.8	-20 20.0
12	203 51.2	90	16 38.6	-48	329 25.7	2 59.4	256 55.7	-20 20.1
14	232 47.3	90	16 29.0	-50	359 29.7	2 59.0	287 .6	-20 20.1
16	261 43.3	90	16 19.0	-52	29 33.7	2 58.6	317 5.5	-20 20.1
18	290 39.3	90	16 8.5	-54	59 37.7	2 58.2	347 10.4	-20 20.1
20	319 35.3	90	15 57.7	-56	89 41.7	2 57.8	17 15.3	-20 20.2
22	348 31.3	90	15 46.5	-58	119 45.8	2 57.4	47 20.2	-20 20.2
Δ					20	-2	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 16.9	.5	15.8	T _m	22 48	2.2	56.9 15.5		
12	- 4 10.6	T _{m☉}	12 h 4.2 min	Starost	13.1 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 20	.1	195	-3.0	♄	14 2	.0	184	-1.3
♂	18 32	.1	117	-1.0	♅	18 51	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	178 59.0	13 20.8	325 48.0	160 3.4	7 36.0	82 5.0	-24 6.8
2	208 59.2	13 19.2	355 52.9	190 2.7	7 33.5	112 7.3	-24 7.2
4	238 59.5	13 17.6	25 57.9	220 1.9	7 31.1	142 9.7	-24 7.6
6	268 59.8	13 16.0	56 2.8	250 1.2	7 28.7	172 12.0	-24 8.0
8	299 .0	13 14.3	86 7.7	280 .4	7 26.2	202 14.3	-24 8.4
10	329 .3	13 12.7	116 12.6	309 59.7	7 23.8	232 16.7	-24 8.8
12	359 .6	13 11.1	146 17.6	339 58.9	7 21.4	262 19.0	-24 9.2
14	29 .9	13 9.5	176 22.5	9 58.2	7 18.9	292 21.3	-24 9.6
16	59 1.1	13 7.9	206 27.4	39 57.4	7 16.5	322 23.6	-24 10.0
18	89 1.4	13 6.3	236 32.4	69 56.7	7 14.0	352 26.0	-24 10.4
20	119 1.7	13 4.7	266 37.3	99 55.9	7 11.6	22 28.3	-24 10.8
22	149 2.0	13 3.1	296 42.2	129 55.2	7 9.1	52 30.6	-24 11.2
Δ	1	-8		-4	-12	12	-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 20	19 46	0 50	: : :	15 44	3.4	6 53	1.1
55	4 39	19 28	0 41	2 45	16 3	3.2	6 33	1.4
50	4 53	19 14	0 35	2 11	16 18	3.0	6 17	1.5
45	5 4	19 3	0 32	1 53	16 30	2.9	6 4	1.6
40	5 14	18 53	0 29	1 40	16 39	2.8	5 54	1.7
35	5 22	18 46	0 27	1 32	16 47	2.7	5 45	1.8
30	5 29	18 39	0 25	1 25	16 55	2.6	5 37	1.9
20	5 41	18 27	0 23	1 17	17 7	2.4	5 24	2.0
10	5 51	18 17	0 22	1 12	17 18	2.3	5 12	2.1
0	6 1	18 7	0 21	1 11	17 28	2.2	5 0	2.2
10	6 10	17 58	0 22	1 11	17 38	2.1	4 49	2.3
20	6 20	17 48	0 23	1 14	17 49	2.0	4 37	2.4
30	6 31	17 37	0 25	1 21	18 1	1.8	4 23	2.5
35	6 38	17 31	0 26	1 25	18 8	1.8	4 15	2.6
40	6 45	17 23	0 28	1 31	18 17	1.7	4 6	2.7
45	6 54	17 15	0 30	1 39	18 26	1.6	3 55	2.8
50	7 4	17 5	0 34	1 49	18 37	1.4	3 42	2.9
55	7 16	16 52	0 38	2 3	18 51	1.3	3 25	3.1
60	7 33	16 36	0 44	2 21	19 10	1.0	3 3	3.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	17 27.2	90	15 34.9	-60	149 49.8	2 57.0	77 25.1	-20 20.2
2	46 23.1	90	15 22.9	-62	179 53.8	2 56.6	107 30.0	-20 20.2
4	75 19.0	89	15 10.6	-64	209 57.8	2 56.2	137 34.9	-20 20.2
6	104 14.9	89	14 57.8	-66	240 1.8	2 55.8	167 39.8	-20 20.3
8	133 10.8	89	14 44.7	-67	270 5.8	2 55.4	197 44.7	-20 20.3
10	162 6.7	89	14 31.3	-69	300 9.8	2 55.0	227 49.6	-20 20.3
12	191 2.6	89	14 17.4	-71	330 13.9	2 54.6	257 54.5	-20 20.3
14	219 58.4	89	14 3.2	-73	0 17.9	2 54.2	287 59.4	-20 20.4
16	248 54.3	90	13 48.7	-75	30 21.9	2 53.8	318 4.3	-20 20.4
18	277 50.2	90	13 33.8	-76	60 25.9	2 53.4	348 9.2	-20 20.4
20	306 46.1	90	13 18.5	-78	90 29.9	2 53.0	18 14.1	-20 20.4
22	335 42.1	90	13 2.9	-80	120 33.9	2 52.6	48 19.0	-20 20.5
Δ					20	-2	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 4.2	.6	15.8	T _m	23 41	2.2	57.7 15.7		
12	- 3 57.6	T _{m☉}	12 h 4.0 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 20	.1	194	-3.0	♄	13 59	.0	184	-1.3
♂	18 30	.1	116	-1.0	♅	18 47	.0	112	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	2.3	13	1.5	326	47.1	159	54.5	7	6.7	82	32.9	-24	11.6
2	209	2.5	12	59.8	356	52.1	189	53.7	7	4.2	112	35.2	-24	12.0
4	239	2.8	12	58.2	26	57.0	219	53.0	7	1.8	142	37.5	-24	12.3
6	269	3.1	12	56.6	57	1.9	249	52.2	6	59.3	172	39.8	-24	12.7
8	299	3.4	12	55.0	87	6.9	279	51.5	6	56.9	202	42.1	-24	13.1
10	329	3.7	12	53.4	117	11.8	309	50.8	6	54.4	232	44.4	-24	13.5
12	359	4.0	12	51.7	147	16.7	339	50.0	6	52.0	262	46.7	-24	13.9
14	29	4.3	12	50.1	177	21.6	9	49.3	6	49.5	292	49.0	-24	14.3
16	59	4.5	12	48.5	207	26.6	39	48.6	6	47.1	322	51.3	-24	14.7
18	89	4.8	12	46.8	237	31.5	69	47.8	6	44.6	352	53.6	-24	15.1
20	119	5.1	12	45.2	267	36.4	99	47.1	6	42.1	22	55.9	-24	15.5
22	149	5.4	12	43.6	297	41.4	129	46.4	6	39.7	52	58.1	-24	15.9
Δ		1		-8				-4		-12		11		-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 22	19 44	0 49	:	17 6	3.5	7 21	1.0
55	4 41	19 25	0 41	2 42	17 19	3.3	7 5	1.2
50	4 55	19 12	0 35	2 10	17 30	3.1	6 53	1.4
45	5 6	19 1	0 31	1 52	17 38	3.0	6 43	1.5
40	5 15	18 52	0 29	1 40	17 45	2.8	6 35	1.6
35	5 22	18 44	0 27	1 31	17 51	2.7	6 28	1.7
30	5 29	18 38	0 25	1 25	17 57	2.6	6 22	1.8
20	5 41	18 26	0 23	1 17	18 6	2.5	6 12	2.0
10	5 51	18 16	0 22	1 12	18 14	2.3	6 2	2.1
0	6 0	18 7	0 21	1 10	18 21	2.2	5 53	2.2
10	6 10	17 58	0 21	1 11	18 29	2.1	5 45	2.3
20	6 19	17 48	0 23	1 14	18 37	1.9	5 35	2.5
30	6 30	17 38	0 24	1 21	18 46	1.8	5 24	2.6
35	6 37	17 31	0 26	1 25	18 51	1.7	5 18	2.7
40	6 44	17 24	0 28	1 31	18 57	1.6	5 10	2.8
45	6 52	17 16	0 30	1 39	19 3	1.5	5 2	2.9
50	7 2	17 6	0 33	1 49	19 12	1.3	4 52	3.1
55	7 14	16 54	0 38	2 2	19 22	1.1	4 39	3.2
60	7 30	16 38	0 44	2 21	19 35	.9	4 22	3.5

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	4	38.0	90	12	47.0	-81	150	37.9	2	52.2	78	23.9	-20	20.5
2	33	34.0	90	12	30.8	-83	180	41.9	2	51.8	108	28.8	-20	20.5
4	62	30.0	90	12	14.2	-84	210	46.0	2	51.4	138	33.7	-20	20.5
6	91	26.0	90	11	57.3	-86	240	50.0	2	51.0	168	38.6	-20	20.5
8	120	22.0	90	11	40.1	-88	270	54.0	2	50.6	198	43.4	-20	20.6
10	149	18.0	90	11	22.6	-89	300	58.0	2	50.2	228	48.3	-20	20.6
12	178	14.1	91	11	4.8	-90	331	2.0	2	49.8	258	53.2	-20	20.6
14	207	10.2	91	10	46.7	-92	1	6.0	2	49.4	288	58.1	-20	20.6
16	236	6.3	91	10	28.3	-93	31	10.0	2	49.0	319	3.0	-20	20.7
18	265	2.5	91	10	9.7	-95	61	14.0	2	48.6	349	7.9	-20	20.7
20	293	58.7	91	9	50.8	-96	91	18.0	2	48.2	19	12.8	-20	20.7
22	322	54.9	91	9	31.6	-97	121	22.0	2	47.8	49	17.7	-20	20.7
Δ							20			-2		24		0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s		h min	min	'	'
00	- 3 50.9	.6	15.8	T _m	1.0	58.4	15.9
12	- 3 44.0	T _{m☉}	12 h 3,7 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 21	.1	193	-3.0	♄	13 56	.0	184	-1.2
♂	18 28	.1	116	-1.0	♂	18 43	.0	112	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	5.7	12	42.0	327	46.3	159	45.7	6	37.2	83	.4	-24	16.3
2	209	6.0	12	40.3	357	51.2	189	44.9	6	34.7	113	2.7	-24	16.7
4	239	6.3	12	38.7	27	56.1	219	44.2	6	32.3	143	5.0	-24	17.0
6	269	6.6	12	37.0	58	1.1	249	43.5	6	29.8	173	7.2	-24	17.4
8	299	6.9	12	35.4	88	6.0	279	42.8	6	27.3	203	9.5	-24	17.8
10	329	7.2	12	33.8	118	10.9	309	42.0	6	24.9	233	11.8	-24	18.2
12	359	7.5	12	32.1	148	15.9	339	41.3	6	22.4	263	14.0	-24	18.6
14	29	7.8	12	30.5	178	20.8	9	40.6	6	19.9	293	16.3	-24	19.0
16	59	8.1	12	28.8	208	25.7	39	39.9	6	17.4	323	18.5	-24	19.4
18	89	8.4	12	27.2	238	30.6	69	39.2	6	15.0	353	20.8	-24	19.8
20	119	8.7	12	25.5	268	35.6	99	38.4	6	12.5	23	23.0	-24	20.1
22	149	9.0	12	23.9	298	40.5	129	37.7	6	10.0	53	25.3	-24	20.5
Δ		1		-8				-4		-12		11		-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 25	19 41	0 49	:	18 31	3.6	7 44	.9
55	4 43	19 23	0 41	2 40	18 38	3.4	7 34	1.1
50	4 56	19 10	0 35	2 9	18 44	3.2	7 26	1.3
45	5 7	18 59	0 31	1 52	18 49	3.0	7 20	1.4
40	5 16	18 51	0 29	1 40	18 53	2.9	7 14	1.5
35	5 23	18 43	0 26	1 31	18 57	2.8	7 10	1.7
30	5 30	18 37	0 25	1 25	18 60	2.7	7 6	1.7
20	5 41	18 26	0 23	1 16	19 5	2.5	6 59	1.9
10	5 51	18 16	0 22	1 12	19 10	2.3	6 52	2.1
0	6 0	18 7	0 21	1 10	19 14	2.2	6 46	2.2
10	6 9	17 58	0 21	1 11	19 18	2.1	6 40	2.3
20	6 19	17 49	0 22	1 14	19 23	1.9	6 34	2.5
30	6 29	17 38	0 24	1 20	19 28	1.7	6 27	2.6
35	6 35	17 32	0 26	1 25	19 31	1.6	6 22	2.7
40	6 42	17 25	0 28	1 31	19 35	1.5	6 18	2.9
45	6 50	17 17	0 30	1 39	19 38	1.4	6 12	3.0
50	6 60	17 8	0 33	1 49	19 43	1.2	6 5	3.1
55	7 12	16 56	0 38	2 2	19 49	1.1	5 57	3.3
60	7 27	16 41	0 44	2 21	19 56	.8	5 46	3.6

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	351	51.2	91	9	12.2	-98	151	26.0	2	47.4	79	22.5	-20	20.8
2	20	47.4	92	8	52.5	-99	181	30.1	2	47.0	109	27.4	-20	20.8
4	49	43.7	92	8	32.6	-101	211	34.1	2	46.6	139	32.3	-20	20.8
6	78	40.1	92	8	12.5	-102	241	38.1	2	46.2	169	37.2	-20	20.8
8	107	36.4	92	7	52.2	-103	271	42.1	2	45.8	199	42.1	-20	20.9
10	136	32.8	92	7	31.6	-104	301	46.1	2	45.4	229	46.9	-20	20.9
12	165	29.2	92	7	10.9	-105	331	50.1	2	45.0	259	51.8	-20	20.9
14	194	25.7	92	6	49.9	-106	1	54.1	2	44.4	289	56.7	-20	20.9
16	223	22.2	92	6	28.8	-107	31	58.1	2	44.2	320	1.6	-20	21.0
18	252	18.6	93	6	7.5	-107	62	2.1	2	43.8	350	6.5	-20	21.0
20	281	15.2	93	5	46.0	-108	92	6.1	2	43.4	20	11.3	-20	21.0
22	310	11.7	93	5	24.4	-109	122	10.1	2	43.0	50	16.2	-20	21.0
Δ							20			-2		24		0

SUNCE				MESEC				
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r	
h	min	s		h min	min	'	'	
00	- 3 37.2	.6	15.8	T _m	0 34	2.2	58.9	16.1
12	- 3 30.0	T _{m☉}	12 h 3,5 min	Starost	16.1 d	Faza	☉	

PLANETE							
Pl.	T _m	π					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	9.3	12	22.2	328	45.4	159	37.0	6	7.5	83	27.5	-24	20.9	
2	209	9.6	12	20.6	358	50.4	189	36.3	6	5.1	113	29.8	-24	21.3	
4	239	9.9	12	18.9	28	55.3	219	35.6	6	2.6	143	32.0	-24	21.7	
6	269	10.2	12	17.3	59	.2	249	34.9	6	.1	173	34.2	-24	22.1	
8	299	10.5	12	15.6	89	5.1	279	34.2	5	57.6	203	36.5	-24	22.5	
10	329	10.8	12	14.0	119	10.1	309	33.5	5	55.1	233	38.7	-24	22.8	
12	359	11.1	12	12.3	149	15.0	339	32.7	5	52.6	263	40.9	-24	23.2	
14	29	11.4	12	10.7	179	19.9	9	32.0	5	50.2	293	43.1	-24	23.6	
16	59	11.7	12	9.0	209	24.8	39	31.3	5	47.7	323	45.4	-24	24.0	
18	89	12.0	12	7.3	239	29.8	69	30.6	5	45.2	353	47.6	-24	24.4	
20	119	12.3	12	5.7	269	34.7	99	29.9	5	42.7	23	49.8	-24	24.8	
22	149	12.6	12	4.0	299	39.6	129	29.2	5	40.2	53	52.0	-24	25.1	
Δ		2		-8				-4		-12		11			-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 27	19 38	0 49	:	19 57	1.6	8 4	1.4
55	4 44	19 21	0 40	2 38	19 59	1.7	7 60	1.6
50	4 58	19 8	0 35	2 8	20 0	1.8	7 56	1.7
45	5 8	18 58	0 31	1 51	20 1	1.8	7 54	1.8
40	5 17	18 49	0 28	1 39	20 2	1.9	7 51	1.8
35	5 24	18 42	0 26	1 31	20 3	1.9	7 49	1.9
30	5 30	18 36	0 25	1 25	20 4	2.0	7 48	1.9
20	5 41	18 25	0 23	1 16	20 5	2.1	7 44	2.0
10	5 51	18 15	0 22	1 12	20 6	2.1	7 42	2.1
0	5 60	18 7	0 21	1 10	20 7	2.2	7 39	2.2
10	6 9	17 58	0 21	1 11	20 8	2.3	7 36	2.3
20	6 18	17 49	0 22	1 14	20 9	2.3	7 33	2.4
30	6 28	17 39	0 24	1 20	20 10	2.4	7 30	2.5
35	6 34	17 33	0 26	1 25	20 10	2.5	7 28	2.5
40	6 41	17 26	0 28	1 31	20 11	2.5	7 26	2.6
45	6 49	17 18	0 30	1 38	20 12	2.6	7 23	2.6
50	6 58	17 9	0 33	1 49	20 13	2.7	7 20	2.7
55	7 9	16 58	0 38	2 2	20 14	2.7	7 17	2.8
60	7 24	16 43	0 44	2 21	20 16	2.9	7 12	3.0

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	339	8.2	93	5	2.6	-110	152	14.1	2	42.6	80	21.1	-20	21.1	
2	8	4.8	93	4	40.7	-110	182	18.1	2	42.2	110	26.0	-20	21.1	
4	37	1.4	93	4	18.6	-111	212	22.1	2	41.7	140	30.8	-20	21.1	
6	65	58.0	93	3	56.4	-111	242	26.1	2	41.3	170	35.7	-20	21.1	
8	94	54.6	93	3	34.2	-112	272	30.1	2	40.9	200	40.6	-20	21.2	
10	123	51.2	93	3	11.8	-112	302	34.1	2	40.5	230	45.5	-20	21.2	
12	152	47.8	93	2	49.3	-113	332	38.1	2	40.1	260	50.3	-20	21.2	
14	181	44.4	93	2	26.8	-113	2	42.1	2	39.7	290	55.2	-20	21.3	
16	210	41.0	93	2	4.2	-113	32	46.1	2	39.3	321	.1	-20	21.3	
18	239	37.6	93	1	41.5	-114	62	50.1	2	38.9	351	4.9	-20	21.3	
20	268	34.2	93	1	18.8	-114	92	54.2	2	38.5	21	9.8	-20	21.3	
22	297	30.8	93	0	56.0	-114	122	58.2	2	38.1	51	14.7	-20	21.4	
Δ								20		-2		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	22.9	.6	15.8	T _m	1 26	2.2	59.4	16.2
12	- 3	15.6	T _{m☉}	12 h 3.3 min	Starost	17.1 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°	h min	'	°	'	°	h min
♀	13 22	.1	191	-3.0	♃	13 49	.0	183	-1.2
♂	18 25	.1	115	-.9	♄	18 36	.0	112	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	179	12.9	12	2.3	329	44.6	159	28.5	5	37.7	83	54.2	-24	25.5	
2	209	13.3	12	.7	359	49.5	189	27.8	5	35.2	113	56.4	-24	25.9	
4	239	13.6	11	59.0	29	54.4	219	27.1	5	32.7	143	58.6	-24	26.3	
6	269	13.9	11	57.3	59	59.3	249	26.4	5	30.2	174	.8	-24	26.7	
8	299	14.2	11	55.7	90	4.3	279	25.7	5	27.7	204	3.0	-24	27.0	
10	329	14.5	11	54.0	120	9.2	309	25.0	5	25.2	234	5.2	-24	27.4	
12	359	14.8	11	52.3	150	14.1	339	24.3	5	22.7	264	7.4	-24	27.8	
14	29	15.1	11	50.6	180	19.1	9	23.6	5	20.2	294	9.6	-24	28.2	
16	59	15.5	11	49.0	210	24.0	39	22.9	5	17.7	324	11.8	-24	28.5	
18	89	15.8	11	47.3	240	28.9	69	22.2	5	15.2	354	14.0	-24	28.9	
20	119	16.1	11	45.6	270	33.8	99	21.5	5	12.7	24	16.1	-24	29.3	
22	149	16.4	11	43.9	300	38.8	129	20.8	5	10.2	54	18.3	-24	29.7	
Δ		2		-8				-3		-12		11			-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 30	19 35	0 48	3 56	20 36	.9	8 39	3.6
55	4 46	19 18	0 40	2 36	20 40	1.1	8 38	3.4
50	4 59	19 6	0 35	2 7	20 43	1.3	8 37	3.2
45	5 9	18 56	0 31	1 50	20 45	1.4	8 36	3.0
40	5 18	18 48	0 28	1 39	20 48	1.6	8 35	2.9
35	5 25	18 41	0 26	1 31	20 50	1.7	8 35	2.8
30	5 31	18 35	0 25	1 24	20 51	1.8	8 34	2.7
20	5 42	18 24	0 23	1 16	20 54	1.9	8 33	2.5
10	5 51	18 15	0 21	1 12	20 57	2.1	8 32	2.3
0	5 60	18 6	0 21	1 10	20 59	2.2	8 32	2.2
10	6 8	17 58	0 21	1 11	21 2	2.4	8 31	2.1
20	6 17	17 49	0 22	1 14	21 5	2.5	8 30	1.9
30	6 27	17 39	0 24	1 20	21 8	2.7	8 29	1.7
35	6 33	17 34	0 26	1 25	21 9	2.8	8 28	1.6
40	6 39	17 27	0 28	1 31	21 11	2.9	8 28	1.5
45	6 47	17 20	0 30	1 38	21 14	3.0	8 27	1.4
50	6 56	17 11	0 33	1 48	21 17	3.2	8 26	1.3
55	7 7	16 60	0 38	2 2	21 20	3.4	8 25	1.1
60	7 22	16 45	0 44	2 20	21 25	3.6	8 24	.8

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	326	27.3	93	0	33.2	-114	153	2.2	2	37.7	81	19.5	-20	21.4	
2	355	23.9	93	0	10.4	10	183	6.2	2	37.3	111	24.4	-20	21.4	
4	24	20.4	93	0	12.5	114	213	10.2	2	36.9	141	29.3	-20	21.4	
6	53	16.9	92	0	35.3	114	243	14.2	2	36.5	171	34.1	-20	21.5	
8	82	13.4	92	0	58.1	114	273	18.2	2	36.1	201	39.0	-20	21.5	
10	111	9.9	92	1	20.9	114	303	22.2	2	35.7	231	43.9	-20	21.5	
12	140	6.3	92	1	43.7	114	333	26.2	2	35.3	261	48.7	-20	21.6	
14	169	2.7	92	2	6.4	113	3	30.2	2	34.8	291	53.6	-20	21.6	
16	197	59.1	92	2	29.1	113	33	34.2	2	34.4	321	58.5	-20	21.6	
18	226	55.4	91	2	51.7	113	63	38.2	2	34.0	352	3.3	-20	21.6	
20	255	51.7	91	3	14.3	112	93	42.1	2	33.6	22	8.2	-20	21.7	
22	284	47.9	91	3	36.8	112	123	46.1	2	33.2	52	13.0	-20	21.7	
Δ								20		-2		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	8.2	.6	15.8	T _m	2 19	2.2	59.6	16.3
12	- 3	.6	T _{m☉}	12 h 3.0 min	Starost	18.1 d	Faza	☉	

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

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 16.7	11 42.2	330 43.7	159 20.2	5 7.7	84 20.5	-24 30.0
2	209 17.1	11 40.6	0 48.6	189 19.5	5 5.2	114 22.7	-24 30.4
4	239 17.4	11 38.9	30 53.6	219 18.8	5 2.7	144 24.8	-24 30.8
6	269 17.7	11 37.2	60 58.5	249 18.1	5 .2	174 27.0	-24 31.2
8	299 18.0	11 35.5	91 3.4	279 17.4	4 57.7	204 29.2	-24 31.5
10	329 18.4	11 33.8	121 8.3	309 16.7	4 55.2	234 31.3	-24 31.9
12	359 18.7	11 32.1	151 13.3	339 16.0	4 52.7	264 33.5	-24 32.3
14	29 19.0	11 30.4	181 18.2	9 15.3	4 50.2	294 35.6	-24 32.7
16	59 19.3	11 28.7	211 23.1	39 14.6	4 47.7	324 37.8	-24 33.0
18	89 19.7	11 27.1	241 28.1	69 14.0	4 45.1	354 39.9	-24 33.4
20	119 20.0	11 25.4	271 33.0	99 13.3	4 42.6	24 42.1	-24 33.8
22	149 20.3	11 23.7	301 37.9	129 12.6	4 40.1	54 44.2	-24 34.1
Δ	2	-8		-3	-13	11	-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 32	19 32	0 48	3 44	20 56	1.0	10 6	3.6
55	4 48	19 16	0 40	2 34	21 6	1.2	9 59	3.4
50	5 1	19 4	0 35	2 7	21 14	1.4	9 53	3.2
45	5 10	18 54	0 31	1 50	21 20	1.5	9 48	3.0
40	5 19	18 46	0 28	1 38	21 25	1.7	9 45	2.9
35	5 25	18 39	0 26	1 30	21 30	1.8	9 41	2.8
30	5 32	18 33	0 25	1 24	21 34	1.8	9 38	2.7
20	5 42	18 23	0 23	1 16	21 41	2.0	9 33	2.5
10	5 51	18 14	0 21	1 12	21 47	2.1	9 29	2.4
0	5 59	18 6	0 21	1 10	21 53	2.3	9 25	2.2
10	6 8	17 58	0 21	1 11	21 58	2.4	9 20	2.1
20	6 16	17 49	0 22	1 14	22 5	2.5	9 16	2.0
30	6 26	17 40	0 24	1 20	22 12	2.7	9 11	1.8
35	6 32	17 34	0 26	1 25	22 16	2.8	9 8	1.7
40	6 38	17 28	0 28	1 31	22 21	2.9	9 5	1.6
45	6 45	17 21	0 30	1 38	22 26	3.0	9 1	1.5
50	6 54	17 12	0 33	1 48	22 33	3.1	8 56	1.3
55	7 5	17 2	0 37	2 2	22 41	3.3	8 51	1.1
60	7 19	16 48	0 43	2 20	22 52	2.3	8 43	.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	313 44.0	91	3 59.2	111	153 50.1	2 32.8	82 17.9	-20 21.7
2	342 40.2	90	4 21.5	111	183 54.1	2 32.4	112 22.8	-20 21.7
4	11 36.2	90	4 43.7	110	213 58.1	2 32.0	142 27.6	-20 21.8
6	40 32.2	90	5 5.7	110	244 2.1	2 31.6	172 32.5	-20 21.8
8	69 28.2	89	5 27.7	109	274 6.1	2 31.2	202 37.3	-20 21.8
10	98 24.0	89	5 49.5	108	304 10.1	2 30.8	232 42.2	-20 21.9
12	127 19.8	89	6 11.1	108	334 14.1	2 30.4	262 47.0	-20 21.9
14	156 15.5	88	6 32.6	107	4 18.1	2 30.0	292 51.9	-20 21.9
16	185 11.2	88	6 54.0	106	34 22.1	2 29.5	322 56.7	-20 21.9
18	214 6.8	87	7 15.1	105	64 26.1	2 29.1	353 1.6	-20 22.0
20	243 2.3	87	7 36.1	104	94 30.1	2 28.7	23 6.4	-20 22.0
22	271 57.7	87	7 56.9	103	124 34.1	2 28.3	53 11.3	-20 22.0
Δ					20	-2	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	- 2 53.0	.6	15.8	T _m	3 12	2.2	59.7 16.3
12	- 2 45.2	T _{m☉} 12 h 2.8 min	Starost 19.1 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	13 23	.1	189	-3.0	♃	13 43	.0	183	-1.2
♂	18 21	.1	114	-.9	♄	18 28	.0	112	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 20.6	11 22.0	331 42.8	159 11.9	4 37.6	84 46.4	-24 34.5
2	209 21.0	11 20.3	1 47.8	189 11.2	4 35.1	114 48.5	-24 34.9
4	239 21.3	11 18.6	31 52.7	219 10.5	4 32.6	144 50.7	-24 35.2
6	269 21.6	11 16.9	61 57.6	249 9.9	4 30.0	174 52.8	-24 35.6
8	299 22.0	11 15.2	92 2.6	279 9.2	4 27.5	204 54.9	-24 36.0
10	329 22.3	11 13.5	122 7.5	309 8.5	4 25.0	234 57.1	-24 36.3
12	359 22.6	11 11.8	152 12.4	339 7.8	4 22.5	264 59.2	-24 36.7
14	29 23.0	11 10.1	182 17.3	9 7.2	4 20.0	295 1.3	-24 37.1
16	59 23.3	11 8.3	212 22.3	39 6.5	4 17.4	325 3.4	-24 37.4
18	89 23.6	11 6.6	242 27.2	69 5.8	4 14.9	355 5.5	-24 37.8
20	119 24.0	11 4.9	272 32.1	99 5.1	4 12.4	25 7.7	-24 38.2
22	149 24.3	11 3.2	302 37.0	129 4.4	4 9.9	55 9.8	-24 38.5
Δ	2	-9		-3	-13	11	-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 34	19 29	0 47	3 35	21 20	1.2	11 33	3.5
55	4 50	19 14	0 40	2 32	21 35	1.4	11 19	3.3
50	5 2	19 2	0 35	2 6	21 47	1.6	11 9	3.1
45	5 12	18 53	0 31	1 49	21 57	1.7	11 0	2.9
40	5 19	18 45	0 28	1 38	22 5	1.8	10 54	2.8
35	5 26	18 38	0 26	1 30	22 12	1.9	10 48	2.7
30	5 32	18 32	0 25	1 24	22 18	2.0	10 42	2.7
20	5 42	18 22	0 23	1 16	22 28	2.1	10 33	2.5
10	5 51	18 14	0 21	1 12	22 38	2.2	10 26	2.4
0	5 59	18 6	0 21	1 10	22 47	2.3	10 18	2.3
10	6 7	17 58	0 21	1 11	22 56	2.4	10 11	2.2
20	6 16	17 50	0 22	1 14	23 5	2.3	10 3	2.0
30	6 25	17 40	0 24	1 20	23 16	2.3	9 54	1.9
35	6 30	17 35	0 26	1 25	23 22	2.3	9 49	1.8
40	6 37	17 29	0 28	1 31	23 30	2.3	9 43	1.7
45	6 44	17 22	0 30	1 38	23 38	2.3	9 36	1.6
50	6 52	17 14	0 33	1 48	23 48	2.3	9 28	1.5
55	7 2	17 3	0 37	2 1	.. .	.0	9 18	1.3
60	7 16	16 50	0 43	2 20	23 48	3.6	9 5	1.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	300 53.0	86	8 17.5	102	154 38.1	2 27.9	83 16.1	-20 22.1
2	329 48.2	86	8 37.8	101	184 42.1	2 27.5	113 21.0	-20 22.1
4	358 43.4	85	8 58.0	100	214 46.1	2 27.1	143 25.8	-20 22.1
6	27 38.5	85	9 17.9	98	244 50.1	2 26.7	173 30.7	-20 22.2
8	56 33.4	84	9 37.6	97	274 54.1	2 26.3	203 35.5	-20 22.2
10	85 28.3	84	9 57.0	96	304 58.1	2 25.9	233 40.4	-20 22.2
12	114 23.1	83	10 16.2	95	335 2.1	2 25.5	263 45.2	-20 22.2
14	143 17.8	83	10 35.1	93	5 6.0	2 25.0	293 50.1	-20 22.3
16	172 12.4	82	10 53.7	92	35 10.0	2 24.6	323 54.9	-20 22.3
18	201 6.9	82	11 12.1	90	65 14.0	2 24.2	353 59.8	-20 22.3
20	230 1.3	82	11 30.2	89	95 18.0	2 23.8	24 4.6	-20 22.4
22	258 55.6	81	11 48.0	87	125 22.0	2 23.4	54 9.4	-20 22.4
Δ					20	-2	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	- 2 37.4	.7	15.8	T _m	4 5	2.3	59.7 16.3
12	- 2 29.4	T _{m☉} 12 h 2.5 min	Starost 20.1 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	' / "	°	°	h min	' / "	°	°	°
♀	13 24	.1	187	-3.0	♃	13 40	.0	183	-1.2
♂	18 20	.1	113	-.9	♄	18 24	.0	112	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	24.6	11	1.5	332	42.0	159	3.8	4	7.3	85	11.9	-24	38.9
2	209	25.0	10	59.8		2 46.9	189	3.1	4	4.8	115	14.0	-24	39.2
4	239	25.3	10	58.1		32 51.8	219	2.4	4	2.3	145	16.1	-24	39.6
6	269	25.7	10	56.4		62 56.8	249	1.8	3	59.8	175	18.2	-24	40.0
8	299	26.0	10	54.6		93 1.7	279	1.1	3	57.2	205	20.3	-24	40.3
10	329	26.3	10	52.9		123 6.6	309	.4	3	54.7	235	22.4	-24	40.7
12	359	26.7	10	51.2		153 11.5	338	59.7	3	52.2	265	24.5	-24	41.1
14	29	27.0	10	49.5		183 16.5	8	59.1	3	49.6	295	26.6	-24	41.4
16	59	27.4	10	47.8		213 21.4	38	58.4	3	47.1	325	28.7	-24	41.8
18	89	27.7	10	46.0		243 26.3	68	57.7	3	44.6	355	30.8	-24	42.1
20	119	28.1	10	44.3		273 31.3	98	57.1	3	42.0	25	32.8	-24	42.5
22	149	28.4	10	42.6		303 36.2	128	56.4	3	39.5	55	34.9	-24	42.8
Δ		2		-9				-3		-13		10		-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 37	19 26	0 47	3 28	21 48	1.5	12 57	3.3
55	4 52	19 11	0 40	2 31	22 9	1.7	12 37	3.1
50	5 4	18 60	0 34	2 5	22 25	1.8	12 23	2.9
45	5 13	18 51	0 31	1 49	22 37	1.9	12 11	2.8
40	5 20	18 43	0 28	1 38	22 48	2.0	12 2	2.8
35	5 27	18 37	0 26	1 30	22 57	2.0	11 53	2.7
30	5 33	18 31	0 25	1 24	23 5	2.1	11 46	2.6
20	5 43	18 22	0 23	1 16	23 18	2.3	11 34	2.5
10	5 51	18 13	0 21	1 12	23 30	2.3	11 23	2.4
0	5 59	18 6	0 21	1 10	23 42	2.3	11 13	2.3
10	6 7	17 58	0 21	1 11	23 53	2.3	11 3	2.2
20	6 15	17 50	0 22	1 14	...	...	10 52	2.1
30	6 24	17 41	0 24	1 20	...	...	10 39	2.0
35	6 29	17 36	0 26	1 25	...	...	10 32	2.0
40	6 35	17 30	0 28	1 30	...	...	10 24	1.9
45	6 42	17 23	0 30	1 38	...	...	10 15	1.8
50	6 50	17 15	0 33	1 48	...	...	10 3	1.7
55	7 0	17 5	0 37	2 1	0 1	3.2	9 49	1.5
60	7 13	16 52	0 43	2 20	...	...	9 31	1.3
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	287	49.8	81	12	5.4	86	155	26.0	2	23.0	84	14.3	-20	22.4
2	316	43.9	80	12	22.6	84	185	30.0	2	22.6	114	19.1	-20	22.5
4	345	37.9	80	12	39.4	83	215	34.0	2	22.2	144	24.0	-20	22.5
6	14	31.8	79	12	55.9	81	245	38.0	2	21.8	174	28.8	-20	22.5
8	43	25.6	79	13	12.1	79	275	42.0	2	21.3	204	33.6	-20	22.5
10	72	19.3	78	13	28.0	77	305	46.0	2	20.9	234	38.5	-20	22.6
12	101	13.0	78	13	43.5	76	335	49.9	2	20.5	264	43.3	-20	22.6
14	130	6.5	77	13	58.6	74	5	53.9	2	20.1	294	48.2	-20	22.6
16	158	59.9	77	14	13.4	72	35	57.9	2	19.7	324	53.0	-20	22.7
18	187	53.3	76	14	27.8	70	66	1.9	2	19.3	354	57.8	-20	22.7
20	216	46.5	76	14	41.8	68	96	5.9	2	18.9	25	2.7	-20	22.7
22	245	39.7	75	14	55.5	66	126	9.9	2	18.5	55	7.5	-20	22.8
Δ							20			-2		24		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	- 2	21.4	.7	15.8	T _m	4 60	2.3	59.5	16.2
12	- 2	13.2	T _{m☉}	12 h 2.2 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 24	.1	186	-3.0	♄	13 36	.0	183	-1.2
♂	18 18	.1	112	-.9	♄	18 20	.0	112	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA			MARS					
	S _☉		δ _☉			S _♀	δ _♀		S _♂	δ _♂				
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	28.7	10	40.9	333	41.1	158	55.7	3	37.0	85	37.0	-24	43.2
2	209	29.1	10	39.1		3 46.0	188	55.1	3	34.4	115	39.1	-24	43.5
4	239	29.4	10	37.4		33 51.0	218	54.4	3	31.9	145	41.1	-24	43.9
6	269	29.8	10	35.7		63 55.9	248	53.8	3	29.3	175	43.2	-24	44.3
8	299	30.1	10	33.9		94 .8	278	53.1	3	26.8	205	45.3	-24	44.6
10	329	30.5	10	32.2		124 5.8	308	52.4	3	24.3	235	47.3	-24	45.0
12	359	30.8	10	30.5		154 10.7	338	51.8	3	21.7	265	49.4	-24	45.3
14	29	31.2	10	28.7		184 15.6	8	51.1	3	19.2	295	51.5	-24	45.7
16	59	31.5	10	27.0		214 20.5	38	50.4	3	16.6	325	53.5	-24	46.0
18	89	31.9	10	25.3		244 25.5	68	49.8	3	14.1	355	55.6	-24	46.4
20	119	32.2	10	23.5		274 30.4	98	49.1	3	11.6	25	57.6	-24	46.7
22	149	32.6	10	21.8		304 35.3	128	48.5	3	9.0	55	59.7	-24	47.1
Δ		2		-9				-3		-13		10		-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 39	19 23	0 47	3 22	22 24	1.9	14 16	2.9
55	4 54	19 9	0 39	2 29	22 49	2.0	13 52	2.8
50	5 5	18 58	0 34	2 4	23 8	2.3	13 34	2.7
45	5 14	18 49	0 31	1 48	23 23	2.3	13 19	2.7
40	5 21	18 42	0 28	1 37	23 35	2.3	13 8	2.6
35	5 28	18 36	0 26	1 29	23 46	2.3	12 58	2.6
30	5 33	18 30	0 25	1 23	23 55	2.3	12 49	2.5
20	5 43	18 21	0 23	1 16	...	...	12 34	2.5
10	5 51	18 13	0 21	1 11	...	...	12 21	2.4
0	5 59	18 5	0 21	1 10	...	...	12 8	2.3
10	6 6	17 58	0 21	1 11	...	...	11 56	2.3
20	6 14	17 50	0 22	1 14	0 5	2.5	11 43	2.2
30	6 23	17 41	0 24	1 20	0 19	2.6	11 28	2.2
35	6 28	17 36	0 26	1 25	0 27	2.6	11 19	2.1
40	6 34	17 31	0 27	1 30	0 37	2.7	11 9	2.0
45	6 40	17 24	0 30	1 38	0 48	2.8	10 58	2.1
50	6 48	17 17	0 33	1 48	1 1	2.8	10 44	1.9
55	6 58	17 7	0 37	2 1	1 18	3.0	10 26	1.8
60	7 10	16 55	0 43	2 20	1 40	3.1	10 2	1.7
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	274	32.8	75	15	8.7	64	156	13.9	2	18.1	85	12.3	-20	22.8
2	303	25.8	75	15	21.6	62	186	17.9	2	17.6	115	17.2	-20	22.8
4	332	18.7	74	15	34.1	60	216	21.9	2	17.2	145	22.0	-20	22.9
6	1	11.6	74	15	46.2	58	246	25.8	2	16.8	175	26.8	-20	22.9
8	30	4.4	74	15	57.8	56	276	29.8	2	16.4	205	31.7	-20	22.9
10	58	57.1	73	16	9.1	54	306	33.8	2	16.0	235	36.5	-20	23.0
12	87	49.8	73	16	19.9	52	336	37.8	2	15.6	265	41.3	-20	23.0
14	116	42.4	73	16	30.4	50	6	41.8	2	15.2	295	46.1	-20	23.0
16	145	34.9	72	16	40.4	48	36	45.8	2	14.8	325	51.0	-20	23.1
18	174	27.4	72	16	49.9	46	66	49.8	2	14.4	355	55.8	-20	23.1
20	203	19.8	72	16	59.1	43	96	53.7	2	13.9	26	.6	-20	23.1
22	232	12.3	72	17	7.8	41	126	57.7	2	13.5	56	5.4	-20	23.2
Δ							20			-2		24		0

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	'	h min	min	'	'		
00	- 2	5.0	.7	15.8	T _m	5 55	2.3	59.2	16.1
12	- 1	56.6	T _{m☉}	12 h 1.9 min	Starost	22.1			

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 32.9	10 20.1	334 40.3	158 47.8	3 6.5	86 1.7	-24 47.4
2	209 33.3	10 18.3	4 45.2	188 47.1	3 3.9	116 3.8	-24 47.8
4	239 33.6	10 16.6	34 50.1	218 46.5	3 1.4	146 5.8	-24 48.1
6	269 34.0	10 14.8	64 55.0	248 45.8	2 58.8	176 7.8	-24 48.5
8	299 34.4	10 13.1	95 .0	278 45.2	2 56.3	206 9.9	-24 48.8
10	329 34.7	10 11.3	125 4.9	308 44.5	2 53.7	236 11.9	-24 49.2
12	359 35.1	10 9.6	155 9.8	338 43.9	2 51.2	266 13.9	-24 49.5
14	29 35.4	10 7.8	185 14.8	8 43.2	2 48.6	296 16.0	-24 49.8
16	59 35.8	10 6.1	215 19.7	38 42.6	2 46.1	326 18.0	-24 50.2
18	89 36.1	10 4.3	245 24.6	68 41.9	2 43.5	356 20.0	-24 50.5
20	119 36.5	10 2.6	275 29.5	98 41.3	2 41.0	26 22.0	-24 50.9
22	149 36.9	10 .8	305 34.5	128 40.6	2 38.4	56 24.1	-24 51.2
Δ	2	-9		-3	-13	10	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	261 4.6	72 17 16.0	39	157 1.7	2 13.1	86 10.3	-20 23.2	
2	289 57.0	72 17 23.8	37	187 5.7	2 12.7	116 15.1	-20 23.2	
4	318 49.3	72 17 31.2	35	217 9.7	2 12.3	146 19.9	-20 23.3	
6	347 41.6	71 17 38.1	32	247 13.7	2 11.9	176 24.7	-20 23.3	
8	16 33.9	71 17 44.6	30	277 17.6	2 11.5	206 29.6	-20 23.3	
10	45 26.2	71 17 50.6	28	307 21.6	2 11.0	236 34.4	-20 23.3	
12	74 18.5	71 17 56.2	26	337 25.6	2 10.6	266 39.2	-20 23.4	
14	103 10.7	72 18 1.3	23	7 29.6	2 10.2	296 44.0	-20 23.4	
16	132 3.0	72 18 5.9	21	37 33.6	2 9.8	326 48.8	-20 23.4	
18	160 55.4	72 18 10.1	19	67 37.6	2 9.4	356 53.7	-20 23.5	
20	189 47.7	72 18 13.9	16	97 41.5	2 9.0	26 58.5	-20 23.5	
22	218 40.1	72 18 17.2	14	127 45.5	2 8.6	57 3.3	-20 23.6	
Δ				20	-2	24	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 41	19 20	0 46	3 17	23 10	2.3	15 27	2.5
55	4 56	19 6	0 39	2 27	23 37	2.3	14 59	2.5
50	5 7	18 56	0 34	2 3	23 37	.0	14 39	2.4
45	5 15	18 47	0 31	1 48	...	.0	14 23	2.4
40	5 22	18 40	0 28	1 37	...	.0	14 10	2.4
35	5 28	18 34	0 26	1 29	...	.0	13 59	2.4
30	5 34	18 29	0 25	1 23	...	.0	13 49	2.4
20	5 43	18 20	0 22	1 15	0 11	2.3	13 33	2.4
10	5 51	18 12	0 21	1 11	0 25	2.3	13 18	2.4
0	5 58	18 5	0 21	1 10	0 38	2.3	13 5	2.3
10	6 6	17 58	0 21	1 11	0 51	2.4	12 51	2.3
20	6 13	17 50	0 22	1 14	1 5	2.4	12 36	2.3
30	6 22	17 42	0 24	1 20	1 21	2.5	12 20	2.3
35	6 27	17 37	0 26	1 24	1 30	2.5	12 10	2.3
40	6 32	17 32	0 27	1 30	1 41	2.5	11 59	2.3
45	6 38	17 25	0 30	1 38	1 54	2.5	11 46	2.2
50	6 46	17 18	0 33	1 48	2 9	2.6	11 30	2.2
55	6 55	17 9	0 37	2 1	2 29	2.6	11 10	2.2
60	7 7	16 57	0 43	2 19	2 56	2.7	10 43	2.1
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 48.3	.7	15.9	T _m	6 51	2.3	58.8 16.0
12	- 1 39.7	T _{m☉}	12 h 1.7 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 25	.1	184	-3.0	♄	13 30	.0	182	-1.2
♂	18 15	.1	111	-.9	♅	18 12	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 37.2	9 59.1	335 39.4	158 39.9	2 35.9	86 26.1	-24 51.6
2	209 37.6	9 57.3	5 44.3	188 39.3	2 33.3	116 28.1	-24 51.9
4	239 37.9	9 55.6	35 49.3	218 38.6	2 30.8	146 30.1	-24 52.2
6	269 38.3	9 53.8	65 54.2	248 38.0	2 28.2	176 32.1	-24 52.6
8	299 38.7	9 52.1	95 59.1	278 37.3	2 25.7	206 34.1	-24 52.9
10	329 39.0	9 50.3	126 4.0	308 36.7	2 23.1	236 36.1	-24 53.2
12	359 39.4	9 48.5	156 9.0	338 36.0	2 20.6	266 38.1	-24 53.6
14	29 39.8	9 46.8	186 13.9	8 35.4	2 18.0	296 40.1	-24 53.9
16	59 40.1	9 45.0	216 18.8	38 34.7	2 15.4	326 42.1	-24 54.3
18	89 40.5	9 43.2	246 23.7	68 34.1	2 12.9	356 44.1	-24 54.6
20	119 40.9	9 41.5	276 28.7	98 33.5	2 10.3	26 46.1	-24 54.9
22	149 41.2	9 39.7	306 33.6	128 32.8	2 7.8	56 48.1	-24 55.3
Δ	2	-9		-3	-13	10	-2

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	247 32.5	72 18 20.0	12	157 49.5	2 8.2	87 8.1	-20 23.6	
2	276 24.9	73 18 22.3	10	187 53.5	2 7.7	117 12.9	-20 23.6	
4	305 17.5	73 18 24.3	7	217 57.5	2 7.3	147 17.7	-20 23.7	
6	334 10.0	73 18 25.7	5	248 1.5	2 6.9	177 22.6	-20 23.7	
8	3 2.6	73 18 26.7	3	278 5.4	2 6.5	207 27.4	-20 23.7	
10	31 55.3	74 18 27.2	0	308 9.4	2 6.1	237 32.2	-20 23.8	
12	60 48.1	74 18 27.3	-2	338 13.4	2 5.7	267 37.0	-20 23.8	
14	89 41.0	75 18 26.9	-4	8 17.4	2 5.3	297 41.8	-20 23.8	
16	118 33.9	75 18 26.1	-6	38 21.4	2 4.8	327 46.6	-20 23.9	
18	147 27.0	76 18 24.8	-9	68 25.3	2 4.4	357 51.4	-20 23.9	
20	176 20.1	76 18 23.1	-11	98 29.3	2 4.0	27 56.2	-20 23.9	
22	205 13.4	77 18 20.9	-13	128 33.3	2 3.6	58 1.0	-20 24.0	
Δ				20	-2	24	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 44	19 17	0 46	3 13	...	.0	16 26	2.0
55	4 58	19 4	0 39	2 26	...	.0	15 58	2.1
50	5 8	18 54	0 34	2 2	0 -2	2.3	15 38	2.1
45	5 16	18 46	0 31	1 47	0 14	2.3	15 21	2.1
40	5 23	18 39	0 28	1 37	0 27	2.3	15 8	2.2
35	5 29	18 33	0 26	1 29	0 38	2.3	14 57	2.2
30	5 34	18 28	0 25	1 23	0 48	2.3	14 47	2.2
20	5 43	18 19	0 22	1 15	1 5	2.3	14 30	2.2
10	5 51	18 12	0 21	1 11	1 20	2.3	14 15	2.3
0	5 58	18 5	0 21	1 10	1 34	2.3	14 1	2.3
10	6 5	17 58	0 21	1 10	1 48	2.3	13 47	2.3
20	6 12	17 51	0 22	1 14	2 3	2.3	13 32	2.3
30	6 21	17 43	0 24	1 20	2 20	2.3	13 14	2.4
35	6 25	17 38	0 26	1 24	2 30	2.3	13 4	2.4
40	6 31	17 33	0 27	1 30	2 41	2.3	12 53	2.4
45	6 37	17 27	0 30	1 38	2 55	2.3	12 39	2.4
50	6 44	17 19	0 33	1 48	3 11	2.3	12 23	2.5
55	6 53	17 11	0 37	2 1	3 32	2.2	12 2	2.5
60	7 5	16 59	0 43	2 19	4 1	2.2	11 33	2.5
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min s	s	'	h min	min	'	'
00	- 1 31.1	.7	15.9	T _m	7 47	2.3	58.4 15.9
12	- 1 22.3	T _{m☉}	12 h 1.4 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 26	.1	183	-3.0	♄	13 27	.0	182	-1.2
♂	18 13	.1	111	-.9	♅	18 12	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 41.6	9 38.0	336 38.5	158 32.2	2 5.2	86 50.1	-24 55.6	
2	209 42.0	9 36.2	6 43.5	188 31.5	2 2.7	116 52.0	-24 55.9	
4	239 42.3	9 34.4	36 48.4	218 30.9	2 .1	146 54.0	-24 56.3	
6	269 42.7	9 32.6	66 53.3	248 30.2	1 57.5	176 56.0	-24 56.6	
8	299 43.1	9 30.9	96 58.2	278 29.6	1 55.0	206 58.0	-24 56.9	
10	329 43.5	9 29.1	127 3.2	308 28.9	1 52.4	236 59.9	-24 57.3	
12	359 43.8	9 27.3	157 8.1	338 28.3	1 49.9	267 1.9	-24 57.6	
14	29 44.2	9 25.6	187 13.0	8 27.6	1 47.3	297 3.9	-24 57.9	
16	59 44.6	9 23.8	217 18.0	38 27.0	1 44.7	327 5.8	-24 58.2	
18	89 44.9	9 22.0	247 22.9	68 26.4	1 42.2	357 7.8	-24 58.6	
20	119 45.3	9 20.2	277 27.8	98 25.7	1 39.6	27 9.8	-24 58.9	
22	149 45.7	9 18.4	307 32.7	128 25.1	1 37.0	57 11.7	-24 59.2	
Δ	2	-9		-3	-13	10	-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 46	19 14	0 46	3 9	0 5	2.7	17 14	1.5
55	4 59	19 1	0 39	2 25	0 33	2.6	16 47	1.7
50	5 9	18 52	0 34	2 2	0 54	2.6	16 28	1.8
45	5 18	18 44	0 31	1 47	1 10	2.5	16 13	1.9
40	5 24	18 37	0 28	1 36	1 23	2.5	16 0	1.9
35	5 30	18 32	0 26	1 29	1 34	2.4	15 49	2.0
30	5 35	18 27	0 24	1 23	1 44	2.4	15 40	2.0
20	5 44	18 18	0 22	1 15	2 1	2.3	15 24	2.1
10	5 51	18 11	0 21	1 11	2 16	2.3	15 9	2.2
0	5 58	18 4	0 21	1 10	2 30	2.3	14 56	2.2
10	6 5	17 58	0 21	1 10	2 43	2.2	14 42	2.3
20	6 12	17 51	0 22	1 14	2 58	2.2	14 28	2.3
30	6 19	17 43	0 24	1 20	3 15	2.1	14 11	2.4
35	6 24	17 39	0 26	1 24	3 25	2.1	14 2	2.5
40	6 29	17 34	0 27	1 30	3 36	2.0	13 51	2.5
45	6 35	17 28	0 30	1 38	3 50	2.0	13 38	2.6
50	6 42	17 21	0 33	1 48	4 6	1.9	13 22	2.6
55	6 51	17 12	0 37	2 1	4 26	1.9	13 2	2.7
60	7 2	17 2	0 43	2 19	4 54	1.7	12 34	2.9

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	234 6.8	78 18 18.3	-15	158 37.3	2 3.2	88 5.9	-20 24.0	
2	263 .3	78 18 15.2	-17	188 41.3	2 2.8	118 10.7	-20 24.0	
4	291 53.9	79 18 11.7	-20	218 45.2	2 2.3	148 15.5	-20 24.1	
6	320 47.7	80 18 7.8	-22	248 49.2	2 1.9	178 20.3	-20 24.1	
8	349 41.6	80 18 3.4	-24	278 53.2	2 1.5	208 25.1	-20 24.1	
10	18 35.7	81 17 58.7	-26	308 57.2	2 1.1	238 29.9	-20 24.2	
12	47 29.9	82 17 53.4	-28	339 1.1	2 .7	268 34.7	-20 24.2	
14	76 24.2	83 17 47.8	-30	9 5.1	2 .3	298 39.5	-20 24.2	
16	105 18.8	83 17 41.8	-32	39 9.1	1 59.9	328 44.3	-20 24.3	
18	134 13.4	84 17 35.3	-34	69 13.1	1 59.4	358 49.1	-20 24.3	
20	163 8.3	85 17 28.5	-36	99 17.0	1 59.0	28 53.9	-20 24.4	
22	192 3.3	86 17 21.2	-38	129 21.0	1 58.6	58 58.7	-20 24.4	
Δ				20	-2	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 13.6	.7	15.9	T _m	8 43	2.3	58.0
12	- 1 4.7	T _{m☉}	12 h 1.1 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 26	.1	182	-3.0	♄	13 24	.0	182	-1.2
♂	18 11	.1	110	-.8	♅	18 5	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	°	'	°	'
0	179 46.1	9 16.7	337 37.7	158 24.4	1 34.5	87 13.7	-24 59.5	
2	209 46.4	9 14.9	7 42.6	188 23.8	1 31.9	117 15.6	-24 59.9	
4	239 46.8	9 13.1	37 47.5	218 23.2	1 29.3	147 17.6	-25 .2	
6	269 47.2	9 11.3	67 52.5	248 22.5	1 26.8	177 19.5	-25 .5	
8	299 47.6	9 9.5	97 57.4	278 21.9	1 24.2	207 21.5	-25 .8	
10	329 48.0	9 7.7	128 2.3	308 21.2	1 21.6	237 23.4	-25 1.2	
12	359 48.3	9 6.0	158 7.2	338 20.6	1 19.1	267 25.3	-25 1.5	
14	29 48.7	9 4.2	188 12.2	8 19.9	1 16.5	297 27.3	-25 1.8	
16	59 49.1	9 2.4	218 17.1	38 19.3	1 13.9	327 29.2	-25 2.1	
18	89 49.5	9 .6	248 22.0	68 18.7	1 11.4	357 31.1	-25 2.4	
20	119 49.9	8 58.8	278 27.0	98 18.0	1 8.8	27 33.1	-25 2.8	
22	149 50.2	8 57.0	308 31.9	128 17.4	1 6.2	57 35.0	-25 3.1	
Δ	2	-9		-3	-13	10	-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 49	19 11	0 45	3 5	1 11	3.0	17 50	1.2
55	5 1	18 59	0 39	2 23	1 36	2.8	17 28	1.4
50	5 11	18 50	0 34	2 1	1 55	2.7	17 11	1.5
45	5 19	18 42	0 30	1 46	2 10	2.6	16 58	1.6
40	5 25	18 36	0 28	1 38	2 22	2.5	16 46	1.7
35	5 31	18 30	0 26	1 32	2 33	2.5	16 37	1.8
30	5 35	18 26	0 24	1 23	2 42	2.4	16 29	1.8
20	5 44	18 18	0 22	1 15	2 57	2.3	16 14	2.0
10	5 51	18 11	0 21	1 11	3 11	2.3	16 1	2.0
0	5 57	18 4	0 21	1 10	3 24	2.2	15 49	2.1
10	6 4	17 58	0 21	1 10	3 37	2.1	15 37	2.2
20	6 11	17 51	0 22	1 14	3 50	2.0	15 24	2.3
30	6 18	17 44	0 24	1 20	4 6	1.9	15 10	2.4
35	6 23	17 39	0 26	1 24	4 15	1.9	15 1	2.5
40	6 28	17 35	0 27	1 30	4 26	1.8	14 51	2.6
45	6 33	17 29	0 30	1 38	4 38	1.7	14 39	2.6
50	6 40	17 22	0 33	1 48	4 52	1.6	14 25	2.7
55	6 48	17 14	0 37	2 1	5 11	1.5	14 7	2.9
60	6 59	17 4	0 42	2 19	5 36	1.3	13 43	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	°	'	°	'
0	220 58.6	87 17 13.6	-40	159 25.0	1 58.2	89 3.5	-20 24.4	
2	249 54.0	88 17 5.6	-42	189 29.0	1 57.8	119 8.3	-20 24.5	
4	278 49.6	89 16 57.2	-44	219 33.0	1 57.4	149 13.1	-20 24.5	
6	307 45.4	90 16 48.4	-46	249 36.9	1 56.9	179 17.9	-20 24.5	
8	336 41.3	91 16 39.2	-48	279 40.9	1 56.5	209 22.7	-20 24.6	
10	5 37.5	92 16 29.7	-49	309 44.9	1 56.1	239 27.5	-20 24.6	
12	34 33.9	93 16 19.8	-51	339 48.9	1 55.7	269 32.3	-20 24.6	
14	63 30.5	94 16 9.5	-53	9 52.8	1 55.3	299 37.1	-20 24.7	
16	92 27.3	95 15 58.9	-55	39 56.8	1 54.9	329 41.9	-20 24.7	
18	121 24.3	96 15 48.0	-56	70 .8	1 54.4	359 46.6	-20 24.8	
20	150 21.5	97 15 36.7	-58	100 4.7	1 54.0	29 51.4	-20 24.8	
22	179 19.0	98 15 25.1	-60	130 8.7	1 53.6	59 56.2	-20 24.8	
Δ				20	-2	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 55.7	.8	15.9	T _m	9 37	2.1	57.5
12	- 0 46.6	T _{m☉}	12 h .8 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 27	.1	181	-3.0	♄	13 21	.0	182	-1.2
♂	18 10	.1	110	-.8	♅	18 1	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 50.6	8 55.2	338 36.8	158 16.8	1 3.7	87 36.9	-25 3.4
2	209 51.0	8 53.4	8 41.7	188 16.1	1 1.1	117 38.8	-25 3.7
4	239 51.4	8 51.6	38 46.7	218 15.5	0 58.5	147 40.8	-25 4.0
6	269 51.8	8 49.8	68 51.6	248 14.8	0 56.0	177 42.7	-25 4.3
8	299 52.1	8 48.0	98 56.5	278 14.2	0 53.4	207 44.6	-25 4.7
10	329 52.5	8 46.3	129 1.5	308 13.6	0 50.8	237 46.5	-25 5.0
12	359 52.9	8 44.5	159 6.4	338 12.9	0 48.3	267 48.4	-25 5.3
14	29 53.3	8 42.7	189 11.3	8 12.3	0 45.7	297 50.3	-25 5.6
16	59 53.7	8 40.9	219 16.2	38 11.7	0 43.1	327 52.2	-25 5.9
18	89 54.1	8 39.1	249 21.2	68 11.0	0 40.5	357 54.1	-25 6.2
20	119 54.5	8 37.3	279 26.1	98 10.4	0 38.0	27 56.0	-25 6.5
22	149 54.9	8 35.5	309 31.0	128 9.8	0 35.4	57 57.9	-25 6.8
Δ	2	-9		-3	-13	10	-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 51	19 8	0 45	3 2	2 23	3.1	18 19	.9
55	5 3	18 57	0 38	2 22	2 44	2.9	18 1	1.2
50	5 12	18 47	0 34	2 0	2 60	2.8	17 47	1.3
45	5 20	18 40	0 30	1 46	3 13	2.6	17 37	1.4
40	5 26	18 34	0 28	1 36	3 23	2.6	17 28	1.5
35	5 31	18 29	0 26	1 28	3 32	2.5	17 20	1.6
30	5 36	18 24	0 24	1 23	3 40	2.4	17 13	1.7
20	5 44	18 17	0 22	1 15	3 53	2.3	17 1	1.8
10	5 51	18 10	0 21	1 11	4 5	2.2	16 50	1.9
0	5 57	18 4	0 21	1 9	4 16	2.1	16 40	2.0
10	6 3	17 58	0 21	1 10	4 27	2.0	16 30	2.1
20	6 10	17 51	0 22	1 14	4 39	1.9	16 20	2.3
30	6 17	17 44	0 24	1 20	4 52	1.8	16 8	2.4
35	6 21	17 40	0 26	1 24	5 0	1.7	16 0	2.5
40	6 26	17 35	0 27	1 30	5 9	1.6	15 52	2.5
45	6 31	17 30	0 30	1 38	5 19	1.5	15 43	2.6
50	6 38	17 24	0 33	1 48	5 32	1.4	15 31	2.8
55	6 46	17 16	0 37	2 1	5 47	1.3	15 17	2.9
60	6 56	17 6	0 42	2 19	6 8	1.0	14 57	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	208 16.6	99	15 13.2	-61	160 12.7	1 53.2	90 1.0	-20 24.9
2	237 14.5	100	15 1.0	-63	190 16.7	1 52.8	120 5.8	-20 24.9
4	266 12.6	102	14 48.4	-64	220 20.6	1 52.4	150 10.6	-20 24.9
6	295 10.9	103	14 35.6	-66	250 24.6	1 51.9	180 15.4	-20 25.0
8	324 9.4	104	14 22.4	-67	280 28.6	1 51.5	210 20.2	-20 25.0
10	353 8.2	105	14 9.0	-69	310 32.6	1 51.1	240 25.0	-20 25.1
12	22 7.1	106	13 55.3	-70	340 36.5	1 50.7	270 29.8	-20 25.1
14	51 6.3	107	13 41.3	-71	10 40.5	1 50.3	300 34.5	-20 25.1
16	80 5.7	108	13 27.0	-73	40 44.5	1 49.8	330 39.3	-20 25.2
18	109 5.4	109	13 12.5	-74	70 48.4	1 49.4	0 44.1	-20 25.2
20	138 5.2	110	12 57.7	-75	100 52.4	1 49.0	30 48.9	-20 25.2
22	167 5.3	111	12 42.7	-76	130 56.4	1 48.6	60 53.7	-20 25.3
Δ					20	-2	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 37.5	.8	15.9	T _m	10 28	2.1	57.0	15.5	
12	- 0 28.3	T _{m☉}	12 h .5 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 27	.1	180	-3.1	♄	13 17	.0	182	-1.2
	18 8	.1	109	-.8	♅	17 57	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 55.2	8 33.6	339 35.9	158 9.1	0 32.8	87 59.8	-25 7.1
2	209 55.6	8 31.8	9 40.9	188 8.5	0 30.3	118 1.7	-25 7.4
4	239 56.0	8 30.0	39 45.8	218 7.9	0 27.7	148 3.6	-25 7.7
6	269 56.4	8 28.2	69 50.7	248 7.2	0 25.1	178 5.5	-25 8.1
8	299 56.8	8 26.4	99 55.7	278 6.6	0 22.5	208 7.4	-25 8.4
10	329 57.2	8 24.6	130 .6	308 6.0	0 20.0	238 9.3	-25 8.7
12	359 57.6	8 22.8	160 5.5	338 5.3	0 17.4	268 11.1	-25 9.0
14	29 58.0	8 21.0	190 10.4	8 4.7	0 14.8	298 13.0	-25 9.3
16	59 58.4	8 19.2	220 15.4	38 4.1	0 12.2	328 14.9	-25 9.6
18	89 58.8	8 17.4	250 20.3	68 3.4	0 9.7	358 16.8	-25 9.9
20	119 59.2	8 15.6	280 25.2	98 2.8	0 7.1	28 18.6	-25 10.2
22	149 59.6	8 13.7	310 30.2	128 2.2	0 4.5	58 20.5	-25 10.5
Δ	2	-9		-3	-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	4 53	19 5	0 45	2 59	3 38	3.1	18 41	.8
55	5 5	18 54	0 38	2 21	3 54	2.9	18 29	1.0
50	5 14	18 45	0 34	1 59	4 6	2.8	18 19	1.2
45	5 21	18 38	0 30	1 45	4 16	2.6	18 11	1.3
40	5 27	18 33	0 28	1 35	4 24	2.5	18 4	1.4
35	5 32	18 28	0 26	1 28	4 31	2.4	17 59	1.5
30	5 37	18 23	0 24	1 22	4 38	2.4	17 53	1.6
20	5 44	18 16	0 22	1 15	4 48	2.2	17 45	1.7
10	5 51	18 9	0 21	1 11	4 57	2.1	17 37	1.8
0	5 57	18 3	0 21	1 9	5 6	2.0	17 29	1.9
10	6 3	17 58	0 21	1 10	5 15	1.9	17 22	2.1
20	6 9	17 52	0 22	1 13	5 24	1.8	17 14	2.2
30	6 16	17 45	0 24	1 20	5 35	1.6	17 5	2.3
35	6 20	17 41	0 25	1 24	5 41	1.5	16 59	2.4
40	6 24	17 36	0 27	1 30	5 48	1.5	16 53	2.5
45	6 30	17 31	0 30	1 38	5 56	1.4	16 46	2.6
50	6 36	17 25	0 33	1 48	6 5	1.2	16 38	2.8
55	6 43	17 18	0 37	2 1	6 17	1.1	16 27	2.9
60	6 53	17 8	0 42	2 19	6 33	.9	16 13	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	196 5.6	113	12 27.4	-78	161 .4	1 48.2	90 58.5	-20 25.3
2	225 6.1	114	12 11.9	-79	191 4.3	1 47.8	121 3.2	-20 25.4
4	254 6.9	115	11 56.2	-80	221 8.3	1 47.3	151 8.0	-20 25.4
6	283 7.8	116	11 40.2	-81	251 12.3	1 46.9	181 12.8	-20 25.4
8	312 9.0	117	11 24.1	-82	281 16.2	1 46.5	211 17.6	-20 25.5
10	341 10.4	118	11 7.7	-83	311 20.2	1 46.1	241 22.4	-20 25.5
12	10 12.0	119	10 51.1	-84	341 24.2	1 45.7	271 27.1	-20 25.6
14	39 13.8	120	10 34.4	-85	11 28.2	1 45.2	301 31.9	-20 25.6
16	68 15.8	121	10 17.5	-86	41 32.1	1 44.8	331 36.7	-20 25.6
18	97 18.0	122	10 .4	-86	71 36.1	1 44.4	1 41.5	-20 25.7
20	126 20.4	123	9 43.1	-87	101 40.1	1 44.0	31 46.2	-20 25.7
22	155 23.0	124	9 25.6	-88	131 44.0	1 43.6	61 51.0	-20 25.7
Δ					20	-2	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 19.0	.8	15.9	T _m	11 18	2.0	56.5	15.4	
12	- 0 9.6	T _{m☉}	12 h .2 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 28	.1	179	-3.1	♄	13 14	.0	181	-1.2
	18 7	.1	108	-.8	♅	17 53	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 59.9	8 11.9	340 35.1	158 1.5	0 1.9	88 22.4	-25 10.8
2	210 .3	8 10.1	10 40.0	188 .9	-0 .6	118 24.2	-25 11.1
4	240 .7	8 8.3	40 44.9	218 .3	-0 3.2	148 26.1	-25 11.4
6	270 1.1	8 6.5	70 49.9	247 59.6	-0 5.8	178 28.0	-25 11.7
8	300 1.5	8 4.7	100 54.8	277 59.0	-0 8.4	208 29.8	-25 12.0
10	330 1.9	8 2.8	130 59.7	307 58.4	-0 10.9	238 31.7	-25 12.2
12	0 2.3	8 1.0	161 4.7	337 57.7	-0 13.5	268 33.5	-25 12.5
14	30 2.7	7 59.2	191 9.6	7 57.1	-0 16.1	298 35.4	-25 12.8
16	60 3.1	7 57.4	221 14.5	37 56.5	-0 18.7	328 37.2	-25 13.1
18	90 3.5	7 55.6	251 19.4	67 55.8	-0 21.2	358 39.1	-25 13.4
20	120 3.9	7 53.7	281 24.4	97 55.2	-0 23.8	28 40.9	-25 13.7
22	150 4.3	7 51.9	311 29.3	127 54.6	-0 26.4	58 42.7	-25 14.0
Δ	2	-9		-3	-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	4 56	19 2	0 45	2 56	4 53	3.1	19 0	.7
55	5 7	18 52	0 38	2 20	5 4	2.9	18 53	.9
50	5 15	18 43	0 34	1 59	5 13	2.7	18 47	1.1
45	5 22	18 37	0 30	1 45	5 19	2.6	18 42	1.2
40	5 28	18 31	0 28	1 35	5 25	2.5	18 38	1.3
35	5 33	18 26	0 26	1 28	5 30	2.4	18 34	1.4
30	5 37	18 22	0 24	1 22	5 34	2.3	18 31	1.5
20	5 44	18 15	0 22	1 15	5 41	2.2	18 26	1.6
10	5 51	18 9	0 21	1 11	5 48	2.0	18 21	1.8
0	5 57	18 3	0 21	1 9	5 54	1.9	18 16	1.9
10	6 2	17 58	0 21	1 10	5 60	1.8	18 11	2.0
20	6 8	17 52	0 22	1 13	6 6	1.7	18 6	2.1
30	6 15	17 45	0 24	1 20	6 14	1.5	18 1	2.3
35	6 19	17 41	0 25	1 24	6 18	1.4	17 57	2.4
40	6 23	17 37	0 27	1 30	6 23	1.3	17 54	2.5
45	6 28	17 33	0 30	1 38	6 28	1.2	17 49	2.6
50	6 34	17 27	0 33	1 48	6 35	1.1	17 44	2.7
55	6 41	17 20	0 37	2 1	6 43	.9	17 37	2.9
60	6 50	17 11	0 42	2 19	6 53	.7	17 29	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	184 25.8	125 9	8.0	-89	161 48.0	1 43.1	91 55.8	-20 25.8
2	213 28.8	126 8	50.3	-89	191 52.0	1 42.7	122 .6	-20 25.8
4	242 32.0	127 8	32.4	-90	221 55.9	1 42.3	152 5.3	-20 25.9
6	271 35.4	128 8	14.4	-91	251 59.9	1 41.9	182 10.1	-20 25.9
8	300 38.9	129 7	56.2	-91	282 3.9	1 41.5	212 14.9	-20 25.9
10	329 42.7	130 7	37.9	-92	312 7.8	1 41.0	242 19.7	-20 26.0
12	358 46.6	130 7	19.5	-93	342 11.8	1 40.6	272 24.4	-20 26.0
14	27 50.7	131 7	1.0	-93	12 15.8	1 40.2	302 29.2	-20 26.1
16	56 55.0	132 6	42.4	-94	42 19.7	1 39.8	332 34.0	-20 26.1
18	85 59.4	133 6	23.7	-94	72 23.7	1 39.4	2 38.7	-20 26.1
20	115 4.0	134 6	4.9	-94	102 27.7	1 39.0	32 43.5	-20 26.2
22	144 8.8	135 5	46.0	-95	132 31.6	1 38.5	62 48.3	-20 26.2
Δ					20	-2	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 .2	.8	15.9	T _m	12 5	1.9	56.0 15.3
12	0 9.4	T _{m☉}	11 h 59.8 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 28	.1	177	-3.1	♄	13 11	.0	181	-1.2
♂	18 5	.1	108	-.8	♂	17 49	.0	111	.7

2. SEPTEMBAR

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 4.7	7 50.1	341 34.2	157 53.9	-0 29.0	88 44.6	-25 14.3
2	210 5.1	7 48.3	11 39.2	187 53.3	-0 31.5	118 46.4	-25 14.6
4	240 5.5	7 46.4	41 44.1	217 52.7	-0 34.1	148 48.3	-25 14.9
6	270 5.9	7 44.6	71 49.0	247 52.0	-0 36.7	178 50.1	-25 15.1
8	300 6.3	7 42.8	101 53.9	277 51.4	-0 39.3	208 51.9	-25 15.4
10	330 6.7	7 40.9	131 58.9	307 50.8	-0 41.9	238 53.7	-25 15.7
12	0 7.1	7 39.1	162 3.8	337 50.1	-0 44.4	268 55.6	-25 16.0
14	30 7.5	7 37.3	192 8.7	7 49.5	-0 47.0	298 57.4	-25 16.3
16	60 8.0	7 35.4	222 13.7	37 48.9	-0 49.6	328 59.2	-25 16.6
18	90 8.4	7 33.6	252 18.6	67 48.3	-0 52.2	359 1.0	-25 16.8
20	120 8.8	7 31.8	282 23.5	97 47.6	-0 54.7	29 2.8	-25 17.1
22	150 9.2	7 29.9	312 28.4	127 47.0	-0 57.3	59 4.6	-25 17.4
Δ	2	-9		-3	-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	4 58	18 59	0 44	2 53	6 8	3.0	19 17	1.6
55	5 9	18 49	0 38	2 18	6 14	2.8	19 15	1.6
50	5 17	18 41	0 33	1 58	6 18	2.7	19 12	1.7
45	5 24	18 35	0 30	1 45	6 22	2.5	19 11	1.7
40	5 29	18 29	0 28	1 35	6 24	2.4	19 9	1.7
35	5 34	18 25	0 26	1 27	6 27	2.3	19 8	1.7
30	5 38	18 21	0 24	1 22	6 29	2.2	19 7	1.7
20	5 45	18 14	0 22	1 15	6 33	2.1	19 5	1.8
10	5 51	18 8	0 21	1 11	6 36	2.0	19 3	1.8
0	5 56	18 3	0 21	1 9	6 40	1.8	19 1	1.8
10	6 2	17 57	0 21	1 10	6 43	1.7	18 59	1.9
20	6 7	17 52	0 22	1 13	6 46	1.6	18 57	1.9
30	6 14	17 46	0 24	1 20	6 50	1.5	18 55	1.9
35	6 17	17 42	0 25	1 24	6 52	1.4	18 54	1.9
40	6 21	17 38	0 27	1 30	6 55	1.3	18 53	2.0
45	6 26	17 34	0 30	1 38	6 58	1.2	18 51	2.0
50	6 32	17 28	0 33	1 48	7 1	1.0	18 49	2.0
55	6 38	17 22	0 36	2 1	7 6	.9	18 46	2.1
60	6 47	17 13	0 42	2 19	7 11	.7	18 43	2.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	173 13.7	135 5	27.1	-95	162 35.6	1 38.1	92 53.0	-20 26.3
2	202 18.7	136 5	8.1	-95	192 39.6	1 37.7	122 57.8	-20 26.3
4	231 24.0	137 4	49.0	-96	222 43.5	1 37.3	153 2.6	-20 26.3
6	260 29.3	137 4	29.8	-96	252 47.5	1 36.9	183 7.3	-20 26.4
8	289 34.8	138 4	10.6	-96	282 51.5	1 36.4	213 12.1	-20 26.4
10	318 40.4	139 3	51.4	-96	312 55.4	1 36.0	243 16.9	-20 26.5
12	347 46.2	139 3	32.1	-97	342 59.4	1 35.6	273 21.6	-20 26.5
14	16 52.1	140 3	12.8	-97	13 3.4	1 35.2	303 26.4	-20 26.5
16	45 58.1	141 2	53.4	-97	43 7.3	1 34.7	333 31.1	-20 26.6
18	75 4.2	141 2	34.1	-97	73 11.3	1 34.3	3 35.9	-20 26.6
20	104 10.5	142 2	14.7	-97	103 15.3	1 33.9	33 40.7	-20 26.7
22	133 16.8	142 1	55.3	-97	133 19.2	1 33.5	63 45.4	-20 26.7
Δ					20	-2	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 18.9	.8	15.9	T _m	12 50	1.9	55.5 15.1
12	0 28.6	T _{m☉}	11 h 59.5 min	Starost	.6 d	Faza ●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 29	.1	176	-3.1	♄	13 8	.0	181	-1.2
♂	18 4	.1	107	-.8	♂	17 46	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS							
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂						
h	°	'	°	'	°	'	°	'					
0	180	9.6	7	28.1	342	33.4	157	46.4 - 0	59.9	89	6.5 -25	17.7	
2	210	10.0	7	26.3	12	38.3	187	45.7 - 1	2.5	119	8.3 -25	18.0	
4	240	10.4	7	24.4	42	43.2	217	45.1 - 1	5.0	149	10.1 -25	18.2	
6	270	10.8	7	22.6	72	48.2	247	44.5 - 1	7.6	179	11.9 -25	18.5	
8	300	11.2	7	20.8	102	53.1	277	43.8 - 1	10.2	209	13.7 -25	18.8	
10	330	11.6	7	18.9	132	58.0	307	43.2 - 1	12.8	239	15.5 -25	19.1	
12	0	12.0	7	17.1	163	2.9	337	42.6 - 1	15.4	269	17.3 -25	19.3	
14	30	12.4	7	15.2	193	7.9	7	41.9 - 1	17.9	299	19.1 -25	19.6	
16	60	12.8	7	13.4	223	12.8	37	41.3 - 1	20.5	329	20.9 -25	19.9	
18	90	13.3	7	11.6	253	17.7	67	40.7 - 1	23.1	359	22.6 -25	20.2	
20	120	13.7	7	9.7	283	22.6	97	40.1 - 1	25.7	29	24.4 -25	20.4	
22	150	14.1	7	7.9	313	27.6	127	39.4 - 1	28.2	59	26.2 -25	20.7	
Δ		2		-9				-3	-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	5 0	18 56	0 44	2 51	7 21	.9	19 56	3.0
55	5 11	18 47	0 38	2 17	7 22	1.1	19 54	2.8
50	5 18	18 39	0 33	1 58	7 22	1.2	19 52	2.6
45	5 25	18 33	0 30	1 44	7 22	1.3	19 51	2.5
40	5 30	18 28	0 28	1 34	7 23	1.4	19 50	2.4
35	5 34	18 23	0 26	1 27	7 23	1.4	19 49	2.3
30	5 38	18 20	0 24	1 22	7 23	1.5	19 49	2.2
20	5 45	18 13	0 22	1 15	7 23	1.6	19 47	2.0
10	5 51	18 8	0 21	1 11	7 24	1.7	19 46	1.9
0	5 56	18 2	0 21	1 9	7 24	1.8	19 45	1.8
10	6 1	17 57	0 21	1 10	7 24	1.9	19 44	1.7
20	6 6	17 52	0 22	1 13	7 25	2.0	19 43	1.6
30	6 13	17 46	0 24	1 20	7 25	2.1	19 41	1.4
35	6 16	17 43	0 25	1 24	7 25	2.2	19 40	1.3
40	6 20	17 39	0 27	1 30	7 26	2.3	19 40	1.2
45	6 24	17 35	0 29	1 38	7 26	2.4	19 38	1.1
50	6 29	17 30	0 32	1 48	7 26	2.5	19 37	1.0
55	6 36	17 23	0 36	2 1	7 27	2.6	19 36	.9
60	6 44	17 15	0 42	2 19	7 28	2.8	19 34	.7

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	162	23.3	143	1	35.9	-97	163	23.2	1	33.1	93	50.2	-20	26.8
2	191	29.8	143	1	16.4	-97	193	27.1	1	32.6	123	54.9	-20	26.8
4	220	36.5	144	0	57.0	-97	223	31.1	1	32.2	153	59.7	-20	26.8
6	249	43.2	144	0	37.7	-97	253	35.1	1	31.8	184	4.4	-20	26.9
8	278	50.0	145	0	18.3	-86	283	39.0	1	31.4	214	9.2	-20	26.9
10	307	56.9	145	0	1.1	97	313	43.0	1	31.0	244	13.9	-20	27.0
12	337	3.9	145	0	20.4	96	343	47.0	1	30.5	274	18.7	-20	27.0
14	6	11.0	146	0	39.7	96	13	50.9	1	30.1	304	23.5	-20	27.0
16	35	18.1	146	0	59.0	96	43	54.9	1	29.7	334	28.2	-20	27.1
18	64	25.3	146	1	18.2	96	73	58.8	1	29.3	4	33.0	-20	27.1
20	93	32.5	147	1	37.4	96	104	2.8	1	28.9	34	37.7	-20	27.2
22	122	39.8	147	1	56.5	95	134	6.8	1	28.4	64	42.5	-20	27.2
Δ							20		-2		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 38.3	.8	15.9	T _m	13 35	1.8	55.0	15.0
12	0 48.1	T _{m☉}	11 h 59.2 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	'	°	'
♀	13 29	.1	175	-3.1	♃	13 5	.0	181	-1.2
♁	18 2	.1	107	-.8	♄	17 42	.0	111	.7

4. SEPTEMBAR

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS							
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂						
h	°	'	°	'	°	'	°	'					
0	180	14.5	7	6.0	343	32.5	157	38.8 - 1	30.8	89	28.0 -25	21.0	
2	210	14.9	7	4.2	13	37.4	187	38.2 - 1	33.4	119	29.8 -25	21.2	
4	240	15.3	7	2.3	43	42.4	217	37.5 - 1	36.0	149	31.6 -25	21.5	
6	270	15.7	7	.5	73	47.3	247	36.9 - 1	38.5	179	33.3 -25	21.8	
8	300	16.1	6	58.6	103	52.2	277	36.3 - 1	41.1	209	35.1 -25	22.0	
10	330	16.6	6	56.8	133	57.1	307	35.6 - 1	43.7	239	36.9 -25	22.3	
12	0	17.0	6	54.9	164	2.1	337	35.0 - 1	46.3	269	38.6 -25	22.5	
14	30	17.4	6	53.1	194	7.0	7	34.4 - 1	48.8	299	40.4 -25	22.8	
16	60	17.8	6	51.2	224	11.9	37	33.7 - 1	51.4	329	42.2 -25	23.1	
18	90	18.2	6	49.4	254	16.9	67	33.1 - 1	54.0	359	43.9 -25	23.3	
20	120	18.6	6	47.5	284	21.8	97	32.5 - 1	56.6	29	45.7 -25	23.6	
22	150	19.1	6	45.7	314	26.7	127	31.8 - 1	59.2	59	47.5 -25	23.9	
Δ		2		-9				-3	-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	5 3	18 53	0 44	2 49	7 43	.7	21 8	2.9
55	5 12	18 44	0 38	2 16	7 47	.9	21 1	2.7
50	5 20	18 37	0 33	1 57	7 51	1.0	20 55	2.6
45	5 26	18 31	0 30	1 44	7 53	1.2	20 51	2.4
40	5 31	18 26	0 28	1 34	7 55	1.3	20 47	2.3
35	5 35	18 22	0 26	1 27	7 57	1.3	20 44	2.2
30	5 39	18 19	0 24	1 22	7 59	1.4	20 41	2.2
20	5 45	18 12	0 22	1 14	8 2	1.6	20 36	2.0
10	5 51	18 7	0 21	1 11	8 5	1.7	20 32	1.9
0	5 56	18 2	0 21	1 9	8 7	1.8	20 28	1.8
10	6 1	17 57	0 21	1 10	8 10	1.9	20 24	1.7
20	6 6	17 52	0 22	1 13	8 13	2.0	20 20	1.6
30	6 11	17 47	0 24	1 19	8 16	2.2	20 15	1.4
35	6 15	17 44	0 25	1 24	8 18	2.3	20 13	1.4
40	6 18	17 40	0 27	1 30	8 20	2.3	20 9	1.3
45	6 22	17 36	0 29	1 38	8 22	2.5	20 6	1.2
50	6 27	17 31	0 32	1 48	8 25	2.6	20 1	1.1
55	6 33	17 25	0 36	2 1	8 29	2.7	19 56	.9
60	6 41	17 18	0 42	2 19	8 34	3.0	19 49	.7

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	151	47.2	147	2	15.6	95	164	10.7	1	28.0	94	47.2	-20	27.3
2	180	54.6	147	2	34.6	95	194	14.7	1	27.6	124	52.0	-20	27.3
4	210	2.0	147	2	53.5	94	224	18.7	1	27.2	154	56.7	-20	27.3
6	239	9.5	148	3	12.4	94	254	22.6	1	26.7	185	1.5	-20	27.4
8	268	17.0	148	3	31.2	94	284	26.6	1	26.3	215	6.2	-20	27.4
10	297	24.5	148	3	49.9	93	314	30.5	1	25.9	245	10.9	-20	27.5
12	326	32.1	148	4	8.5	93	344	34.5	1	25.5	275	15.7	-20	27.5
14	355	39.6	148	4	27.0	92	14	38.5	1	25.1	305	20.4	-20	27.6
16	24	47.2	148	4	45.5	92	44	42.4	1	24.6	335	25.2	-20	27.6
18	53	54.8	148	5	3.8	91	74	46.4	1	24.2	5	29.9	-20	27.6
20	83	2.4	148	5	22.1	91	104	50.3	1	23.8	35	34.7	-20	27.7
22	112	10.0	148	5	40.2	90	134	54.3	1	23.4	65	39.4	-20	27.7
Δ							20		-2		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 58.0	.8	15.9	T _m	14 18	1.8	54.7	14.9
12	1 7.9	T _{m☉}	11 h 58.9 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	'	°	'
♀	13 30	.1	174	-3.1	♃	13 2	.0	181	-1.2
♁	18 1	.1	106	-.8					

5. SEPTEMBAR

2016.

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS												
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂											
h	°	'	°	'	°	'	°	'										
0	180	19.5	6	43.8	344	31.6	157	31.2 - 2 1.7	89	49.2 -25 24.1								
2	210	19.9	6	42.0	14	36.6	187	30.6 - 2 4.3	119	51.0 -25 24.4								
4	240	20.3	6	40.1	44	41.5	217	29.9 - 2 6.9	149	52.7 -25 24.6								
6	270	20.7	6	38.2	74	46.4	247	29.3 - 2 9.5	179	54.5 -25 24.9								
8	300	21.1	6	36.4	104	51.4	277	28.7 - 2 12.0	209	56.2 -25 25.1								
10	330	21.6	6	34.5	134	56.3	307	28.0 - 2 14.6	239	58.0 -25 25.4								
12	0	22.0	6	32.7	165	1.2	337	27.4 - 2 17.2	269	59.7 -25 25.6								
14	30	22.4	6	30.8	195	6.1	7	26.8 - 2 19.8	300	1.4 -25 25.9								
16	60	22.8	6	28.9	225	11.1	37	26.1 - 2 22.3	330	3.2 -25 26.1								
18	90	23.2	6	27.1	255	16.0	67	25.5 - 2 24.9	0	4.9 -25 26.4								
20	120	23.7	6	25.2	285	20.9	97	24.9 - 2 27.5	30	6.7 -25 26.6								
22	150	24.1	6	23.4	315	25.9	127	24.2 - 2 30.0	60	8.4 -25 26.9								
Δ		2		-9				-3			-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	5 5	18 50	0 44	2 47	7 59	.7	22 18	2.9
55	5 14	18 41	0 38	2 15	8 8	.9	22 6	2.7
50	5 21	18 35	0 33	1 56	8 15	1.1	21 57	2.5
45	5 27	18 29	0 30	1 43	8 21	1.2	21 49	2.4
40	5 32	18 25	0 27	1 34	8 26	1.3	21 43	2.3
35	5 36	18 21	0 26	1 27	8 30	1.4	21 38	2.2
30	5 39	18 17	0 24	1 22	8 33	1.5	21 33	2.2
20	5 45	18 11	0 22	1 14	8 40	1.6	21 25	2.0
10	5 51	18 6	0 21	1 10	8 45	1.7	21 18	1.9
0	5 55	18 2	0 21	1 9	8 51	1.8	21 12	1.8
10	5 60	17 57	0 21	1 10	8 56	1.9	21 5	1.7
20	6 5	17 53	0 22	1 13	9 2	2.0	20 58	1.6
30	6 10	17 47	0 24	1 19	9 8	2.2	20 50	1.5
35	6 13	17 44	0 25	1 24	9 12	2.2	20 45	1.4
40	6 17	17 41	0 27	1 30	9 16	2.3	20 40	1.3
45	6 21	17 37	0 29	1 38	9 21	2.4	20 34	1.3
50	6 25	17 33	0 32	1 48	9 27	2.5	20 27	1.1
55	6 31	17 27	0 36	2 1	9 35	2.7	20 18	1.0
60	6 38	17 20	0 42	2 19	9 45	2.9	20 6	.8

UT	MESEC				JUPITER		SATURN											
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄										
h	°	'	°	'	°	'	°	'										
0	141	17.6	148	5	58.3	90	164	58.3	1	22.9	95	44.1	-20	27.8				
2	170	25.1	148	6	16.2	89	195	2.2	1	22.5	125	48.9	-20	27.8				
4	199	32.7	148	6	34.0	88	225	6.2	1	22.1	155	53.6	-20	27.9				
6	228	40.2	148	6	51.6	88	255	10.1	1	21.7	185	58.4	-20	27.9				
8	257	47.8	147	7	9.2	87	285	14.1	1	21.3	216	3.1	-20	27.9				
10	286	55.2	147	7	26.6	86	315	18.1	1	20.8	246	7.8	-20	28.0				
12	316	2.7	147	7	43.8	86	345	22.0	1	20.4	276	12.6	-20	28.0				
14	345	10.1	147	8	1.0	85	15	26.0	1	20.0	306	17.3	-20	28.1				
16	14	17.5	147	8	18.0	84	45	29.9	1	19.6	336	22.1	-20	28.1				
18	43	24.9	146	8	34.8	83	75	33.9	1	19.1	6	26.8	-20	28.2				
20	72	32.2	146	8	51.5	83	105	37.8	1	18.7	36	31.5	-20	28.2				
22	101	39.4	146	9	8.0	82	135	41.8	1	18.3	66	36.3	-20	28.3				
Δ								20		-2				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 17.9	.8	15.9	T _m	15 1	1.8	54.4	14.8
12	1 28.0	T _m ☉	11 h 58.5 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	'	°	
♂	13 30	.1	173	-3.1	♄	12 58	.0	180	-1.2
♂	17 60	.1	105	-7	♄	17 34	.0	111	.7

6. SEPTEMBAR

UTORAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS												
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂											
h	°	'	°	'	°	'	°	'										
0	180	24.5	6	21.5	345	30.8	157	23.6 - 2 32.6	90	10.1 -25 27.1								
2	210	24.9	6	19.6	15	35.7	187	23.0 - 2 35.2	120	11.8 -25 27.4								
4	240	25.4	6	17.8	45	40.6	217	22.3 - 2 37.8	150	13.6 -25 27.6								
6	270	25.8	6	15.9	75	45.6	247	21.7 - 2 40.3	180	15.3 -25 27.9								
8	300	26.2	6	14.0	105	50.5	277	21.1 - 2 42.9	210	17.0 -25 28.1								
10	330	26.6	6	12.2	135	55.4	307	20.4 - 2 45.5	240	18.7 -25 28.3								
12	0	27.0	6	10.3	166	.4	337	19.8 - 2 48.0	270	20.4 -25 28.6								
14	30	27.5	6	8.4	196	5.3	7	19.2 - 2 50.6	300	22.2 -25 28.8								
16	60	27.9	6	6.5	226	10.2	37	18.5 - 2 53.2	330	23.9 -25 29.1								
18	90	28.3	6	4.7	256	15.1	67	17.9 - 2 55.8	0	25.6 -25 29.3								
20	120	28.7	6	2.8	286	20.1	97	17.2 - 2 58.3	30	27.3 -25 29.5								
22	150	29.2	6	.9	316	25.0	127	16.6 - 3 .9	60	29.0 -25 29.8								
Δ		2		-9				-3			-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	5 8	18 47	0 44	2 45	8 17	.9	23 27	2.8
55	5 16	18 39	0 37	2 14	8 31	1.1	23 10	2.6
50	5 23	18 32	0 33	1 56	8 42	1.2	22 57	2.5
45	5 28	18 27	0 30	1 43	8 50	1.3	22 47	2.4
40	5 33	18 23	0 27	1 34	8 57	1.4	22 39	2.3
35	5 37	18 19	0 26	1 27	9 3	1.5	22 31	2.2
30	5 40	18 16	0 24	1 21	9 9	1.5	22 25	2.2
20	5 46	18 11	0 22	1 14	9 18	1.7	22 14	2.0
10	5 50	18 6	0 21	1 10	9 26	1.8	22 4	2.0
0	5 55	18 1	0 21	1 9	9 34	1.8	21 55	1.9
10	5 59	17 57	0 21	1 10	9 42	1.9	21 46	1.8
20	6 4	17 53	0 22	1 13	9 50	2.0	21 37	1.7
30	6 9	17 48	0 24	1 19	10 0	2.2	21 26	1.6
35	6 12	17 45	0 25	1 24	10 6	2.2	21 20	1.5
40	6 15	17 42	0 27	1 30	10 12	2.3	21 12	1.5
45	6 19	17 38	0 29	1 38	10 20	2.4	21 4	1.4
50	6 23	17 34	0 32	1 48	10 29	2.5	20 54	1.3
55	6 28	17 29	0 36	2 1	10 40	2.6	20 42	1.1
60	6 35	17 22	0 42	2 20	10 54	2.8	20 26	1.0

UT	MESEC				JUPITER		SATURN											
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄										
h	°	'	°	'	°	'	°	'										
0	130	46.6	146	9	24.4	81	165	45.8	1	17.9	96	41.0	-20	28.3				
2	159	53.7	145	9	40.6	80	195	49.7	1	17.4	126	45.7	-20	28.3				
4	189	.8	145	9	56.6	79	225	53.7	1	17.0	156	50.4	-20	28.4				
6	218	7.7	145	10	12.5	78	255	57.6	1	16.6	186	55.2	-20	28.4				
8	247	14.7	144	10	28.1	77	286	1.6	1	16.2	216	59.9	-20	28.5				
10	276	21.5	144	10	43.6	77	316	5.5	1	15.8	247	4.6	-20	28.5				
12	305	28.3	143	10	59.0	76	346	9.5	1	15.3	277	9.4	-20	28.6				
14	334	35.0	143	11	14.1	75	16	13.5	1	14.9	307	14.1	-20	28.6				
16	3	41.6	143	11	29.0	74	46	17.4	1	14.5	337	18.8	-20	28.7				
18	32	48.1	142	11	43.8	73	76	21.4	1	14.1	7	23.6	-20	28.7				
20	61	54.5	142	11	58.3	72	106	25.3	1	13.6	37	28.3	-20	28.7				
22	91	.8	141	12	12.6	71	136	29.3	1	13.2	67	33.0	-20	28.8				
Δ								20		-2				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 38.0	.8	15.9	T _m	15 45	1.8	54.2	14.8
12	1 48.2	T _m ☉	11 h 58.2 min	Starost	4.6 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 31	.1	172	-3.1	♄	12 55	.0	180	-1.2
♂	17 58	.1	105	-7	♄	17 31	.0	111	.7

7. SEPTEMBAR

2016.

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 29.6	5 59.1	346 29.9	157 16.0 - 3	3.5	90 30.7 -25	30.0
2	210 30.0	5 57.2	16 34.8	187 15.3 - 3	6.0	120 32.4 -25	30.2
4	240 30.5	5 55.3	46 39.8	217 14.7 - 3	8.6	150 34.1 -25	30.5
6	270 30.9	5 53.4	76 44.7	247 14.1 - 3	11.2	180 35.8 -25	30.7
8	300 31.3	5 51.6	106 49.6	277 13.4 - 3	13.7	210 37.5 -25	30.9
10	330 31.7	5 49.7	136 54.6	307 12.8 - 3	16.3	240 39.2 -25	31.2
12	0 32.2	5 47.8	166 59.5	337 12.1 - 3	18.9	270 40.9 -25	31.4
14	30 32.6	5 45.9	197 4.4	7 11.5 - 3	21.4	300 42.6 -25	31.6
16	60 33.0	5 44.1	227 9.3	37 10.9 - 3	24.0	330 44.3 -25	31.9
18	90 33.5	5 42.2	257 14.3	67 10.2 - 3	26.6	0 45.9 -25	32.1
20	120 33.9	5 40.3	287 19.2	97 9.6 - 3	29.1	30 47.6 -25	32.3
22	150 34.3	5 38.4	317 24.1	127 8.9 - 3	31.7	60 49.3 -25	32.5
Δ	2	-9		-3	-13	8	-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 10	18 44	0 43	2 43	8 38	1.1	.. ..	.0
55	5 18	18 36	0 37	2 14	8 56	1.2	.. ..	.0
50	5 24	18 30	0 33	1 55	9 10	1.4	23 57	2.4
45	5 29	18 25	0 30	1 43	9 21	1.4	23 44	2.3
40	5 34	18 21	0 27	1 33	9 31	1.5	23 34	2.3
35	5 37	18 18	0 26	1 26	9 39	1.6	23 25	2.2
30	5 40	18 15	0 24	1 21	9 46	1.6	23 17	2.1
20	5 46	18 10	0 22	1 14	9 58	1.7	23 3	2.1
10	5 50	18 5	0 21	1 10	10 8	1.8	22 51	2.0
0	5 55	18 1	0 21	1 9	10 18	1.9	22 40	1.9
10	5 59	17 57	0 21	1 10	10 29	2.0	22 29	1.9
20	6 3	17 53	0 22	1 13	10 39	2.1	22 18	1.8
30	6 8	17 48	0 24	1 19	10 52	2.2	22 4	1.7
35	6 10	17 46	0 25	1 24	10 59	2.2	21 56	1.7
40	6 13	17 43	0 27	1 30	11 7	2.3	21 47	1.6
45	6 17	17 40	0 29	1 38	11 17	2.3	21 37	1.5
50	6 21	17 36	0 32	1 48	11 29	2.4	21 25	1.4
55	6 26	17 31	0 36	2 1	11 43	2.6	21 9	1.3
60	6 32	17 25	0 42	2 20	12 3	2.7	20 48	1.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	120 7.0 141	12 26.8	70	166 33.2	1 12.8	97 37.7 -20	28.8	
2	149 13.1 140	12 40.7	68	196 37.2	1 12.4	127 42.5 -20	28.9	
4	178 19.1 139	12 54.4	67	226 41.1	1 11.9	157 47.2 -20	28.9	
6	207 25.0 139	13 7.8	66	256 45.1	1 11.5	187 51.9 -20	29.0	
8	236 30.8 138	13 21.1	65	286 49.1	1 11.1	217 56.6 -20	29.0	
10	265 36.5 138	13 34.1	64	316 53.0	1 10.7	248 1.3 -20	29.1	
12	294 42.0 137	13 46.9	63	346 57.0	1 10.2	278 6.1 -20	29.1	
14	323 47.4 137	13 59.5	62	17 .9	1 9.8	308 10.8 -20	29.2	
16	352 52.7 136	14 11.8	60	47 4.9	1 9.4	338 15.5 -20	29.2	
18	21 57.9 135	14 23.9	59	77 8.8	1 9.0	8 20.2 -20	29.3	
20	51 2.9 135	14 35.7	58	107 12.8	1 8.5	38 24.9 -20	29.3	
22	80 7.9 134	14 47.3	57	137 16.7	1 8.1	68 29.7 -20	29.3	
Δ				20	-2	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 58.4	.9	15.9	T _m 16 29	1.9	54.1	14.8
12	2 8.7	T _{m☉} 11 h 57.9 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	'	°	
♂	13 31	.1	171	-3.1	♄	12 52	.0	180	-1.2
	17 57	.1	104	-7	♅	17 27	.0	111	.7

8. SEPTEMBAR

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 34.7	5 36.5	347 29.1	157 8.3 - 3	34.3	90 51.0 -25	32.8
2	210 35.2	5 34.7	17 34.0	187 7.7 - 3	36.8	120 52.7 -25	33.0
4	240 35.6	5 32.8	47 38.9	217 7.0 - 3	39.4	150 54.3 -25	33.2
6	270 36.0	5 30.9	77 43.8	247 6.4 - 3	42.0	180 56.0 -25	33.4
8	300 36.5	5 29.0	107 48.8	277 5.7 - 3	44.5	210 57.7 -25	33.6
10	330 36.9	5 27.1	137 53.7	307 5.1 - 3	47.1	240 59.4 -25	33.9
12	0 37.3	5 25.2	167 58.6	337 4.4 - 3	49.7	271 1.0 -25	34.1
14	30 37.8	5 23.4	198 3.6	7 3.8 - 3	52.2	301 2.7 -25	34.3
16	60 38.2	5 21.5	228 8.5	37 3.1 - 3	54.8	331 4.3 -25	34.5
18	90 38.6	5 19.6	258 13.4	67 2.5 - 3	57.3	1 6.0 -25	34.7
20	120 39.1	5 17.7	288 18.3	97 1.9 - 3	59.9	31 7.7 -25	34.9
22	150 39.5	5 15.8	318 23.3	127 1.2 - 4	2.5	61 9.3 -25	35.1
Δ	2	-9		-3	-13	8	-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 12	18 41	0 43	2 41	9 4	1.3	0 34	2.7
55	5 20	18 34	0 37	2 13	9 26	1.5	0 13	2.5
50	5 26	18 28	0 33	1 55	9 43	1.6	.. ..	.0
45	5 31	18 24	0 30	1 42	9 56	1.6	.. ..	.0
40	5 35	18 20	0 27	1 33	10 7	1.7	.. ..	.0
35	5 38	18 16	0 26	1 26	10 17	1.7	.. ..	.0
30	5 41	18 14	0 24	1 21	10 25	1.8	.. ..	.0
20	5 46	18 9	0 22	1 14	10 40	1.8	23 53	2.1
10	5 50	18 5	0 21	1 10	10 52	1.9	23 39	2.0
0	5 54	18 1	0 21	1 9	11 4	2.0	23 27	2.0
10	5 58	17 57	0 21	1 10	11 16	2.0	23 14	2.0
20	6 2	17 53	0 22	1 13	11 29	2.1	23 1	1.9
30	6 7	17 49	0 24	1 19	11 43	2.1	22 45	1.9
35	6 9	17 47	0 25	1 24	11 52	2.2	22 36	1.8
40	6 12	17 44	0 27	1 30	12 2	2.2	22 26	1.8
45	6 15	17 41	0 29	1 38	12 13	2.3	22 14	1.7
50	6 19	17 37	0 32	1 48	12 27	2.4	21 59	1.7
55	6 23	17 33	0 36	2 1	12 45	2.4	21 41	1.6
60	6 29	17 27	0 42	2 20	13 8	2.6	21 17	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	109 12.6 133	14 58.6	55	167 20.7	1 7.7	98 34.4 -20	29.4	
2	138 17.3 133	15 9.7	54	197 24.6	1 7.3	128 39.1 -20	29.4	
4	167 21.8 132	15 20.5	53	227 28.6	1 6.8	158 43.8 -20	29.5	
6	196 26.1 131	15 31.1	51	257 32.6	1 6.4	188 48.5 -20	29.5	
8	225 30.4 130	15 41.3	50	287 36.5	1 6.0	218 53.2 -20	29.6	
10	254 34.5 130	15 51.3	49	317 40.5	1 5.6	248 57.9 -20	29.6	
12	283 38.4 129	16 1.1	47	347 44.4	1 5.1	279 2.7 -20	29.7	
14	312 42.2 128	16 10.5	46	17 48.4	1 4.7	309 7.4 -20	29.7	
16	341 45.8 127	16 19.7	44	47 52.3	1 4.3	339 12.1 -20	29.8	
18	10 49.3 127	16 28.6	43	77 56.3	1 3.9	9 16.8 -20	29.8	
20	39 52.6 126	16 37.1	41	108 .2	1 3.4	39 21.5 -20	29.9	
22	68 55.8 125	16 45.4	40	138 4.2	1 3.0	69 26.2 -20	29.9	
Δ				20	-2	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 19.0	.9	15.9	T _m 17 15	2.0	54.2	14.8
12	2 29.3	T _{m☉} 11 h 57.5 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	'	°	
♂	13 32	.1	170	-3.1	♄	12 49	.0	180	-1.2
	17 56	.1	103	-7	♅	17 23	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 39.9	5 13.9	348 28.2	157 .6 - 4 5.0	91 11.0 -25 35.4		
2	210 40.4	5 12.0	18 33.1	186 59.9 - 4 7.6	121 12.6 -25 35.6		
4	240 40.8	5 10.1	48 38.1	216 59.3 - 4 10.1	151 14.3 -25 35.8		
6	270 41.2	5 8.3	78 43.0	246 58.6 - 4 12.7	181 15.9 -25 36.0		
8	300 41.7	5 6.4	108 47.9	276 58.0 - 4 15.3	211 17.6 -25 36.2		
10	330 42.1	5 4.5	138 52.8	306 57.3 - 4 17.8	241 19.2 -25 36.4		
12	0 42.5	5 2.6	168 57.8	336 56.7 - 4 20.4	271 20.9 -25 36.6		
14	30 43.0	5 .7	199 2.7	6 56.0 - 4 22.9	301 22.5 -25 36.8		
16	60 43.4	4 58.8	229 7.6	36 55.4 - 4 25.5	331 24.1 -25 37.0		
18	90 43.8	4 56.9	259 12.6	66 54.7 - 4 28.0	1 25.8 -25 37.2		
20	120 44.3	4 55.0	289 17.5	96 54.1 - 4 30.6	31 27.4 -25 37.4		
22	150 44.7	4 53.1	319 22.4	126 53.4 - 4 33.1	61 29.0 -25 37.6		
Δ	2	-9		-3 -13	8 -1		

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	97 58.9	124 16 53.4	38	168 8.1	1 2.6	99 30.9	-20 30.0	
2	127 1.7	124 17 1.1	37	198 12.1	1 2.2	129 35.6	-20 30.0	
4	156 4.5	123 17 8.5	35	228 16.0	1 1.7	159 40.3	-20 30.0	
6	185 7.0	122 17 15.6	34	258 20.0	1 1.3	189 45.0	-20 30.1	
8	214 9.5	121 17 22.4	32	288 23.9	1 .9	219 49.7	-20 30.1	
10	243 11.7	121 17 28.8	31	318 27.9	1 .5	249 54.5	-20 30.2	
12	272 13.8	120 17 34.9	29	348 31.8	1 .0	279 59.2	-20 30.2	
14	301 15.8	119 17 40.7	27	18 35.8	0 59.6	310 3.9	-20 30.3	
16	330 17.6	118 17 46.2	26	48 39.7	0 59.2	340 8.6	-20 30.3	
18	359 19.2	117 17 51.4	24	78 43.7	0 58.8	10 13.3	-20 30.4	
20	28 20.7	117 17 56.2	22	108 47.6	0 58.3	40 18.0	-20 30.4	
22	57 22.0	116 18 .7	21	138 51.6	0 57.9	70 22.7	-20 30.5	
Δ				20	-2	24	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 15	18 38	0 43	2 40	9 35	1.7	1 38	2.5
55	5 22	18 31	0 37	2 12	10 1	1.8	1 13	2.4
50	5 27	18 26	0 33	1 54	10 20	1.8	0 54	2.3
45	5 32	18 22	0 30	1 42	10 35	1.9	0 40	2.2
40	5 36	18 18	0 27	1 33	10 48	1.9	0 28	2.2
35	5 39	18 15	0 25	1 26	10 58	1.9	0 17	2.2
30	5 41	18 12	0 24	1 21	11 8	1.9	0 8	2.1
20	5 46	18 8	0 22	1 14	11 24	2.0	...	.0
10	5 50	18 4	0 21	1 10	11 38	2.0	...	.0
0	5 54	18 0	0 21	1 9	11 51	2.0	...	.0
10	5 57	17 57	0 21	1 10	12 4	2.1	...	.0
20	6 1	17 53	0 22	1 13	12 19	2.1	23 46	2.0
30	6 5	17 49	0 24	1 19	12 35	2.1	23 30	2.0
35	6 8	17 47	0 25	1 24	12 44	2.1	23 20	2.0
40	6 10	17 45	0 27	1 30	12 55	2.2	23 9	2.0
45	6 13	17 42	0 29	1 38	13 8	2.2	22 56	2.0
50	6 17	17 39	0 32	1 48	13 24	2.2	22 40	2.0
55	6 21	17 34	0 36	2 1	13 43	2.3	22 20	1.9
60	6 26	17 29	0 42	2 20	14 10	2.3	21 52	1.9

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	2 39.7	.9	15.9	T _m 18 3	2.0	54.5	14.9
12	2 50.2	T _{m☉} 11 h 57.2 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	' / "	°	' / "
♂	13 32	.1	169	-3.1	♄	12 46	.0	180	-1.2
♂	17 54	.1	103	-7	♅	17 19	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 45.2	4 51.2	349 27.3	156 52.8 - 4 35.7	91 30.7 -25 37.8		
2	210 45.6	4 49.3	19 32.3	186 52.1 - 4 38.3	121 32.3 -25 38.0		
4	240 46.0	4 47.4	49 37.2	216 51.5 - 4 40.8	151 33.9 -25 38.2		
6	270 46.5	4 45.5	79 42.1	246 50.8 - 4 43.4	181 35.6 -25 38.4		
8	300 46.9	4 43.6	109 47.1	276 50.2 - 4 45.9	211 37.2 -25 38.6		
10	330 47.3	4 41.7	139 52.0	306 49.5 - 4 48.5	241 38.8 -25 38.8		
12	0 47.8	4 39.8	169 56.9	336 48.9 - 4 51.0	271 40.4 -25 39.0		
14	30 48.2	4 37.9	200 1.8	6 48.2 - 4 53.6	301 42.0 -25 39.2		
16	60 48.7	4 36.0	230 6.8	36 47.6 - 4 56.1	331 43.7 -25 39.4		
18	90 49.1	4 34.1	260 11.7	66 46.9 - 4 58.7	1 45.3 -25 39.5		
20	120 49.5	4 32.2	290 16.6	96 46.2 - 5 1.2	31 46.9 -25 39.7		
22	150 50.0	4 30.3	320 21.5	126 45.6 - 5 3.7	61 48.5 -25 39.9		
Δ	2	-9		-3 -13	8 -1		

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	86 23.2	115 18 4.8	19	168 55.5	0 57.5	100 27.4	-20 30.5	
2	115 24.2	114 18 8.6	17	198 59.5	0 57.1	130 32.1	-20 30.6	
4	144 25.0	114 18 12.0	15	229 3.4	0 56.6	160 36.8	-20 30.6	
6	173 25.8	113 18 15.1	14	259 7.4	0 56.2	190 41.5	-20 30.7	
8	202 26.3	112 18 17.9	12	289 11.3	0 55.8	220 46.2	-20 30.7	
10	231 26.7	111 18 20.3	10	319 15.3	0 55.4	250 50.9	-20 30.8	
12	260 27.0	111 18 22.3	8	349 19.2	0 54.9	280 55.6	-20 30.8	
14	289 27.1	110 18 24.0	7	19 23.2	0 54.5	311 .3	-20 30.9	
16	318 27.1	109 18 25.3	5	49 27.1	0 54.1	341 4.9	-20 30.9	
18	347 26.9	108 18 26.2	3	79 31.1	0 53.7	11 9.6	-20 31.0	
20	16 26.6	108 18 26.8	1	109 35.0	0 53.2	41 14.3	-20 31.0	
22	45 26.1	107 18 27.0	-1	139 39.0	0 52.8	71 19.0	-20 31.1	
Δ				20	-2	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	5 17	18 35	0 43	2 38	10 16	2.1	2 37	2.2
55	5 24	18 29	0 37	2 11	10 43	2.1	2 10	2.2
50	5 29	18 24	0 33	1 54	11 4	2.1	1 49	2.1
45	5 33	18 20	0 30	1 42	11 20	2.1	1 33	2.1
40	5 36	18 16	0 27	1 33	11 33	2.1	1 20	2.1
35	5 39	18 14	0 25	1 26	11 44	2.1	1 9	2.1
30	5 42	18 11	0 24	1 21	11 54	2.1	0 59	2.1
20	5 46	18 7	0 22	1 14	12 11	2.1	0 43	2.1
10	5 50	18 3	0 21	1 10	12 26	2.1	0 28	2.1
0	5 54	18 0	0 21	1 9	12 40	2.1	0 15	2.1
10	5 57	17 57	0 21	1 10	12 54	2.1	0 1	2.0
20	6 0	17 54	0 22	1 13	13 9	2.1	...	.0
30	6 4	17 50	0 24	1 19	13 26	2.1	...	.0
35	6 6	17 48	0 25	1 24	13 36	2.1	...	.0
40	6 9	17 46	0 27	1 30	13 47	2.1	23 57	2.2
45	6 11	17 43	0 29	1 38	14 1	2.1	23 43	2.2
50	6 14	17 40	0 32	1 48	14 17	2.1	23 27	2.3
55	6 18	17 36	0 36	2 1	14 38	2.0	23 6	2.3
60	6 23	17 32	0 42	2 21	15 6	2.0	22 37	2.3

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	3 .6	.9	15.9	T _m 18 52	2.1	55.0	15.0
12	3 11.2	T _{m☉} 11 h 56.8 min	Starost 8.6 d	Faza ☉			

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	' / "	°	' / "	♃	h min	' / "	°	' / "
♂	13 33	.1	167	-3.1	♄	12 43	.0	179	-1.2
♂	17 53	.1	102	-7	♅	17 15	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 50.4	4 28.4	350 26.5	156 44.9	- 5 6.3	91 50.1	-25 40.1
2	210 50.9	4 26.5	20 31.4	186 44.3	- 5 8.8	121 51.7	-25 40.3
4	240 51.3	4 24.6	50 36.3	216 43.6	- 5 11.4	151 53.3	-25 40.5
6	270 51.7	4 22.7	80 41.3	246 42.9	- 5 13.9	181 54.9	-25 40.7
8	300 52.2	4 20.8	110 46.2	276 42.3	- 5 16.5	211 56.5	-25 40.8
10	330 52.6	4 18.9	140 51.1	306 41.6	- 5 19.0	241 58.1	-25 41.0
12	0 53.1	4 17.0	170 56.0	336 41.0	- 5 21.6	271 59.7	-25 41.2
14	30 53.5	4 15.1	201 1.0	6 40.3	- 5 24.1	302 1.3	-25 41.4
16	60 54.0	4 13.2	231 5.9	36 39.6	- 5 26.6	332 2.9	-25 41.6
18	90 54.4	4 11.3	261 10.8	66 39.0	- 5 29.2	2 4.5	-25 41.7
20	120 54.8	4 9.4	291 15.8	96 38.3	- 5 31.7	32 6.1	-25 41.9
22	150 55.3	4 7.5	321 20.7	126 37.6	- 5 34.3	62 7.7	-25 42.1
Δ	2	-10		-3	-13	8	-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 19	18 32	0 43	2 37	11 6	2.6	3 29	1.8
55	5 26	18 26	0 37	2 10	11 34	2.5	3 1	1.9
50	5 30	18 22	0 33	1 53	11 54	2.4	2 41	2.0
45	5 34	18 18	0 30	1 41	12 11	2.4	2 24	2.0
40	5 37	18 15	0 27	1 32	12 24	2.3	2 11	2.0
35	5 40	18 12	0 25	1 26	12 35	2.3	1 60	2.0
30	5 43	18 10	0 24	1 21	12 45	2.3	1 50	2.1
20	5 47	18 6	0 22	1 14	13 2	2.2	1 33	2.1
10	5 50	18 3	0 21	1 10	13 16	2.2	1 18	2.1
0	5 53	17 60	0 21	1 9	13 30	2.1	1 4	2.1
10	5 56	17 57	0 21	1 10	13 44	2.1	0 50	2.1
20	5 59	17 54	0 22	1 13	13 59	2.1	0 35	2.2
30	6 3	17 51	0 24	1 19	14 16	2.0	0 18	2.2
35	6 5	17 49	0 25	1 24	14 26	2.0	0 8	2.2
40	6 7	17 47	0 27	1 30	14 37	2.0	...	...
45	6 9	17 44	0 29	1 38	14 50	1.9	...	...
50	6 12	17 42	0 32	1 48	15 6	1.9	...	...
55	6 16	17 38	0 36	2 2	15 27	1.8	...	...
60	6 20	17 34	0 41	2 21	15 55	1.7	23 33	2.8

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	74 25.5	106	18 26.8	-3	169 42.9	0 52.4	101 23.7	-20 31.1
2	103 24.8	106	18 26.3	-5	199 46.9	0 52.0	131 28.4	-20 31.2
4	132 23.9	105	18 25.4	-7	229 50.8	0 51.5	161 33.1	-20 31.2
6	161 22.9	104	18 24.0	-8	259 54.8	0 51.1	191 37.8	-20 31.3
8	190 21.8	104	18 22.4	-10	289 58.7	0 50.7	221 42.5	-20 31.3
10	219 20.6	103	18 20.3	-12	320 2.7	0 50.3	251 47.2	-20 31.4
12	248 19.2	102	18 17.8	-14	350 6.6	0 49.8	281 51.9	-20 31.4
14	277 17.7	102	18 15.0	-16	20 10.6	0 49.4	311 56.6	-20 31.5
16	306 16.1	101	18 11.7	-18	50 14.5	0 49.0	342 1.2	-20 31.5
18	335 14.3	101	18 8.1	-20	80 18.5	0 48.5	12 5.9	-20 31.6
20	4 12.5	100	18 4.1	-22	110 22.4	0 48.1	42 10.6	-20 31.6
22	33 10.5	100	17 59.6	-24	140 26.4	0 47.7	72 15.3	-20 31.7
Δ					20	-2	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	3 21.7	.9	15.9	T _m 19 43	2.1	55.6	15.1
12	3 32.3	T _{m☉} 11 h 56.5 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	' / "	°	' / "
♂	13 33	.1	166	-3.1	♃	12 39	.0	179	-1.2
♂	17 52	.1	101	-7	♄	17 12	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 55.7	4 5.6	351 25.6	156 37.0	- 5 36.8	92 9.2	-25 42.3
2	210 56.2	4 3.7	21 30.5	186 36.3	- 5 39.3	122 10.8	-25 42.4
4	240 56.6	4 1.8	51 35.5	216 35.7	- 5 41.9	152 12.4	-25 42.6
6	270 57.1	3 59.9	81 40.4	246 35.0	- 5 44.4	182 14.0	-25 42.8
8	300 57.5	3 57.9	111 45.3	276 34.3	- 5 46.9	212 15.6	-25 42.9
10	330 57.9	3 56.0	141 50.3	306 33.7	- 5 49.5	242 17.1	-25 43.1
12	0 58.4	3 54.1	171 55.2	336 33.0	- 5 52.0	272 18.7	-25 43.3
14	30 58.8	3 52.2	202 .1	6 32.3	- 5 54.5	302 20.3	-25 43.4
16	60 59.3	3 50.3	232 5.0	36 31.6	- 5 57.1	332 21.9	-25 43.6
18	90 59.7	3 48.4	262 10.0	66 31.0	- 5 59.6	2 23.4	-25 43.8
20	121 .2	3 46.5	292 14.9	96 30.3	- 6 2.1	32 25.0	-25 43.9
22	151 .6	3 44.6	322 19.8	126 29.6	- 6 4.7	62 26.6	-25 44.1
Δ	2	-10		-3	-13	8	-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 22	18 29	0 42	2 35	12 7	3.0	4 13	1.5
55	5 27	18 24	0 37	2 10	12 33	2.8	3 47	1.7
50	5 32	18 19	0 33	1 53	12 52	2.7	3 28	1.8
45	5 35	18 16	0 30	1 41	13 7	2.6	3 12	1.8
40	5 38	18 13	0 27	1 32	13 20	2.5	2 59	1.9
35	5 41	18 11	0 25	1 26	13 30	2.5	2 49	1.9
30	5 43	18 9	0 24	1 21	13 39	2.4	2 39	2.0
20	5 47	18 5	0 22	1 14	14 55	2.3	2 23	2.1
10	5 50	18 2	0 21	1 10	14 9	2.3	2 8	2.1
0	5 53	17 59	0 21	1 9	14 22	2.2	1 55	2.2
10	5 56	17 57	0 21	1 10	14 35	2.1	1 41	2.2
20	5 58	17 54	0 22	1 13	14 49	2.0	1 27	2.3
30	6 2	17 51	0 24	1 19	15 4	2.0	1 10	2.3
35	6 3	17 49	0 25	1 24	15 13	1.9	1 1	2.4
40	6 5	17 48	0 27	1 30	15 24	1.8	0 50	2.4
45	6 7	17 45	0 29	1 38	15 36	1.8	0 37	2.5
50	6 10	17 43	0 32	1 48	15 51	1.7	0 21	2.5
55	6 13	17 40	0 36	2 2	16 10	1.6	0 1	2.6
60	6 17	17 36	0 41	2 21	16 35	1.4	...	...

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	62 8.4	99	17 54.8	-26	170 30.3	0 47.3	102 20.0	-20 31.7
2	91 6.3	99	17 49.6	-28	200 34.3	0 46.8	132 24.7	-20 31.8
4	120 4.0	98	17 44.0	-30	230 38.2	0 46.4	162 29.4	-20 31.8
6	149 1.6	98	17 38.0	-32	260 42.2	0 46.0	192 34.0	-20 31.9
8	177 59.1	97	17 31.6	-34	290 46.1	0 45.6	222 38.7	-20 31.9
10	206 56.6	97	17 24.8	-36	320 50.0	0 45.1	252 43.4	-20 32.0
12	235 53.9	96	17 17.6	-38	350 54.0	0 44.7	282 48.1	-20 32.0
14	264 51.2	96	17 10.0	-40	20 57.9	0 44.3	312 52.8	-20 32.1
16	293 48.4	95	17 2.0	-42	51 1.9	0 43.9	342 57.4	-20 32.1
18	322 45.4	95	16 53.7	-44	81 5.8	0 43.4	13 2.1	-20 32.2
20	351 42.5	95	16 44.9	-46	111 9.8	0 43.0	43 6.8	-20 32.2
22	20 39.4	94	16 35.7	-48	141 13.7	0 42.6	73 11.5	-20 32.3
Δ					20	-2	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	3 42.9	.9	15.9	T _m 20 34	2.2	56.3	15.4
12	3 53.5	T _{m☉} 11 h 56.1 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	' / "	°	' / "
♂	13 34	.1	165	-3.1	♃</				

UT	SUNCE			PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'				
0	181	1.0	3	42.7	352	24.8	156	29.0	-6	7.2	92	28.1	-25	44.2
2	211	1.5	3	40.7	22	29.7	186	28.3	-6	9.7	122	29.7	-25	44.4
4	241	1.9	3	38.8	52	34.6	216	27.6	-6	12.2	152	31.2	-25	44.6
6	271	2.4	3	36.9	82	39.5	246	26.9	-6	14.8	182	32.8	-25	44.7
8	301	2.8	3	35.0	112	44.5	276	26.3	-6	17.3	212	34.4	-25	44.9
10	331	3.3	3	33.1	142	49.4	306	25.6	-6	19.8	242	35.9	-25	45.0
12	1	3.7	3	31.2	172	54.3	336	24.9	-6	22.3	272	37.5	-25	45.2
14	31	4.2	3	29.2	202	59.3	6	24.2	-6	24.9	302	39.0	-25	45.3
16	61	4.6	3	27.3	233	4.2	36	23.5	-6	27.4	332	40.6	-25	45.5
18	91	5.1	3	25.4	263	9.1	66	22.9	-6	29.9	2	42.1	-25	45.6
20	121	5.5	3	23.5	293	14.0	96	22.2	-6	32.4	32	43.6	-25	45.8
22	151	5.9	3	21.6	323	19.0	126	21.5	-6	34.9	62	45.2	-25	45.9
Δ		2		-10				-3		-13		8		-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 24	18 26	0 42	2 34	13 19	3.3	4 50	1.2
55	5 29	18 21	0 37	2 9	13 40	3.1	4 27	1.4
50	5 33	18 17	0 33	1 52	13 57	2.9	4 10	1.6
45	5 37	18 14	0 30	1 41	14 10	2.8	3 56	1.7
40	5 39	18 12	0 27	1 32	14 20	2.7	3 45	1.8
35	5 42	18 9	0 25	1 26	14 29	2.6	3 35	1.8
30	5 44	18 7	0 24	1 20	14 37	2.5	3 27	1.9
20	5 47	18 4	0 22	1 14	14 51	2.4	3 12	2.0
10	5 50	18 1	0 21	1 10	15 3	2.3	2 59	2.1
0	5 53	17 59	0 21	1 9	15 14	2.2	2 47	2.2
10	5 55	17 57	0 21	1 10	15 26	2.1	2 35	2.3
20	5 58	17 54	0 22	1 13	15 38	2.0	2 22	2.4
30	6 0	17 52	0 24	1 19	15 51	1.9	2 7	2.5
35	6 2	17 50	0 25	1 24	15 59	1.8	1 58	2.5
40	6 4	17 49	0 27	1 30	16 8	1.7	1 48	2.6
45	6 6	17 47	0 29	1 38	16 19	1.6	1 36	2.7
50	6 8	17 44	0 32	1 48	16 31	1.5	1 22	2.8
55	6 11	17 42	0 36	2 2	16 47	1.3	1 4	2.9
60	6 14	17 39	0 41	2 21	17 8	1.1	0 39	3.1

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	49	36.3	94	16	26.1	-50	171	17.7	0	42.1	103	16.2	-20	32.3
2	78	33.1	94	16	16.2	-52	201	21.6	0	41.7	133	20.8	-20	32.4
4	107	29.8	93	16	5.8	-54	231	25.6	0	41.3	163	25.5	-20	32.4
6	136	26.4	93	15	55.1	-56	261	29.5	0	40.9	193	30.2	-20	32.5
8	165	23.0	93	15	44.0	-58	291	33.5	0	40.4	223	34.9	-20	32.5
10	194	19.6	92	15	32.4	-59	321	37.4	0	40.0	253	39.5	-20	32.6
12	223	16.1	92	15	20.5	-61	351	41.3	0	39.6	283	44.2	-20	32.6
14	252	12.5	92	15	8.3	-63	21	45.3	0	39.2	313	48.9	-20	32.7
16	281	8.9	92	14	55.6	-65	51	49.2	0	38.7	343	53.5	-20	32.7
18	310	5.2	91	14	42.6	-67	81	53.2	0	38.3	13	58.2	-20	32.8
20	339	1.5	91	14	29.2	-69	111	57.1	0	37.9	44	2.9	-20	32.8
22	7	57.8	91	14	15.4	-71	142	1.1	0	37.4	74	7.6	-20	32.9
Δ								20		-2		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	4 4.2	.9	15.9	T _m	21 27	2.2	57.2	15.6
12	4 14.9	T _{m☉}	11 h 55.8 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	'	°	
♂	13 34	.1	164	-3.2	♄	12 33	.0	179	-1.2
♂	17 49	.1	100	-.6	♂	17 4	.0	111	.7

UT	SUNCE			PROLEĆ. TAČKA S _γ	VENERA			MARS						
	S _☉	δ _☉			S _♀	δ _♀		S _♂	δ _♂					
h	°	'	°	'	°	'	°	'	°	'				
0	181	6.4	3	19.7	353	23.9	156	20.8	-6	37.5	92	46.7	-25	46.1
2	211	6.8	3	17.7	23	28.8	186	20.1	-6	40.0	122	48.3	-25	46.2
4	241	7.3	3	15.8	53	33.7	216	19.5	-6	42.5	152	49.8	-25	46.4
6	271	7.7	3	13.9	83	38.7	246	18.8	-6	45.0	182	51.3	-25	46.5
8	301	8.2	3	12.0	113	43.6	276	18.1	-6	47.5	212	52.9	-25	46.6
10	331	8.6	3	10.1	143	48.5	306	17.4	-6	50.0	242	54.4	-25	46.8
12	1	9.1	3	8.1	173	53.5	336	16.7	-6	52.5	272	55.9	-25	46.9
14	31	9.5	3	6.2	203	58.4	6	16.0	-6	55.1	302	57.5	-25	47.1
16	61	10.0	3	4.3	234	3.3	36	15.3	-6	57.6	332	59.0	-25	47.2
18	91	10.4	3	2.4	264	8.2	66	14.7	-7	.1	3	.5	-25	47.3
20	121	10.9	3	.4	294	13.2	96	14.0	-7	2.6	33	2.1	-25	47.5
22	151	11.3	2	58.5	324	18.1	126	13.3	-7	5.1	63	3.6	-25	47.6
Δ		2		-10				-3		-13		8		-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 26	18 23	0 42	2 33	14 37	3.5	5 20	1.0
55	5 31	18 19	0 37	2 8	14 54	3.3	5 2	1.3
50	5 35	18 15	0 32	1 52	15 7	3.1	4 48	1.4
45	5 38	18 12	0 29	1 40	15 17	2.9	4 37	1.6
40	5 40	18 10	0 27	1 32	15 25	2.8	4 28	1.7
35	5 42	18 8	0 25	1 25	15 32	2.7	4 20	1.8
30	5 44	18 6	0 24	1 20	15 38	2.6	4 13	1.8
20	5 47	18 3	0 22	1 14	15 49	2.5	4 0	2.0
10	5 50	18 1	0 21	1 10	15 58	2.3	3 50	2.1
0	5 52	17 59	0 21	1 9	16 7	2.2	3 40	2.2
10	5 54	17 57	0 21	1 10	16 16	2.1	3 29	2.3
20	5 57	17 54	0 22	1 13	16 26	2.0	3 19	2.4
30	5 59	17 52	0 24	1 19	16 36	1.8	3 6	2.6
35	6 0	17 51	0 25	1 24	16 42	1.7	2 59	2.7
40	6 2	17 49	0 27	1 30	16 49	1.6	2 51	2.8
45	6 4	17 48	0 29	1 38	16 58	1.5	2 41	2.9
50	6 6	17 46	0 32	1 48	17 7	1.4	2 29	3.0
55	6 8	17 44	0 36	2 2	17 19	1.2	2 14	3.2
60	6 11	17 41	0 41	2 22	17 35	1.0	1 55	3.4

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	36	54.0	91	14	1.3	-73	172	5.0	0	37.0	104	12.2	-20	32.9
2	65	50.1	91	13	46.8	-74	202	9.0	0	36.6	134	16.9	-20	33.0
4	94	46.3	90	13	31.9	-76	232	12.9	0	36.2	164	21.6	-20	33.0
6	123	42.3	90	13	16.7	-78	262	16.9	0	35.7	194	26.2	-20	33.1
8	152	38.4	90	13	1.1	-80	292	20.8	0	35.3	224	30.9	-20	33.1
10	181	34.4	90	12	45.2	-81	322	24.7	0	34.9	254	35.6	-20	33.2
12	210	30.4	90	12	29.0	-83	352	28.7	0	34.5	284	40.2	-20	33.2
14	239	26.4	90	12	12.4	-85	22	32.6	0	34.0	314	44.9	-20	33.3
16	268	22.3	90	11	55.5	-86	52	36.6	0	33.6	344	49.6	-20	33.3
18	297	18.2	89	11	38.3	-88	82	40.5	0	33.2	14	54.2	-20	33.4
20	326	14.1	89	11	20.7	-89	112	44.5	0	32.7	44	58.9	-20	33.5
22	355	9.9	89	11	2.9	-91	142	48.4	0	32.3	75	3.5	-20	33.5
Δ								20		-2		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	4 25.6	.9	15.9	T _m	22 20	2.2	58.1	15.8
12	4 36.3	T _{m☉}	11 h 55.4 min	Starost	12.6 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	181 11.8	2 56.6	354 23.0	156 12.6	- 7 7.6	93 5.1	-25 47.7
2	211 12.2	2 54.7	24 28.0	186 11.9	- 7 10.1	123 6.6	-25 47.9
4	241 12.7	2 52.8	54 32.9	216 11.2	- 7 12.6	153 8.1	-25 48.0
6	271 13.1	2 50.8	84 37.8	246 10.5	- 7 15.1	183 9.7	-25 48.1
8	301 13.5	2 48.9	114 42.7	276 9.8	- 7 17.6	213 11.2	-25 48.2
10	331 14.0	2 47.0	144 47.7	306 9.1	- 7 20.1	243 12.7	-25 48.4
12	1 14.4	2 45.1	174 52.6	336 8.4	- 7 22.6	273 14.2	-25 48.5
14	31 14.9	2 43.1	204 57.5	6 7.7	- 7 25.1	303 15.7	-25 48.6
16	61 15.3	2 41.2	235 2.5	36 7.0	- 7 27.6	333 17.2	-25 48.7
18	91 15.8	2 39.3	265 7.4	66 6.3	- 7 30.1	3 18.7	-25 48.9
20	121 16.2	2 37.3	295 12.3	96 5.6	- 7 32.6	33 20.2	-25 49.0
22	151 16.7	2 35.4	325 17.2	126 4.9	- 7 35.1	63 21.7	-25 49.1
Δ	2	-10		-3	-12	8	-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 29	18 20	0 42	2 32	16 2	3.7	5 45	.9
55	5 33	18 16	0 36	2 8	16 12	3.4	5 32	1.1
50	5 36	18 13	0 32	1 52	16 20	3.2	5 22	1.3
45	5 39	18 10	0 29	1 40	16 27	3.0	5 14	1.5
40	5 41	18 8	0 27	1 32	16 33	2.9	5 8	1.6
35	5 43	18 6	0 25	1 25	16 37	2.8	5 2	1.7
30	5 45	18 5	0 24	1 20	16 41	2.7	4 57	1.8
20	5 47	18 2	0 22	1 14	16 49	2.5	4 48	2.0
10	5 50	18 0	0 21	1 10	16 55	2.4	4 40	2.1
0	5 52	17 58	0 21	1 9	17 1	2.2	4 33	2.2
10	5 54	17 56	0 21	1 10	17 7	2.1	4 25	2.4
20	5 56	17 55	0 22	1 13	17 13	1.9	4 17	2.5
30	5 58	17 53	0 24	1 19	17 20	1.8	4 8	2.7
35	5 59	17 52	0 25	1 24	17 24	1.7	4 3	2.8
40	6 0	17 50	0 27	1 30	17 29	1.6	3 57	2.9
45	6 2	17 49	0 29	1 38	17 34	1.4	3 50	3.0
50	6 4	17 47	0 32	1 48	17 40	1.3	3 41	3.1
55	6 6	17 46	0 36	2 2	17 48	1.1	3 31	3.3
60	6 8	17 43	0 41	2 22	17 58	.9	3 17	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	24 5.7	89 10	44.7	-92	172 52.3	0 31.9	105 8.2	-20 33.6
2	53 1.5	89 10	26.2	-94	202 56.3	0 31.5	135 12.9	-20 33.6
4	81 57.3	89 10	7.5	-95	233 .2	0 31.0	165 17.5	-20 33.7
6	110 53.1	89 9	48.5	-97	263 4.2	0 30.6	195 22.2	-20 33.7
8	139 48.8	88 9	29.1	-98	293 8.1	0 30.2	225 26.8	-20 33.8
10	168 44.5	88 9	9.6	-99	323 12.1	0 29.8	255 31.5	-20 33.8
12	197 40.2	88 8	49.7	-101	353 16.0	0 29.3	285 36.2	-20 33.9
14	226 35.8	88 8	29.6	-102	23 20.0	0 28.9	315 40.8	-20 33.9
16	255 31.4	88 8	9.3	-103	53 23.9	0 28.5	345 45.5	-20 34.0
18	284 27.0	88 7	48.7	-104	83 27.8	0 28.0	15 50.1	-20 34.0
20	313 22.6	88 7	27.8	-105	113 31.8	0 27.6	45 54.8	-20 34.1
22	342 18.1	88 7	6.8	-106	143 35.7	0 27.2	75 59.4	-20 34.1
Δ					20	-2	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	4 47.0	.9	15.9	T _m	23 13	2.2	58.9 16.1
12	4 57.8	T _{m☉}	11 h 55.0 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	'	°	
♂	13 35	.1	162	-3.2	♄	12 27	.0	178	-1.2
♂	17 47	.1	99	-.6	♂	16 57	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 17.1	2 33.5	355 22.2	156 4.2	- 7 37.6	93 23.2	-25 49.2
2	211 17.6	2 31.6	25 27.1	186 3.5	- 7 40.1	123 24.7	-25 49.3
4	241 18.0	2 29.6	55 32.0	216 2.8	- 7 42.6	153 26.2	-25 49.5
6	271 18.5	2 27.7	85 37.0	246 2.1	- 7 45.1	183 27.7	-25 49.6
8	301 18.9	2 25.8	115 41.9	276 1.4	- 7 47.5	213 29.2	-25 49.7
10	331 19.4	2 23.8	145 46.8	306 .7	- 7 50.0	243 30.7	-25 49.8
12	1 19.8	2 21.9	175 51.7	335 60.0	- 7 52.5	273 32.2	-25 49.9
14	31 20.3	2 20.0	205 56.7	5 59.3	- 7 55.0	303 33.7	-25 50.0
16	61 20.7	2 18.1	236 1.6	35 58.6	- 7 57.5	333 35.2	-25 50.1
18	91 21.2	2 16.1	266 6.5	65 57.9	- 7 60.0	3 36.7	-25 50.2
20	121 21.6	2 14.2	296 11.5	95 57.2	- 8 2.5	33 38.1	-25 50.3
22	151 22.1	2 12.3	326 16.4	125 56.4	- 8 4.9	63 39.6	-25 50.4
Δ	2	-10		-4	-12	7	-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 31	18 17	0 42	2 31	17 29	2.9	6 7	.8
55	5 35	18 13	0 36	2 7	17 34	2.8	5 60	1.1
50	5 38	18 11	0 32	1 51	17 37	2.7	5 54	1.3
45	5 40	18 8	0 29	1 40	17 40	2.6	5 50	1.4
40	5 42	18 7	0 27	1 32	17 42	2.5	5 46	1.6
35	5 44	18 5	0 25	1 25	17 44	2.5	5 43	1.7
30	5 45	18 4	0 24	1 20	17 46	2.5	5 40	1.8
20	5 48	18 1	0 22	1 13	17 49	2.4	5 35	1.9
10	5 50	17 60	0 21	1 10	17 52	2.3	5 30	2.1
0	5 51	17 58	0 21	1 9	17 54	2.3	5 26	2.2
10	5 53	17 56	0 21	1 10	17 57	2.2	5 22	2.4
20	5 55	17 55	0 22	1 13	17 60	2.1	5 17	2.5
30	5 57	17 53	0 24	1 20	18 3	2.1	5 12	2.7
35	5 58	17 52	0 25	1 24	18 4	2.0	5 9	2.8
40	5 59	17 51	0 27	1 30	18 6	2.0	5 6	2.9
45	5 60	17 50	0 29	1 38	18 9	1.9	5 2	3.1
50	6 1	17 49	0 32	1 49	18 11	1.9	4 57	3.2
55	6 3	17 47	0 36	2 3	18 15	1.8	4 51	3.4
60	6 5	17 45	0 41	2 23	18 19	1.7	4 43	3.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	11 13.7	87 6	45.5	-107	173 39.7	0 26.8	106 4.1	-20 34.2
2	40 9.2	87 6	24.1	-108	203 43.6	0 26.3	136 8.8	-20 34.3
4	69 4.6	87 6	2.4	-109	233 47.6	0 25.9	166 13.4	-20 34.3
6	98 .0	87 5	40.6	-110	263 51.5	0 25.5	196 18.1	-20 34.4
8	126 55.4	87 5	18.6	-111	293 55.4	0 25.0	226 22.7	-20 34.4
10	155 50.8	87 4	56.4	-112	323 59.4	0 24.6	256 27.4	-20 34.5
12	184 46.1	86 4	34.0	-112	354 3.3	0 24.2	286 32.0	-20 34.5
14	213 41.4	86 4	11.5	-113	24 7.3	0 23.8	316 36.7	-20 34.6
16	242 36.7	86 3	48.9	-114	54 11.2	0 23.3	346 41.3	-20 34.6
18	271 31.9	86 3	26.2	-114	84 15.1	0 22.9	16 46.0	-20 34.7
20	300 27.1	86 3	3.3	-115	114 19.1	0 22.5	46 50.6	-20 34.7
22	329 22.2	85 2	40.3	-115	144 23.0	0 22.1	76 55.3	-20 34.8
Δ					20	-2	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	5 8.5	.9	15.9	T _m	.. .	1.0	59.6 16.3
12	5 19.3	T _{m☉}	11 h 54.7 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	'	°	
♂	13 36	.1	161	-3.2	♄	12 24	.0	178	-1.2
♂	17 46	.1	98	-.6	♂	16 53	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 22.5	2 10.3	356 21.3	155 55.7	- 8 7.4	93 41.1	-25 50.5
2	211 23.0	2 8.4	26 26.2	185 55.0	- 8 9.9	123 42.6	-25 50.6
4	241 23.4	2 6.5	56 31.2	215 54.3	- 8 12.4	153 44.1	-25 50.7
6	271 23.9	2 4.5	86 36.1	245 53.6	- 8 14.9	183 45.5	-25 50.8
8	301 24.3	2 2.6	116 41.0	275 52.9	- 8 17.3	213 47.0	-25 50.9
10	331 24.8	2 .7	146 46.0	305 52.1	- 8 19.8	243 48.5	-25 51.0
12	1 25.2	1 58.7	176 50.9	335 51.4	- 8 22.3	273 50.0	-25 51.1
14	31 25.7	1 56.8	206 55.8	5 50.7	- 8 24.8	303 51.4	-25 51.2
16	61 26.1	1 54.9	237 .7	35 50.0	- 8 27.2	333 52.9	-25 51.3
18	91 26.5	1 52.9	267 5.7	65 49.3	- 8 29.7	3 54.4	-25 51.4
20	121 27.0	1 51.0	297 10.6	95 48.5	- 8 32.2	33 55.8	-25 51.5
22	151 27.4	1 49.1	327 15.5	125 47.8	- 8 34.6	63 57.3	-25 51.6
Δ	2	-10		-4	-12	7	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 33	18 14	0 42	2 30	18 38	.9	6 27	3.1
55	5 37	18 11	0 36	2 7	18 40	1.1	6 26	3.0
50	5 39	18 8	0 32	1 51	18 41	1.3	6 25	2.8
45	5 41	18 6	0 29	1 40	18 43	1.5	6 24	2.8
40	5 43	18 5	0 27	1 31	18 43	1.6	6 23	2.7
35	5 45	18 4	0 25	1 25	18 44	1.7	6 23	2.6
30	5 46	18 2	0 24	1 20	18 45	1.8	6 22	2.5
20	5 48	18 1	0 22	1 13	18 46	2.0	6 21	2.4
10	5 50	17 59	0 21	1 10	18 47	2.1	6 21	2.3
0	5 51	17 58	0 21	1 9	18 48	2.3	6 20	2.3
10	5 52	17 56	0 21	1 10	18 49	2.4	6 19	2.2
20	5 54	17 55	0 22	1 13	18 51	2.6	6 18	2.1
30	5 55	17 54	0 24	1 20	18 52	2.8	6 17	2.0
35	5 56	17 53	0 25	1 24	18 53	2.9	6 17	1.9
40	5 57	17 52	0 27	1 30	18 54	3.0	6 16	1.9
45	5 58	17 51	0 29	1 38	18 55	3.1	6 15	1.8
50	5 59	17 50	0 32	1 49	18 56	3.3	6 14	1.7
55	6 0	17 49	0 36	2 3	18 58	3.5	6 13	1.6
60	6 2	17 48	0 41	2 23	18 60	3.7	6 12	1.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	358 17.3	85	2 17.2	-116	174 27.0	0 21.6	106 59.9	-20 34.8
2	27 12.4	85	1 54.1	-116	204 30.9	0 21.2	137 4.5	-20 34.9
4	56 7.3	85	1 30.9	-116	234 34.9	0 20.8	167 9.2	-20 35.0
6	85 2.3	84	1 7.6	-117	264 38.8	0 20.3	197 13.8	-20 35.0
8	113 57.2	84	0 44.2	-117	294 42.7	0 19.9	227 18.5	-20 35.1
10	142 52.0	84	0 20.8	-91	324 46.7	0 19.5	257 23.1	-20 35.1
12	171 46.8	84	0 2.6	117	354 50.6	0 19.1	287 27.8	-20 35.2
14	200 41.5	83	0 26.0	117	24 54.6	0 18.6	317 32.4	-20 35.2
16	229 36.2	83	0 49.5	117	54 58.5	0 18.2	347 37.1	-20 35.3
18	258 30.8	83	1 12.9	117	85 2.4	0 17.8	17 41.7	-20 35.3
20	287 25.3	82	1 36.3	117	115 6.4	0 17.3	47 46.3	-20 35.4
22	316 19.8	82	1 59.7	117	145 10.3	0 16.9	77 51.0	-20 35.4
Δ					20	-2	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	5 30.1	.9	15.9	T _m	0 7	2.3	60.2 16.4
12	5 40.8	T _{m☉}	11 h 54.3 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	'	°	
♂	13 37	.1	160	-3.2	♄	12 21	.0	178	-1.2
♂	17 44	.1	97	-6	♂	16 49	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 27.9	1 47.1	357 20.4	155 47.1	- 8 37.1	93 58.7	-25 51.7
2	211 28.3	1 45.2	27 25.4	185 46.4	- 8 39.6	124 .2	-25 51.8
4	241 28.8	1 43.3	57 30.3	215 45.6	- 8 42.0	154 1.7	-25 51.8
6	271 29.2	1 41.3	87 35.2	245 44.9	- 8 44.5	184 3.1	-25 51.9
8	301 29.7	1 39.4	117 40.2	275 44.2	- 8 46.9	214 4.6	-25 52.0
10	331 30.1	1 37.4	147 45.1	305 43.5	- 8 49.4	244 6.0	-25 52.1
12	1 30.6	1 35.5	177 50.0	335 42.7	- 8 51.9	274 7.5	-25 52.2
14	31 31.0	1 33.6	207 54.9	5 42.0	- 8 54.3	304 8.9	-25 52.3
16	61 31.5	1 31.6	237 59.9	35 41.3	- 8 56.8	334 10.4	-25 52.3
18	91 31.9	1 29.7	268 4.8	65 40.5	- 8 59.2	4 11.8	-25 52.4
20	121 32.4	1 27.8	298 9.7	95 39.8	- 9 1.7	34 13.3	-25 52.5
22	151 32.8	1 25.8	328 14.7	125 39.0	- 9 4.1	64 14.7	-25 52.6
Δ	2	-10		-4	-12	7	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 36	18 11	0 42	2 29	18 60	1.0	7 42	3.8
55	5 39	18 8	0 36	2 6	19 7	1.2	7 37	3.5
50	5 41	18 6	0 32	1 51	19 13	1.4	7 33	3.3
45	5 43	18 5	0 29	1 40	19 18	1.5	7 30	3.1
40	5 44	18 3	0 27	1 31	19 22	1.7	7 27	3.0
35	5 45	18 2	0 25	1 25	19 25	1.8	7 25	2.9
30	5 46	18 1	0 24	1 20	19 28	1.9	7 23	2.8
20	5 48	17 60	0 22	1 13	19 34	2.0	7 20	2.6
10	5 49	17 58	0 21	1 10	19 39	2.2	7 17	2.4
0	5 51	17 57	0 21	1 9	19 43	2.3	7 14	2.3
10	5 52	17 56	0 21	1 10	19 48	2.5	7 11	2.2
20	5 53	17 55	0 22	1 13	19 53	2.6	7 9	2.0
30	5 54	17 54	0 24	1 20	19 58	2.8	7 5	1.8
35	5 55	17 54	0 25	1 24	20 1	2.9	7 3	1.7
40	5 55	17 53	0 27	1 30	20 5	3.0	7 1	1.6
45	5 56	17 53	0 29	1 38	20 9	3.1	6 58	1.5
50	5 57	17 52	0 32	1 49	20 15	3.3	6 55	1.3
55	5 58	17 51	0 36	2 3	20 21	3.5	6 52	1.1
60	5 59	17 50	0 42	2 24	20 29	3.7	6 47	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	345 14.2	82	2 23.1	117	175 14.3	0 16.5	107 55.6	-20 35.5
2	14 8.5	81	2 46.4	116	205 18.2	0 16.1	138 .3	-20 35.6
4	43 2.8	81	3 9.6	116	235 22.1	0 15.6	168 4.9	-20 35.6
6	71 57.0	81	3 32.8	115	265 26.1	0 15.2	198 9.5	-20 35.7
8	100 51.1	80	3 55.9	115	295 30.0	0 14.8	228 14.2	-20 35.7
10	129 45.1	80	4 18.9	114	325 34.0	0 14.3	258 18.8	-20 35.8
12	158 39.1	79	4 41.8	114	355 37.9	0 13.9	288 23.4	-20 35.8
14	187 32.9	79	5 4.6	113	25 41.8	0 13.5	318 28.1	-20 35.9
16	216 26.7	79	5 27.2	112	55 45.8	0 13.1	348 32.7	-20 35.9
18	245 20.4	78	5 49.7	112	85 49.7	0 12.6	18 37.3	-20 36.0
20	274 14.0	78	6 12.1	111	115 53.7	0 12.2	48 42.0	-20 36.1
22	303 7.6	77	6 34.2	110	145 57.6	0 11.8	78 46.6	-20 36.1
Δ					20	-2	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	5 51.6	.9	15.9	T _m	1 1	2.3	60.5 16.5
12	6 2.3	T _{m☉}	11 h 54.0 min	Starost	16.6 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 37	.1	158	-3.2	♄	12 17	.0	178	-1.2
♂	17 43	.1	97	-6	♂	16 46	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 33.3	1 23.9	358 19.6	155 38.3	-9 6.6	94 16.2	-25 52.6
2	211 33.7	1 21.9	28 24.5	185 37.6	-9 9.0	124 17.6	-25 52.7
4	241 34.2	1 20.0	58 29.4	215 36.8	-9 11.5	154 19.0	-25 52.8
6	271 34.6	1 18.1	88 34.4	245 36.1	-9 13.9	184 20.5	-25 52.8
8	301 35.0	1 16.1	118 39.3	275 35.3	-9 16.4	214 21.9	-25 52.9
10	331 35.5	1 14.2	148 44.2	305 34.6	-9 18.8	244 23.4	-25 53.0
12	1 35.9	1 12.3	178 49.2	335 33.9	-9 21.3	274 24.8	-25 53.0
14	31 36.4	1 10.3	208 54.1	5 33.1	-9 23.7	304 26.2	-25 53.1
16	61 36.8	1 8.4	238 59.0	35 32.4	-9 26.1	334 27.7	-25 53.2
18	91 37.3	1 6.4	269 3.9	65 31.6	-9 28.6	4 29.1	-25 53.2
20	121 37.7	1 4.5	299 8.9	95 30.9	-9 31.0	34 30.5	-25 53.3
22	151 38.2	1 2.6	329 13.8	125 30.1	-9 33.4	64 31.9	-25 53.3
Δ	2	-10		-4	-12	7	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 8	0 42	2 28	19 23	1.1	9 12	3.7
55	5 40	18 6	0 36	2 6	19 36	1.4	9 0	3.4
50	5 42	18 4	0 32	1 50	19 47	1.5	8 52	3.2
45	5 44	18 3	0 29	1 39	19 55	1.7	8 45	3.1
40	5 45	18 2	0 27	1 31	20 2	1.8	8 39	3.0
35	5 46	18 1	0 25	1 25	20 8	1.9	8 34	2.9
30	5 47	17 60	0 24	1 20	20 13	2.0	8 30	2.8
20	5 48	17 59	0 22	1 13	20 23	2.1	8 22	2.6
10	5 49	17 58	0 21	1 10	20 31	2.2	8 16	2.5
0	5 50	17 57	0 21	1 9	20 39	2.4	8 9	2.3
10	5 51	17 56	0 21	1 10	20 47	2.5	8 3	2.2
20	5 52	17 55	0 22	1 13	20 55	2.6	7 57	2.1
30	5 53	17 55	0 24	1 20	21 5	2.7	7 49	1.9
35	5 53	17 54	0 25	1 24	21 10	2.8	7 45	1.8
40	5 54	17 54	0 27	1 31	21 17	2.9	7 40	1.7
45	5 54	17 54	0 29	1 39	21 24	3.0	7 34	1.6
50	5 55	17 53	0 32	1 49	21 33	3.2	7 28	1.5
55	5 55	17 53	0 36	2 4	21 44	3.4	7 19	1.3
60	5 56	17 52	0 42	2 24	21 59	3.6	7 9	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	332 1.0	77 6	56.3	109	176 1.5	0 11.3	108 51.2	-20 36.2
2	0 54.4	76 7	18.1	108	206 5.5	0 10.9	138 55.9	-20 36.2
4	29 47.7	76 7	39.7	107	236 9.4	0 10.5	169 5.5	-20 36.3
6	58 40.8	75 8	1.1	106	266 13.4	0 10.1	199 5.1	-20 36.3
8	87 33.9	75 8	22.3	105	296 17.3	0 9.6	229 9.8	-20 36.4
10	116 26.9	75 8	43.3	104	326 21.2	0 9.2	259 14.4	-20 36.4
12	145 19.9	74 9	4.0	102	356 25.2	0 8.8	289 19.0	-20 36.5
14	174 12.7	74 9	24.5	101	26 29.1	0 8.4	319 23.6	-20 36.6
16	203 5.4	73 9	44.8	100	56 33.1	0 7.9	349 28.3	-20 36.6
18	231 58.1	73 10	4.7	98	86 37.0	0 7.5	19 32.9	-20 36.7
20	260 50.6	72 10	24.4	97	116 40.9	0 7.1	49 37.5	-20 36.7
22	289 43.1	72 10	43.8	96	146 44.9	0 6.6	79 42.1	-20 36.8
Δ					20	-2	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	6 13.0	.9	15.9	T _m	1 56	2.3	60.6	16.5	
12	6 23.8	T _{m☉}	11 h 53.6 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	'	°	
♁	13 38	.1	157	-3.2	♃	12 14	.0	178	-1.2
♂	17 42	.1	96	-6	♄	16 42	.0	111	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 38.6	1 1.6	359 18.7	155 29.4	-9 35.9	94 33.4	-25 53.4
2	211 39.1	0 58.7	29 23.7	185 28.6	-9 38.3	124 34.8	-25 53.5
4	241 39.5	0 56.7	59 28.6	215 27.8	-9 40.7	154 36.2	-25 53.5
6	271 40.0	0 54.8	89 33.5	245 27.1	-9 43.2	184 37.6	-25 53.6
8	301 40.4	0 52.8	119 38.4	275 26.3	-9 45.6	214 39.0	-25 53.6
10	331 40.8	0 50.9	149 43.4	305 25.6	-9 48.0	244 40.5	-25 53.7
12	1 41.3	0 49.0	179 48.3	335 24.8	-9 50.5	274 41.9	-25 53.7
14	31 41.7	0 47.0	209 53.2	5 24.1	-9 52.9	304 43.3	-25 53.8
16	61 42.2	0 45.1	239 58.2	35 23.3	-9 55.3	334 44.7	-25 53.8
18	91 42.6	0 43.1	270 3.1	65 22.5	-9 57.7	4 46.1	-25 53.9
20	121 43.1	0 41.2	300 8.0	95 21.8	-10 .1	34 47.5	-25 53.9
22	151 43.5	0 39.2	330 12.9	125 21.0	-10 2.6	64 48.9	-25 53.9
Δ	2	-10		-4	-12	7	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 40	18 5	0 42	2 27	19 50	1.4	10 40	3.5
55	5 42	18 3	0 36	2 5	20 9	1.6	10 22	3.3
50	5 44	18 2	0 32	1 50	20 24	1.8	10 9	3.1
45	5 45	18 1	0 29	1 39	20 36	1.9	9 59	3.0
40	5 46	17 60	0 27	1 31	20 45	2.0	9 50	2.9
35	5 47	17 59	0 25	1 25	20 54	2.0	9 43	2.8
30	5 47	17 59	0 24	1 20	21 1	2.1	9 36	2.7
20	5 48	17 58	0 22	1 13	21 14	2.2	9 25	2.6
10	5 49	17 57	0 21	1 10	21 25	2.3	9 15	2.5
0	5 50	17 56	0 21	1 9	21 35	2.4	9 6	2.4
10	5 51	17 56	0 21	1 10	21 46	2.5	8 56	2.3
20	5 51	17 56	0 22	1 13	21 57	2.6	8 46	2.2
30	5 52	17 55	0 24	1 20	22 10	2.7	8 35	2.0
35	5 52	17 55	0 25	1 24	22 18	2.7	8 29	2.0
40	5 52	17 55	0 27	1 31	22 27	2.8	8 21	1.9
45	5 52	17 55	0 29	1 39	22 37	2.9	8 13	1.8
50	5 53	17 55	0 32	1 49	22 49	3.0	8 3	1.6
55	5 53	17 55	0 36	2 4	23 5	2.4	7 50	1.5
60	5 53	17 55	0 42	2 25	23 25	2.4	7 33	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	318 35.5	71 11	2.9	94	176 48.8	0 6.2	109 46.8	-20 36.8
2	347 27.8	71 11	21.7	92	206 52.8	0 5.8	139 51.4	-20 36.9
4	16 20.0	71 11	40.2	91	236 56.7	0 5.4	169 56.0	-20 37.0
6	45 12.1	70 11	58.3	89	267 .6	0 4.9	200 .6	-20 37.0
8	74 4.2	70 12	16.2	87	297 4.6	0 4.5	230 5.3	-20 37.1
10	102 56.2	69 12	33.6	86	327 8.5	0 4.1	260 9.9	-20 37.1
12	131 48.1	69 12	50.8	84	357 12.5	0 3.6	290 14.5	-20 37.2
14	160 39.9	69 13	7.5	82	27 16.4	0 3.2	320 19.1	-20 37.2
16	189 31.6	68 13	24.0	80	57 20.3	0 2.8	350 23.7	-20 37.3
18	218 23.3	68 13	40.0	78	87 24.3	0 2.4	20 28.4	-20 37.4
20	247 15.0	68 13	55.6	76	117 28.2	0 1.9	50 33.0	-20 37.4
22	276 6.5	68 14	10.9	74	147 32.1	0 1.5	80 37.6	-20 37.5
Δ					20	-2	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	6 34.5	.9	16.0	T _m	2 52	2.4	60.4	16.5	
12	6 45.1	T _{m☉}	11 h 53.2 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	'	°	
♁	13 38	.1	156	-3.2	♃	12 11	.0	177	-1.2
♂	17 41	.1	95	-6	♄	16 38	.0	110	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 43.9	0 37.3	0 17.9	155 20.2	-10 5.0	94 50.3	-25 54.0
2	211 44.4	0 35.4	30 22.8	185 19.5	-10 7.4	124 51.7	-25 54.0
4	241 44.8	0 33.4	60 27.7	215 18.7	-10 9.8	154 53.1	-25 54.1
6	271 45.3	0 31.5	90 32.7	245 17.9	-10 12.2	184 54.6	-25 54.1
8	301 45.7	0 29.5	120 37.6	275 17.1	-10 14.6	214 56.0	-25 54.1
10	331 46.2	0 27.6	150 42.5	305 16.4	-10 17.0	244 57.4	-25 54.2
12	1 46.6	0 25.6	180 47.4	335 15.6	-10 19.4	274 58.7	-25 54.2
14	31 47.0	0 23.7	210 52.4	5 14.8	-10 21.8	305 .1	-25 54.2
16	61 47.5	0 21.8	240 57.3	35 14.0	-10 24.3	335 1.5	-25 54.3
18	91 47.9	0 19.8	271 2.2	65 13.3	-10 26.7	5 2.9	-25 54.3
20	121 48.4	0 17.9	301 7.1	95 12.5	-10 29.1	35 4.3	-25 54.3
22	151 48.8	0 15.9	331 12.1	125 11.7	-10 31.5	65 5.7	-25 54.4
Δ	2	-10		-4	-12	7	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 43	18 2	0 42	2 26	20 24	1.8	12 3	3.1
55	5 44	18 1	0 36	2 5	20 48	1.9	11 41	3.0
50	5 45	17 60	0 32	1 50	21 6	2.0	11 23	2.9
45	5 46	17 59	0 29	1 39	21 20	2.1	11 10	2.8
40	5 47	17 58	0 27	1 31	21 32	2.1	10 59	2.7
35	5 47	17 58	0 25	1 25	21 42	2.2	10 49	2.7
30	5 48	17 57	0 24	1 20	21 51	2.2	10 41	2.6
20	5 49	17 57	0 22	1 13	22 59	2.3	10 27	2.5
10	5 49	17 56	0 21	1 10	22 20	2.3	10 14	2.5
0	5 50	17 56	0 21	1 9	22 32	2.4	10 2	2.4
10	5 50	17 56	0 21	1 10	22 45	2.4	9 51	2.3
20	5 50	17 56	0 22	1 13	22 59	2.5	9 38	2.2
30	5 50	17 56	0 24	1 20	23 14	2.4	9 24	2.2
35	5 50	17 56	0 25	1 25	23 23	2.4	9 16	2.1
40	5 50	17 56	0 27	1 31	23 34	2.4	9 6	2.0
45	5 50	17 56	0 29	1 39	23 46	2.4	8 55	2.0
50	5 50	17 56	0 32	1 50	...	.0	8 42	1.9
55	5 50	17 57	0 36	2 4	...	.0	8 26	1.8
60	5 50	17 57	0 42	2 26	...	.0	8 3	1.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	304 58.0	67 14 25.8	72	177 36.1	0 1.1	110 42.2	-20 37.5	
2	333 49.5	67 14 40.3	70	207 40.0	0 .6	140 46.8	-20 37.6	
4	2 40.9	67 14 54.3	68	237 44.0	0 .2	170 51.4	-20 37.6	
6	31 32.2	67 15 8.0	66	267 47.9	0 .2	200 56.1	-20 37.7	
8	60 23.5	66 15 21.2	64	297 51.8	0 .6	231 .7	-20 37.8	
10	89 14.8	66 15 34.0	62	327 55.8	0 1.1	261 5.3	-20 37.8	
12	118 6.1	66 15 46.4	60	357 59.7	0 1.5	291 9.9	-20 37.9	
14	146 57.3	66 15 58.4	58	28 3.6	0 1.9	321 14.5	-20 37.9	
16	175 48.5	66 16 9.9	55	58 7.6	0 2.4	351 19.1	-20 38.0	
18	204 39.6	66 16 21.0	53	88 11.5	0 2.8	21 23.7	-20 38.0	
20	233 30.8	66 16 31.6	51	118 15.5	0 3.2	51 28.3	-20 38.1	
22	262 22.0	66 16 41.8	49	148 19.4	0 3.6	81 33.0	-20 38.2	
Δ				20	-2	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	6 55.8	.9	16.0	T _m	3 49	2.4	60.0		
12	7 6.4	T _{m☉}	11 h 52.9 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	'	°	
♁	13 39	.1	155	-3.2	♃	12 8	.0	177	-1.2
♂	17 40	.1	95	-.6	♄	16 35	.0	110	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 49.3	0 14.0	1 17.0	155 10.9	-10 33.9	95 7.1	-25 54.4
2	211 49.7	0 12.0	31 21.9	185 10.1	-10 36.3	125 8.5	-25 54.4
4	241 50.1	0 10.1	61 26.9	215 9.4	-10 38.6	155 9.9	-25 54.4
6	271 50.6	0 8.1	91 31.8	245 8.6	-10 41.0	185 11.3	-25 54.5
8	301 51.0	0 6.2	121 36.7	275 7.8	-10 43.4	215 12.6	-25 54.5
10	331 51.5	0 4.2	151 41.6	305 7.0	-10 45.8	245 14.0	-25 54.5
12	1 51.9	0 2.3	181 46.6	335 6.2	-10 48.2	275 15.4	-25 54.5
14	31 52.3	0 .4	211 51.5	5 5.4	-10 50.6	305 16.8	-25 54.5
16	61 52.8	0 1.6	241 56.4	35 4.6	-10 53.0	335 18.2	-25 54.5
18	91 53.2	0 3.5	272 1.4	65 3.8	-10 55.4	5 19.5	-25 54.6
20	121 53.7	0 5.5	302 6.3	95 3.0	-10 57.7	35 20.9	-25 54.6
22	151 54.1	0 7.4	332 11.2	125 2.2	-11 .1	65 22.3	-25 54.6
Δ	2	-10		-4	-12	7	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 45	17 59	0 41	2 26	21 7	2.2	13 19	2.7
55	5 46	17 58	0 36	2 4	21 34	2.2	12 52	2.6
50	5 47	17 57	0 32	1 50	21 54	2.3	12 32	2.6
45	5 47	17 57	0 29	1 39	22 10	2.3	12 17	2.5
40	5 48	17 57	0 27	1 31	22 23	2.3	12 4	2.5
35	5 48	17 56	0 25	1 24	22 35	2.3	11 53	2.5
30	5 48	17 56	0 24	1 20	22 44	2.3	11 44	2.5
20	5 49	17 56	0 22	1 13	23 1	2.3	11 27	2.4
10	5 49	17 56	0 21	1 10	23 16	2.3	11 13	2.4
0	5 49	17 56	0 21	1 9	23 30	2.3	10 60	2.4
10	5 49	17 56	0 21	1 10	23 43	2.3	10 46	2.3
20	5 49	17 56	0 22	1 13	23 58	2.3	10 32	2.3
30	5 49	17 56	0 24	1 20	...	.0	10 16	2.3
35	5 49	17 57	0 25	1 25	...	.0	10 6	2.2
40	5 49	17 57	0 27	1 31	...	.0	9 55	2.2
45	5 48	17 57	0 29	1 39	...	.0	9 43	2.2
50	5 48	17 58	0 32	1 50	0 1	2.7	9 27	2.1
55	5 48	17 59	0 36	2 5	0 20	2.8	9 8	2.1
60	5 47	17 60	0 42	2 26	0 46	2.9	8 41	2.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	291 13.1	66 16 51.5	46	178 23.3	0 4.1	111 37.6	-20 38.2	
2	320 4.3	66 17 .8	44	208 27.3	0 4.5	141 42.2	-20 38.3	
4	348 55.5	66 17 9.6	42	238 31.2	0 4.9	171 46.8	-20 38.3	
6	17 46.7	66 17 18.0	39	268 35.1	0 5.4	201 51.4	-20 38.4	
8	46 37.9	66 17 25.9	37	298 39.1	0 5.8	231 56.0	-20 38.4	
10	75 29.1	66 17 33.3	35	328 43.0	0 6.2	262 .6	-20 38.5	
12	104 20.4	67 17 40.2	32	358 47.0	0 6.6	292 5.2	-20 38.6	
14	133 11.7	67 17 46.7	30	28 50.9	0 7.1	322 9.8	-20 38.6	
16	162 3.1	67 17 52.8	28	58 54.8	0 7.5	352 14.4	-20 38.7	
18	190 54.5	67 17 58.3	25	88 58.8	0 7.9	22 19.0	-20 38.7	
20	219 46.0	68 18 3.4	23	119 2.7	0 8.4	52 23.6	-20 38.8	
22	248 37.6	68 18 8.0	21	149 6.6	0 8.8	82 28.2	-20 38.9	
Δ				20	-2	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 17.0	.9	16.0	T _m	4 46	2.4	59.4		
12	7 27.6	T _{m☉}	11 h 52.5 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	'	°	
♁	13 40	.1	154	-3.2	♃	12 5	.0	177	-1.2
♂	17 39	.1	94	-.5	♄	16 31	.0	110	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	181 54.5	- 0 9.4	2 16.1	155 1.4	-11 2.5	95 23.7	-25 54.6
2	211 55.0	- 0 11.3	32 21.1	185 .6	-11 4.9	125 25.0	-25 54.6
4	241 55.4	- 0 13.3	62 26.0	214 59.8	-11 7.3	155 26.4	-25 54.6
6	271 55.8	- 0 15.2	92 30.9	244 59.0	-11 9.6	185 27.8	-25 54.6
8	301 56.3	- 0 17.2	122 35.9	274 58.2	-11 12.0	215 29.1	-25 54.6
10	331 56.7	- 0 19.1	152 40.8	304 57.4	-11 14.4	245 30.5	-25 54.6
12	1 57.2	- 0 21.1	182 45.7	334 56.6	-11 16.7	275 31.9	-25 54.6
14	31 57.6	- 0 23.0	212 50.6	4 55.8	-11 19.1	305 33.2	-25 54.6
16	61 58.0	- 0 24.9	242 55.6	34 55.0	-11 21.5	335 34.6	-25 54.6
18	91 58.5	- 0 26.9	273 .5	64 54.2	-11 23.8	5 35.9	-25 54.6
20	121 58.9	- 0 28.8	303 5.4	94 53.4	-11 26.2	35 37.3	-25 54.6
22	151 59.3	- 0 30.8	333 10.4	124 52.5	-11 28.6	65 38.7	-25 54.6
Δ	2	-10		-4	-12	7	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	17 56	0 41	2 25	22 0	2.6	14 22	2.1
55	5 48	17 55	0 36	2 4	22 28	2.5	13 54	2.2
50	5 48	17 55	0 32	1 49	22 49	2.5	13 34	2.2
45	5 49	17 55	0 29	1 39	23 5	2.3	13 17	2.2
40	5 49	17 55	0 27	1 31	23 19	2.3	13 4	2.2
35	5 49	17 55	0 25	1 24	23 30	2.3	12 53	2.3
30	5 49	17 55	0 24	1 20	23 40	2.3	12 43	2.3
20	5 49	17 55	0 22	1 13	23 57	2.3	12 25	2.3
10	5 49	17 55	0 21	1 10	...	.0	12 11	2.3
0	5 49	17 55	0 21	1 9	...	.0	11 57	2.3
10	5 49	17 56	0 21	1 10	...	.0	11 42	2.3
20	5 48	17 56	0 22	1 13	...	.0	11 27	2.3
30	5 48	17 57	0 24	1 20	0 15	2.4	11 10	2.4
35	5 48	17 57	0 25	1 25	0 25	2.4	11 0	2.4
40	5 47	17 58	0 27	1 31	0 36	2.4	10 49	2.4
45	5 47	17 59	0 29	1 39	0 50	2.4	10 35	2.4
50	5 46	17 59	0 32	1 50	1 6	2.4	10 19	2.4
55	5 45	18 0	0 36	2 5	1 27	2.4	9 58	2.4
60	5 44	18 2	0 42	2 27	1 55	2.4	9 29	2.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	277 29.2	69 18 12.1	18	179 10.6	- 0 9.2	112 32.8	-20 38.9	
2	306 20.9	69 18 15.8	16	209 14.5	- 0 9.6	142 37.4	-20 39.0	
4	335 12.7	70 18 19.0	14	239 18.4	- 0 10.1	172 42.0	-20 39.0	
6	4 4.6	70 18 21.7	11	269 22.4	- 0 10.5	202 46.6	-20 39.1	
8	32 56.7	71 18 24.0	9	299 26.3	- 0 10.9	232 51.2	-20 39.2	
10	61 48.8	71 18 25.8	7	329 30.3	- 0 11.4	262 55.8	-20 39.2	
12	90 41.0	72 18 27.1	4	359 34.2	- 0 11.8	293 .4	-20 39.3	
14	119 33.3	72 18 28.0	2	29 38.1	- 0 12.2	323 5.0	-20 39.3	
16	148 25.8	73 18 28.4	0	59 42.1	- 0 12.6	353 9.6	-20 39.4	
18	177 18.4	74 18 28.3	-3	89 46.0	- 0 13.1	23 14.2	-20 39.4	
20	206 11.1	74 18 27.8	-5	119 49.9	- 0 13.5	53 18.8	-20 39.5	
22	235 4.0	75 18 26.9	-7	149 53.9	- 0 13.9	83 23.4	-20 39.6	
Δ				20	-2	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 38.1	.9	16.0	T _m	5 43	2.3	58.8 16.0
12	7 48.6	T _{m☉}	11 h 52.2 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	'	°	
♂	13 40	.1	153	-3.2	♄	12 2	.0	177	-1.2
♂	17 38	.1	93	-5	♂	16 27	.0	110	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	181 59.8	- 0 32.7	3 15.3	154 51.7	-11 30.9	95 40.0	-25 54.6
2	212 .2	- 0 34.7	33 20.2	184 50.9	-11 33.3	125 41.4	-25 54.6
4	242 .6	- 0 36.6	63 25.1	214 50.1	-11 35.6	155 42.7	-25 54.6
6	272 1.1	- 0 38.6	93 30.1	244 49.3	-11 38.0	185 44.1	-25 54.6
8	302 1.5	- 0 40.5	123 35.0	274 48.4	-11 40.3	215 45.4	-25 54.6
10	332 1.9	- 0 42.5	153 39.9	304 47.6	-11 42.7	245 46.8	-25 54.5
12	2 2.4	- 0 44.4	183 44.9	334 46.8	-11 45.0	275 48.1	-25 54.5
14	32 2.8	- 0 46.4	213 49.8	4 46.0	-11 47.4	305 49.5	-25 54.5
16	62 3.2	- 0 48.3	243 54.7	34 45.1	-11 49.7	335 50.8	-25 54.5
18	92 3.7	- 0 50.3	273 59.6	64 44.3	-11 52.1	5 52.1	-25 54.5
20	122 4.1	- 0 52.2	304 4.6	94 43.5	-11 54.4	35 53.5	-25 54.5
22	152 4.5	- 0 54.2	334 9.5	124 42.6	-11 56.7	65 54.8	-25 54.4
Δ	2	-10		-4	-12	7	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	17 53	0 41	2 24	23 3	2.2	15 13	1.6
55	5 50	17 53	0 36	2 3	23 29	2.2	14 46	1.8
50	5 50	17 53	0 32	1 49	23 49	2.2	14 26	1.9
45	5 50	17 53	0 29	1 38	23 60	2.4	14 11	1.9
40	5 50	17 53	0 27	1 30	...	.0	13 58	2.0
35	5 50	17 53	0 25	1 24	...	.0	13 47	2.0
30	5 50	17 54	0 24	1 20	...	.0	13 37	2.1
20	5 49	17 54	0 22	1 13	...	.0	13 20	2.1
10	5 49	17 55	0 21	1 10	0 12	2.3	13 6	2.2
0	5 49	17 55	0 21	1 9	0 26	2.3	12 52	2.2
10	5 48	17 56	0 21	1 10	0 40	2.2	12 38	2.3
20	5 47	17 57	0 22	1 13	0 55	2.2	12 24	2.3
30	5 47	17 58	0 24	1 20	1 12	2.2	12 7	2.4
35	5 46	17 58	0 25	1 25	1 22	2.1	11 57	2.4
40	5 45	17 59	0 27	1 31	1 33	2.1	11 46	2.5
45	5 45	17 60	0 29	1 39	1 47	2.1	11 32	2.5
50	5 44	18 1	0 32	1 50	2 3	2.0	11 16	2.6
55	5 42	18 2	0 36	2 6	2 24	2.0	10 55	2.7
60	5 41	18 4	0 42	2 28	2 53	1.9	10 27	2.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	263 57.1	76 18 25.5	-9	179 57.8	- 0 14.4	113 28.0	-20 39.6	
2	292 50.3	77 18 23.6	-12	210 1.7	- 0 14.8	143 32.6	-20 39.7	
4	321 43.6	78 18 21.3	-14	240 5.7	- 0 15.2	173 37.2	-20 39.7	
6	350 37.1	78 18 18.6	-16	270 9.6	- 0 15.6	203 41.8	-20 39.8	
8	19 30.8	79 18 15.4	-18	300 13.6	- 0 16.1	233 46.4	-20 39.9	
10	48 24.7	80 18 11.8	-20	330 17.5	- 0 16.5	263 51.0	-20 39.9	
12	77 18.7	81 18 7.7	-22	0 21.4	- 0 16.9	293 55.6	-20 40.0	
14	106 12.9	82 18 3.3	-24	30 25.4	- 0 17.4	324 .2	-20 40.0	
16	135 7.3	83 17 58.4	-26	60 29.3	- 0 17.8	354 4.7	-20 40.1	
18	164 1.9	84 17 53.1	-29	90 33.2	- 0 18.2	24 9.3	-20 40.2	
20	192 56.7	85 17 47.4	-31	120 37.2	- 0 18.6	54 13.9	-20 40.2	
22	221 51.7	86 17 41.3	-33	150 41.1	- 0 19.1	84 18.5	-20 40.3	
Δ				20	-2	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 59.1	.9	16.0	T _m	6 39	2.3	58.2 15.8
12	8 9.5	T _{m☉}	11 h 51.8 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	'	°	
♂	13 41	.1	152	-3.2	♄	11 59	.0	177	-1.2
♂	17 37	.1	92	-5	♂	16 24	.0	110	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 5.0 - 0 56.1		4 14.4	154 41.8 -11 59.1		95 56.2 -25 54.4	
2	212 5.4 - 0 58.0		34 19.3	184 41.0 -12 1.4		125 57.5 -25 54.4	
4	242 5.8 - 1 .0		64 24.3	214 40.1 -12 3.7		155 58.8 -25 54.4	
6	272 6.3 - 1 1.9		94 29.2	244 39.3 -12 6.1		186 .2 -25 54.3	
8	302 6.7 - 1 3.9		124 34.1	274 38.5 -12 8.4		216 1.5 -25 54.3	
10	332 7.1 - 1 5.8		154 39.1	304 37.6 -12 10.7		246 2.8 -25 54.3	
12	2 7.5 - 1 7.8		184 44.0	334 36.8 -12 13.0		276 4.2 -25 54.2	
14	32 8.0 - 1 9.7		214 48.9	4 35.9 -12 15.4		306 5.5 -25 54.2	
16	62 8.4 - 1 11.7		244 53.8	34 35.1 -12 17.7		336 6.8 -25 54.2	
18	92 8.8 - 1 13.6		274 58.8	64 34.2 -12 20.0		6 8.2 -25 54.1	
20	122 9.3 - 1 15.6		305 3.7	94 33.4 -12 22.3		36 9.5 -25 54.1	
22	152 9.7 - 1 17.5		335 8.6	124 32.5 -12 24.6		66 10.8 -25 54.1	
Δ	2 -10			-4 -12		7 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 52	17 50	0 41	2 24	23 56	2.8	15 53	1.3
55	5 52	17 50	0 36	2 3	.. .	.0	15 29	1.4
50	5 51	17 51	0 32	1 49	.. .	.0	15 11	1.6
45	5 51	17 51	0 29	1 38	.. .	.0	14 57	1.7
40	5 51	17 52	0 27	1 30	0 17	2.5	14 45	1.8
35	5 50	17 52	0 25	1 24	0 27	2.4	14 35	1.8
30	5 50	17 52	0 24	1 20	0 37	2.4	14 27	1.9
20	5 50	17 53	0 22	1 13	0 53	2.3	14 11	2.0
10	5 49	17 54	0 21	1 10	1 7	2.2	13 58	2.1
0	5 48	17 55	0 21	1 9	1 20	2.2	13 46	2.1
10	5 47	17 56	0 21	1 10	1 34	2.1	13 33	2.2
20	5 47	17 57	0 22	1 13	1 48	2.0	13 20	2.3
30	5 45	17 58	0 24	1 20	2 4	2.0	13 4	2.4
35	5 45	17 59	0 25	1 25	2 13	1.9	12 55	2.4
40	5 44	17 60	0 27	1 31	2 24	1.9	12 45	2.5
45	5 43	18 1	0 29	1 40	2 36	1.8	12 33	2.6
50	5 41	18 2	0 32	1 51	2 52	1.7	12 18	2.7
55	5 40	18 4	0 36	2 6	3 11	1.6	11 59	2.8
60	5 38	18 7	0 42	2 29	3 37	1.4	11 34	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	250 47.0 87 17 34.8 -35				180 45.0 - 0 19.5		114 23.1 -20 40.3	
2	279 42.4 88 17 27.9 -36				210 49.0 - 0 19.9		144 27.7 -20 40.4	
4	308 38.0 89 17 20.6 -38				240 52.9 - 0 20.4		174 32.3 -20 40.5	
6	337 33.8 90 17 12.9 -40				270 56.8 - 0 20.8		204 36.9 -20 40.5	
8	6 29.9 91 17 4.9 -42				301 .8 - 0 21.2		234 41.4 -20 40.6	
10	35 26.1 92 16 56.4 -44				331 4.7 - 0 21.6		264 46.0 -20 40.6	
12	64 22.6 94 16 47.6 -46				1 8.7 - 0 22.1		294 50.6 -20 40.7	
14	93 19.3 95 16 38.5 -48				31 12.6 - 0 22.5		324 55.2 -20 40.8	
16	122 16.3 96 16 29.0 -49				61 16.5 - 0 22.9		354 59.8 -20 40.8	
18	151 13.4 97 16 19.1 -51				91 20.5 - 0 23.4		25 4.4 -20 40.9	
20	180 10.8 98 16 8.9 -53				121 24.4 - 0 23.8		55 8.9 -20 40.9	
22	209 8.4 99 15 58.4 -54				151 28.3 - 0 24.2		85 13.5 -20 41.0	
Δ					20 -2		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 19.8	.9	16.0	T _m	7 33	2.2	57.5 15.7
12	8 30.1	T _{m☉}	11 h 51.5 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	'	°	
♂	13 42	.1	150	-3.3	♄	11 55	.0	177	-1.2
♂	17 35	.1	92	-5	♅	16 20	.0	110	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 10.1 - 1 19.5		5 13.6	154 31.7 -12 27.0		96 12.1 -25 54.0	
2	212 10.5 - 1 21.4		35 18.5	184 30.8 -12 29.3		126 13.5 -25 54.0	
4	242 11.0 - 1 23.4		65 23.4	214 30.0 -12 31.6		156 14.8 -25 53.9	
6	272 11.4 - 1 25.3		95 28.3	244 29.1 -12 33.9		186 16.1 -25 53.9	
8	302 11.8 - 1 27.3		125 33.3	274 28.3 -12 36.2		216 17.4 -25 53.8	
10	332 12.2 - 1 29.2		155 38.2	304 27.4 -12 38.5		246 18.7 -25 53.8	
12	2 12.7 - 1 31.2		185 43.1	334 26.5 -12 40.8		276 20.0 -25 53.7	
14	32 13.1 - 1 33.1		215 48.1	4 25.7 -12 43.1		306 21.4 -25 53.7	
16	62 13.5 - 1 35.0		245 53.0	34 24.8 -12 45.4		336 22.7 -25 53.6	
18	92 13.9 - 1 37.0		275 57.9	64 23.9 -12 47.7		6 24.0 -25 53.6	
20	122 14.4 - 1 38.9		306 2.8	94 23.1 -12 50.0		36 25.3 -25 53.5	
22	152 14.8 - 1 40.9		336 7.8	124 22.2 -12 52.3		66 26.6 -25 53.5	
Δ	2 -10			-4 -12		7 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 54	17 47	0 41	2 23	.. .	.0	16 23	1.0
55	5 54	17 48	0 36	2 3	0 35	2.9	16 4	1.2
50	5 53	17 49	0 32	1 49	0 52	2.7	15 49	1.3
45	5 52	17 49	0 29	1 38	1 5	2.6	15 37	1.5
40	5 52	17 50	0 27	1 30	1 16	2.5	15 28	1.6
35	5 51	17 51	0 25	1 24	1 26	2.4	15 19	1.6
30	5 51	17 51	0 24	1 19	1 34	2.4	15 12	1.7
20	5 50	17 52	0 22	1 13	1 49	2.3	14 59	1.8
10	5 49	17 53	0 21	1 10	2 1	2.2	14 48	1.9
0	5 48	17 54	0 21	1 9	2 13	2.1	14 37	2.0
10	5 47	17 56	0 21	1 10	2 24	2.0	14 26	2.1
20	5 46	17 57	0 22	1 13	2 37	1.9	14 15	2.2
30	5 44	17 59	0 24	1 20	2 51	1.8	14 2	2.4
35	5 43	17 60	0 25	1 25	2 59	1.7	13 54	2.4
40	5 42	18 1	0 27	1 31	3 9	1.6	13 45	2.5
45	5 41	18 2	0 29	1 40	3 20	1.6	13 35	2.6
50	5 39	18 4	0 32	1 51	3 33	1.4	13 23	2.7
55	5 37	18 6	0 36	2 7	3 49	1.3	13 7	2.9
60	5 35	18 9	0 42	2 30	4 11	1.1	12 46	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	238 6.2 100 15 47.5 -56				181 32.3 - 0 24.6		115 18.1 -20 41.1	
2	267 4.3 101 15 36.3 -58				211 36.2 - 0 25.1		145 22.7 -20 41.1	
4	296 2.6 103 15 24.8 -59				241 40.1 - 0 25.5		175 27.3 -20 41.2	
6	325 1.1 104 15 13.0 -61				271 44.1 - 0 25.9		205 31.8 -20 41.3	
8	353 59.9 105 15 .8 -62				301 48.0 - 0 26.3		235 36.4 -20 41.3	
10	22 58.8 106 14 48.4 -64				331 51.9 - 0 26.8		265 41.0 -20 41.4	
12	51 58.0 107 14 35.7 -65				1 55.9 - 0 27.2		295 45.6 -20 41.4	
14	80 57.5 108 14 22.7 -66				31 59.8 - 0 27.6		325 50.2 -20 41.5	
16	109 57.1 109 14 9.4 -68				62 3.8 - 0 28.1		355 54.7 -20 41.6	
18	138 57.0 111 13 55.8 -69				92 7.7 - 0 28.5		25 59.3 -20 41.6	
20	167 57.1 112 13 42.0 -70				122 11.6 - 0 28.9		56 3.9 -20 41.7	
22	196 57.4 113 13 27.9 -72				152 15.6 - 0 29.3		86 8.5 -20 41.7	
Δ					20 -2		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 40.4	.8	16.0	T _m	8 25	2.0	56.9 15.5
12	8 50.6	T _{m☉}	11 h 51.2 min	Starost	24.6 d	Faza	☉

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

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 15.2 - 1 42.8		6 12.7	154 21.3 -12 54.6		96 27.9 -25 53.4	
2	212 15.6 - 1 44.8		36 17.6	184 20.5 -12 56.9		126 29.2 -25 53.4	
4	242 16.1 - 1 46.7		66 22.6	214 19.6 -12 59.1		156 30.5 -25 53.3	
6	272 16.5 - 1 48.7		96 27.5	244 18.7 -13 1.4		186 31.8 -25 53.2	
8	302 16.9 - 1 50.6		126 32.4	274 17.8 -13 3.7		216 33.1 -25 53.2	
10	332 17.3 - 1 52.6		156 37.3	304 17.0 -13 6.0		246 34.4 -25 53.1	
12	2 17.7 - 1 54.5		186 42.3	334 16.1 -13 8.3		276 35.7 -25 53.1	
14	32 18.2 - 1 56.5		216 47.2	4 15.2 -13 10.5		306 37.0 -25 53.0	
16	62 18.6 - 1 58.4		246 52.1	34 14.3 -13 12.8		336 38.3 -25 52.9	
18	92 19.0 - 2 .3		276 57.1	64 13.4 -13 15.1		6 39.6 -25 52.8	
20	122 19.4 - 2 2.3		307 2.0	94 12.5 -13 17.4		36 40.9 -25 52.8	
22	152 19.8 - 2 4.2		337 6.9	124 11.6 -13 19.6		66 42.2 -25 52.7	
Δ	2	-10		-4	-11	6	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 57	17 44	0 41	2 22	1 25	3.1	16 47	.8
55	5 55	17 45	0 36	2 3	1 43	2.9	16 33	1.0
50	5 54	17 46	0 32	1 48	1 57	2.7	16 21	1.2
45	5 53	17 47	0 29	1 38	2 8	2.6	16 12	1.3
40	5 53	17 48	0 27	1 30	2 17	2.5	16 5	1.4
35	5 52	17 49	0 25	1 24	2 24	2.4	15 58	1.5
30	5 51	17 50	0 24	1 19	2 31	2.3	15 53	1.6
20	5 50	17 51	0 22	1 13	2 43	2.2	15 43	1.7
10	5 49	17 53	0 21	1 10	2 53	2.1	15 34	1.8
0	5 48	17 54	0 21	1 9	3 3	2.0	15 26	1.9
10	5 46	17 56	0 21	1 10	3 12	1.9	15 17	2.1
20	5 45	17 57	0 22	1 13	3 22	1.8	15 8	2.2
30	5 43	17 59	0 24	1 20	3 34	1.6	14 58	2.3
35	5 42	18 0	0 25	1 25	3 41	1.6	14 52	2.4
40	5 40	18 2	0 27	1 32	3 48	1.5	14 46	2.5
45	5 39	18 3	0 29	1 40	3 57	1.4	14 38	2.6
50	5 37	18 5	0 32	1 51	4 8	1.3	14 28	2.7
55	5 35	18 8	0 37	2 7	4 21	1.1	14 16	2.9
60	5 32	18 11	0 42	2 31	4 38	.9	14 0	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	225 58.0 114	13 13.6	-73		182 19.5 - 0 29.8		116 13.0 -20 41.8	
2	254 58.8 115	12 59.0	-74		212 23.4 - 0 30.2		146 17.6 -20 41.9	
4	283 59.8 116	12 44.1	-75		242 27.4 - 0 30.6		176 22.2 -20 41.9	
6	313 1.0 117	12 29.1	-76		272 31.3 - 0 31.1		206 26.8 -20 42.0	
8	342 2.4 118	12 13.8	-78		302 35.2 - 0 31.5		236 31.3 -20 42.0	
10	11 4.0 119	11 58.3	-79		332 39.2 - 0 31.9		266 35.9 -20 42.1	
12	40 5.8 120	11 42.5	-80		2 43.1 - 0 32.3		296 40.5 -20 42.2	
14	69 7.9 121	11 26.6	-81		32 47.0 - 0 32.8		326 45.0 -20 42.2	
16	98 10.1 122	11 10.5	-82		62 51.0 - 0 33.2		356 49.6 -20 42.3	
18	127 12.6 123	10 54.1	-83		92 54.9 - 0 33.6		26 54.2 -20 42.4	
20	156 15.2 124	10 37.6	-84		122 58.9 - 0 34.0		56 58.7 -20 42.4	
22	185 18.1 125	10 20.9	-84		153 2.8 - 0 34.5		87 3.3 -20 42.5	
Δ					20	-2	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	9 .8	.8	16.0	T _m	9 14	2.0	56.3 15.4
12	9 10.9	T _{m☉}	11 h 50.8 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	'	°	'
♂	13 43	.1	148	-3.3	♃	11 49	.0	176	-1.2
♂	17 33	.1	90	-5	♄	16 13	.0	110	.8

28. SEPTEMBAR

SREDA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 20.2 - 2 6.2		7 11.8	154 10.8 -13 21.9		96 43.5 -25 52.6	
2	212 20.7 - 2 8.1		37 16.8	184 9.9 -13 24.2		126 44.8 -25 52.6	
4	242 21.1 - 2 10.1		67 21.7	214 9.0 -13 26.4		156 46.1 -25 52.5	
6	272 21.5 - 2 12.0		97 26.6	244 8.1 -13 28.7		186 47.4 -25 52.4	
8	302 21.9 - 2 14.0		127 31.6	274 7.2 -13 30.9		216 48.7 -25 52.3	
10	332 22.3 - 2 15.9		157 36.5	304 6.3 -13 33.2		246 49.9 -25 52.2	
12	2 22.7 - 2 17.9		187 41.4	334 5.4 -13 35.4		276 51.2 -25 52.2	
14	32 23.2 - 2 19.8		217 46.3	4 4.5 -13 37.7		306 52.5 -25 52.1	
16	62 23.6 - 2 21.7		247 51.3	34 3.6 -13 39.9		336 53.8 -25 52.0	
18	92 24.0 - 2 23.7		277 56.2	64 2.7 -13 42.2		6 55.1 -25 51.9	
20	122 24.4 - 2 25.6		308 1.1	94 1.7 -13 44.4		36 56.4 -25 51.8	
22	152 24.8 - 2 27.6		338 6.0	124 .8 -13 46.7		66 57.6 -25 51.7	
Δ	2	-10		-5	-11	6	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	17 41	0 41	2 22	2 40	3.1	17 7	.7
55	5 57	17 43	0 36	2 2	2 53	2.9	16 57	.9
50	5 56	17 44	0 32	1 48	3 2	2.7	16 50	1.1
45	5 55	17 46	0 29	1 38	3 10	2.6	16 44	1.2
40	5 54	17 47	0 27	1 30	3 17	2.5	16 39	1.3
35	5 53	17 48	0 25	1 24	3 22	2.4	16 35	1.4
30	5 52	17 49	0 24	1 19	3 27	2.3	16 31	1.5
20	5 50	17 50	0 22	1 13	3 36	2.1	16 24	1.6
10	5 49	17 52	0 21	1 10	3 43	2.0	16 18	1.8
0	5 47	17 54	0 21	1 9	3 50	1.9	16 12	1.9
10	5 46	17 55	0 21	1 10	3 57	1.8	16 7	2.0
20	5 44	17 57	0 22	1 14	4 5	1.7	16 1	2.1
30	5 42	17 60	0 24	1 20	4 13	1.5	15 54	2.3
35	5 40	18 1	0 25	1 25	4 18	1.4	15 50	2.4
40	5 39	18 3	0 27	1 32	4 24	1.4	15 45	2.4
45	5 37	18 5	0 29	1 40	4 30	1.3	15 40	2.6
50	5 35	18 7	0 33	1 52	4 38	1.1	15 33	2.7
55	5 32	18 10	0 37	2 8	4 47	1.0	15 25	2.9
60	5 29	18 14	0 42	2 32	4 59	.8	15 15	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	214 21.1 126	10 4.0	-85		183 6.7 - 0 34.9		117 7.9 -20 42.5	
2	243 24.3 127	9 47.0	-86		213 10.7 - 0 35.3		147 12.4 -20 42.6	
4	272 27.8 128	9 29.7	-87		243 14.6 - 0 35.8		177 17.0 -20 42.7	
6	301 31.4 129	9 12.4	-88		273 18.5 - 0 36.2		207 21.6 -20 42.7	
8	330 35.1 130	8 54.8	-88		303 22.5 - 0 36.6		237 26.1 -20 42.8	
10	359 39.1 131	8 37.2	-89		333 26.4 - 0 37.0		267 30.7 -20 42.9	
12	28 43.2 131	8 19.4	-90		3 30.3 - 0 37.5		297 35.3 -20 42.9	
14	57 47.5 132	8 1.4	-90		33 34.3 - 0 37.9		327 39.8 -20 43.0	
16	86 51.9 133	7 43.4	-91		63 38.2 - 0 38.3		357 44.4 -20 43.0	
18	115 56.6 134	7 25.2	-91		93 42.1 - 0 38.8		27 49.0 -20 43.1	
20	145 1.3 135	7 6.9	-92		123 46.1 - 0 39.2		57 53.5 -20 43.2	
22	174 6.2 135	6 48.5	-93		153 50.0 - 0 39.6		87 58.1 -20 43.2	
Δ					20	-2	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☉	r
h	min s	' / "	' / "	h min	min	' / "	' / "
00	9 21.0	.8	16.0	T _m	10 1	1.9	55.8 15.2
12	9 31.0	T _{m☉}	11 h 50.5 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	'	°	'
♂									

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 25.2	- 2 29.5	8 11.0	153 59.9	-13 48.9	96 58.9	-25 51.6
2	212 25.6	- 2 31.5	38 15.9	183 59.0	-13 51.1	127 .2	-25 51.5
4	242 26.1	- 2 33.4	68 20.8	213 58.1	-13 53.4	157 1.5	-25 51.4
6	272 26.5	- 2 35.3	98 25.8	243 57.2	-13 55.6	187 2.7	-25 51.3
8	302 26.9	- 2 37.3	128 30.7	273 56.3	-13 57.8	217 4.0	-25 51.2
10	332 27.3	- 2 39.2	158 35.6	303 55.3	-14 .1	247 5.3	-25 51.1
12	2 27.7	- 2 41.2	188 40.5	333 54.4	-14 2.3	277 6.5	-25 51.0
14	32 28.1	- 2 43.1	218 45.5	3 53.5	-14 4.5	307 7.8	-25 50.9
16	62 28.5	- 2 45.1	248 50.4	33 52.6	-14 6.7	337 9.1	-25 50.8
18	92 28.9	- 2 47.0	278 55.3	63 51.6	-14 9.0	7 10.4	-25 50.7
20	122 29.3	- 2 48.9	309 .3	93 50.7	-14 11.2	37 11.6	-25 50.6
22	152 29.7	- 2 50.9	339 5.2	123 49.8	-14 13.4	67 12.9	-25 50.5
Δ	2	-10		-5	-11	6	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 2	17 38	0 41	2 22	3 54	3.1	17 24	.8
55	5 59	17 40	0 36	2 2	4 2	2.8	17 19	.9
50	5 57	17 42	0 32	1 48	4 7	2.7	17 16	1.1
45	5 56	17 44	0 29	1 38	4 12	2.5	17 13	1.2
40	5 55	17 45	0 27	1 30	4 16	2.4	17 11	1.3
35	5 53	17 46	0 25	1 24	4 19	2.3	17 8	1.4
30	5 52	17 48	0 24	1 19	4 22	2.2	17 7	1.5
20	5 50	17 50	0 22	1 13	4 27	2.1	17 3	1.6
10	5 49	17 51	0 21	1 10	4 32	2.0	17 0	1.7
0	5 47	17 53	0 21	1 9	4 36	1.8	16 58	1.8
10	5 45	17 55	0 21	1 10	4 40	1.7	16 55	1.9
20	5 43	17 58	0 22	1 14	4 45	1.6	16 52	2.1
30	5 40	18 0	0 24	1 20	4 50	1.5	16 48	2.2
35	5 39	18 2	0 25	1 25	4 53	1.4	16 46	2.3
40	5 37	18 4	0 27	1 32	4 56	1.3	16 44	2.4
45	5 35	18 6	0 30	1 41	5 0	1.2	16 41	2.5
50	5 33	18 9	0 33	1 52	5 5	1.0	16 38	2.6
55	5 30	18 12	0 37	2 8	5 10	.9	16 34	2.8
60	5 26	18 16	0 42	2 33	5 18	.7	16 29	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	203 11.3	136	6 30.0	-93	183 53.9	- 0 40.0	118 2.6	-20 43.3
2	232 16.5	137	6 11.4	-93	213 57.9	- 0 40.5	148 7.2	-20 43.4
4	261 21.9	137	5 52.7	-94	244 1.8	- 0 40.9	178 11.8	-20 43.4
6	290 27.4	138	5 33.9	-94	274 5.7	- 0 41.3	208 16.3	-20 43.5
8	319 33.0	139	5 15.1	-95	304 9.7	- 0 41.7	238 20.9	-20 43.5
10	348 38.8	139	4 56.2	-95	334 13.6	- 0 42.2	268 25.4	-20 43.6
12	17 44.7	140	4 37.2	-95	4 17.6	- 0 42.6	298 30.0	-20 43.7
14	46 50.7	141	4 18.1	-96	34 21.5	- 0 43.0	328 34.5	-20 43.7
16	75 56.8	141	3 59.0	-96	64 25.4	- 0 43.5	358 39.1	-20 43.8
18	105 3.0	142	3 39.9	-96	94 29.4	- 0 43.9	28 43.7	-20 43.9
20	134 9.4	142	3 20.7	-96	124 33.3	- 0 44.3	58 48.2	-20 43.9
22	163 15.8	143	3 1.4	-96	154 37.2	- 0 44.7	88 52.8	-20 44.0
Δ					20	-2	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	9 40.9	.8	16.0	T _m	10 47	1.8	55.4 15.1
12	9 50.8			T _{m☉}	11 h 50.2 min	Starost 27.6 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 44	.1	146	-3.3	♃	11 43	.0	176	-1.2
♂	17 31	.1	89	-5	♄	16 5	.0	110	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	182 30.2	- 2 52.8	9 10.1	153 48.9	-14 15.6	97 14.1	-25 50.4
2	212 30.6	- 2 54.8	39 15.0	183 47.9	-14 17.8	127 15.4	-25 50.3
4	242 31.0	- 2 56.7	69 20.0	213 47.0	-14 20.0	157 16.7	-25 50.2
6	272 31.4	- 2 58.6	99 24.9	243 46.1	-14 22.2	187 17.9	-25 50.1
8	302 31.8	- 3 .6	129 29.8	273 45.1	-14 24.4	217 19.2	-25 50.0
10	332 32.2	- 3 2.5	159 34.8	303 44.2	-14 26.6	247 20.5	-25 49.8
12	2 32.6	- 3 4.5	189 39.7	333 43.2	-14 28.8	277 21.7	-25 49.7
14	32 33.0	- 3 6.4	219 44.6	3 42.3	-14 31.0	307 23.0	-25 49.6
16	62 33.4	- 3 8.3	249 49.5	33 41.3	-14 33.2	337 24.2	-25 49.5
18	92 33.8	- 3 10.3	279 54.5	63 40.4	-14 35.4	7 25.5	-25 49.4
20	122 34.2	- 3 12.2	309 59.4	93 39.4	-14 37.6	37 26.7	-25 49.2
22	152 34.6	- 3 14.2	340 4.3	123 38.5	-14 39.8	67 28.0	-25 49.1
Δ	2	-10		-5	-11	6	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 4	17 34	0 41	2 21	5 7	1.8	17 42	3.0
55	6 1	17 37	0 36	2 2	5 10	1.8	17 42	2.8
50	5 59	17 40	0 32	1 48	5 11	1.8	17 42	2.6
45	5 57	17 42	0 29	1 38	5 13	1.8	17 42	2.5
40	5 56	17 43	0 27	1 30	5 14	1.8	17 42	2.4
35	5 54	17 45	0 25	1 24	5 15	1.8	17 42	2.3
30	5 53	17 46	0 24	1 19	5 16	1.8	17 42	2.2
20	5 51	17 49	0 22	1 13	5 18	1.8	17 42	2.0
10	5 49	17 51	0 21	1 10	5 19	1.8	17 41	1.9
0	5 47	17 53	0 21	1 9	5 20	1.8	17 41	1.8
10	5 44	17 55	0 21	1 10	5 22	1.8	17 41	1.7
20	5 42	17 58	0 22	1 14	5 23	1.8	17 41	1.6
30	5 39	18 1	0 24	1 21	5 25	1.8	17 41	1.4
35	5 38	18 3	0 25	1 26	5 26	1.8	17 41	1.3
40	5 36	18 5	0 27	1 32	5 27	1.9	17 41	1.2
45	5 33	18 7	0 30	1 41	5 28	1.9	17 41	1.1
50	5 31	18 10	0 33	1 53	5 30	1.9	17 40	1.0
55	5 27	18 14	0 37	2 9	5 32	1.9	17 40	.8
60	5 23	18 19	0 42	2 34	5 34	1.9	17 40	.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	192 22.3	143	2 42.2	-96	184 41.2	- 0 45.2	118 57.3	-20 44.0
2	221 29.0	144	2 22.9	-97	214 45.1	- 0 45.6	149 1.9	-20 44.1
4	250 35.7	144	2 3.6	-97	244 49.0	- 0 46.0	179 6.4	-20 44.2
6	279 42.5	144	1 44.2	-97	274 53.0	- 0 46.4	209 11.0	-20 44.2
8	308 49.4	145	1 24.9	-97	304 56.9	- 0 46.9	239 15.5	-20 44.3
10	337 56.4	145	1 5.6	-97	335 .8	- 0 47.3	269 20.1	-20 44.4
12	7 3.4	146	0 46.2	-97	5 4.8	- 0 47.7	299 24.6	-20 44.4
14	36 10.5	146	0 26.9	-97	35 8.7	- 0 48.1	329 29.2	-20 44.5
16	65 17.7	146	0 7.6	21	65 12.6	- 0 48.6	359 33.7	-20 44.6
18	94 25.0	146	0 11.7	96	95 16.6	- 0 49.0	29 38.3	-20 44.6
20	123 32.3	147	0 31.0	96	125 20.5	- 0 49.4	59 42.8	-20 44.7
22	152 39.6	147	0 50.3	96	155 24.5	- 0 49.9	89 47.4	-20 44.7
Δ					20	-2	23	0

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _☾	r
h	min	s	'	h min	min	'	'
00	10 .6	.8	16.0	T _m	11 31	1.8	54.9 15.0
12	10 10.3			T _{m☉}	11 h 49.8 min	Starost 28.6 d	Faza ●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 45	.1	145	-3.3	♃	11 40	.0	176	-1.2
♂	17 30	.1	88	-4	♄	16 2	.0	110	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 35.0 - 3 16.1		10 9.3	153 37.5 -14 42.0		97 29.2 -25 49.0	
2	212 35.4 - 3 18.0		40 14.2	183 36.6 -14 44.2		127 30.5 -25 48.9	
4	242 35.8 - 3 20.0		70 19.1	213 35.6 -14 46.3		157 31.7 -25 48.7	
6	272 36.2 - 3 21.9		100 24.0	243 34.7 -14 48.5		187 33.0 -25 48.6	
8	302 36.6 - 3 23.9		130 29.0	273 33.7 -14 50.7		217 34.2 -25 48.5	
10	332 37.0 - 3 25.8		160 33.9	303 32.7 -14 52.9		247 35.5 -25 48.3	
12	2 37.4 - 3 27.7		190 38.8	333 31.8 -14 55.0		277 36.7 -25 48.2	
14	32 37.8 - 3 29.7		220 43.8	3 30.8 -14 57.2		307 37.9 -25 48.0	
16	62 38.2 - 3 31.6		250 48.7	33 29.8 -14 59.4		337 39.2 -25 47.9	
18	92 38.6 - 3 33.5		280 53.6	63 28.9 -15 1.5		7 40.4 -25 47.8	
20	122 39.0 - 3 35.5		310 58.5	93 27.9 -15 3.7		37 41.7 -25 47.6	
22	152 39.4 - 3 37.4		341 3.5	123 26.9 -15 5.9		67 42.9 -25 47.5	
Δ	2	-10		-5	-11	6	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 6	17 31	0 41	2 21	5 49	.7	18 54	3.0
55	6 3	17 35	0 36	2 2	5 52	.9	18 49	2.7
50	6 0	17 38	0 32	1 48	5 54	1.0	18 45	2.6
45	5 58	17 40	0 29	1 38	5 55	1.1	18 41	2.5
40	5 57	17 42	0 27	1 30	5 57	1.2	18 39	2.3
35	5 55	17 44	0 25	1 24	5 58	1.3	18 36	2.3
30	5 54	17 45	0 24	1 19	5 59	1.4	18 34	2.2
20	5 51	17 48	0 22	1 13	6 1	1.6	18 31	2.0
10	5 49	17 50	0 21	1 10	6 2	1.7	18 28	1.9
0	5 46	17 53	0 21	1 9	6 4	1.8	18 25	1.8
10	5 44	17 55	0 21	1 10	6 5	1.9	18 22	1.7
20	5 41	17 58	0 22	1 14	6 7	2.0	18 19	1.6
30	5 38	18 2	0 24	1 21	6 9	2.2	18 15	1.4
35	5 36	18 3	0 25	1 26	6 10	2.3	18 13	1.4
40	5 34	18 6	0 27	1 32	6 11	2.4	18 11	1.3
45	5 31	18 8	0 30	1 41	6 13	2.5	18 8	1.2
50	5 28	18 12	0 33	1 53	6 15	2.6	18 5	1.0
55	5 25	18 16	0 37	2 10	6 17	2.8	18 1	.9
60	5 20	18 21	0 43	2 35	6 20	3.0	17 56	.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 47.0 147	1 9.5	96	185 28.4 - 0 50.3	119 51.9 -20 44.8			
2	210 54.4 147	1 28.7	96	215 32.3 - 0 50.7	149 56.5 -20 44.9			
4	240 1.9 148	1 47.8	95	245 36.3 - 0 51.1	180 1.0 -20 44.9			
6	269 9.4 148	2 6.9	95	275 40.2 - 0 51.6	210 5.5 -20 45.0			
8	298 17.0 148	2 26.0	95	305 44.1 - 0 52.0	240 10.1 -20 45.1			
10	327 24.5 148	2 45.0	95	335 48.1 - 0 52.4	270 14.6 -20 45.1			
12	356 32.1 148	3 3.9	94	5 52.0 - 0 52.8	300 19.2 -20 45.2			
14	25 39.7 148	3 22.8	94	35 55.9 - 0 53.3	330 23.7 -20 45.3			
16	54 47.4 148	3 41.5	94	65 59.9 - 0 53.7	0 28.3 -20 45.3			
18	83 55.0 148	4 1.3	93	96 3.8 - 0 54.1	30 32.8 -20 45.4			
20	113 2.6 148	4 18.9	93	126 7.7 - 0 54.5	60 37.3 -20 45.4			
22	142 10.3 148	4 37.4	92	156 11.7 - 0 55.0	90 41.9 -20 45.5			
Δ				20	-2	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 20.0	.8	16.0	T _m	12 14	1.8	54.6 14.9		
12	10 29.6	T _{m☉}	11 h 49.5 min	Starost	29.6 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	13 46	.1	143	-3.3	♃	11 37	.0	175	-1.2
♂	17 29	.1	87	-4	♄	15 58	.0	110	.8

2. OKTOBAR

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 39.8 - 3 39.4		11 8.4	153 26.0 -15 8.0		97 44.1 -25 47.3	
2	212 40.2 - 3 41.3		41 13.3	183 25.0 -15 10.2		127 45.4 -25 47.2	
4	242 40.6 - 3 43.2		71 18.2	213 24.0 -15 12.3		157 46.6 -25 47.0	
6	272 41.0 - 3 45.2		101 23.2	243 23.0 -15 14.5		187 47.8 -25 46.9	
8	302 41.4 - 3 47.1		131 28.1	273 22.0 -15 16.6		217 49.1 -25 46.7	
10	332 41.7 - 3 49.0		161 33.0	303 21.1 -15 18.7		247 50.3 -25 46.6	
12	2 42.1 - 3 51.0		191 38.0	333 20.1 -15 20.9		277 51.5 -25 46.4	
14	32 42.5 - 3 52.9		221 42.9	3 19.1 -15 23.0		307 52.8 -25 46.3	
16	62 42.9 - 3 54.8		251 47.8	33 18.1 -15 25.2		337 54.0 -25 46.1	
18	92 43.3 - 3 56.8		281 52.7	63 17.1 -15 27.3		7 55.2 -25 46.0	
20	122 43.7 - 3 58.7		311 57.7	93 16.1 -15 29.4		37 56.5 -25 45.8	
22	152 44.1 - 4 .6		342 2.6	123 15.1 -15 31.6		67 57.7 -25 45.6	
Δ	2	-10		-5	-11	6	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 9	17 28	0 41	2 20	6 5	.7	20 5	2.9
55	6 5	17 32	0 36	2 1	6 13	.9	19 55	2.7
50	6 2	17 36	0 32	1 48	6 18	1.1	19 47	2.5
45	5 60	17 38	0 29	1 38	6 23	1.2	19 40	2.4
40	5 58	17 40	0 27	1 30	6 27	1.3	19 35	2.3
35	5 56	17 42	0 25	1 24	6 30	1.4	19 31	2.2
30	5 54	17 44	0 24	1 19	6 33	1.4	19 27	2.2
20	5 51	17 47	0 22	1 13	6 38	1.6	19 20	2.0
10	5 49	17 50	0 21	1 10	6 43	1.7	19 14	1.9
0	5 46	17 52	0 21	1 9	6 47	1.8	19 8	1.8
10	5 43	17 55	0 21	1 10	6 51	1.9	19 2	1.7
20	5 40	17 58	0 22	1 14	6 56	2.0	18 56	1.6
30	5 37	18 2	0 24	1 21	7 1	2.2	18 49	1.5
35	5 35	18 4	0 25	1 26	7 5	2.2	18 45	1.4
40	5 32	18 7	0 27	1 33	7 8	2.3	18 41	1.3
45	5 30	18 10	0 30	1 41	7 12	2.4	18 36	1.2
50	5 26	18 13	0 33	1 53	7 17	2.6	18 29	1.1
55	5 22	18 18	0 37	2 11	7 23	2.7	18 22	1.0
60	5 17	18 23	0 43	2 37	7 31	2.9	18 12	.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	171 17.9 148	4 55.9	92	186 15.6 - 0 55.4	120 46.4 -20 45.6			
2	200 25.6 148	5 14.2	91	216 19.6 - 0 55.8	150 51.0 -20 45.6			
4	229 33.2 148	5 32.5	91	246 23.5 - 0 56.3	180 55.5 -20 45.7			
6	258 40.8 148	5 50.6	90	276 27.4 - 0 56.7	211 .0 -20 45.8			
8	287 48.4 148	6 8.7	90	306 31.4 - 0 57.1	241 4.6 -20 45.8			
10	316 56.0 148	6 26.6	89	336 35.3 - 0 57.5	271 9.1 -20 45.9			
12	346 3.5 148	6 44.4	88	6 39.2 - 0 58.0	301 13.7 -20 46.0			
14	15 11.0 147	7 2.1	88	36 43.2 - 0 58.4	331 18.2 -20 46.0			
16	44 18.5 147	7 19.6	87	66 47.1 - 0 58.8	1 22.7 -20 46.1			
18	73 26.0 147	7 37.0	86	96 51.0 - 0 59.2	31 27.3 -20 46.2			
20	102 33.4 147	7 54.3	86	126 55.0 - 0 59.7	61 31.8 -20 46.2			
22	131 40.8 147	8 11.5	85	156 58.9 - 1 .1	91 36.3 -20 46.3			
Δ				20	-2	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 39.1	.8	16.0	T _m	12 57	1.8	54.3 14.8		
12	10 48.5	T _{m☉}	11 h 49.2 min	Starost	1.0 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	'	♃	h min	'	°	'
♁	13 47	.1	142	-3.3	♃	11 33	.0	175	-1.2
♂	17 28	.1	87	-4	♄	15 54	.0	110	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	44.5	-4	2.6	12	7.5	153	14.1	-15	33.7	97	58.9	-25	45.5
2	212	44.9	-4	4.5	42	12.5	183	13.1	-15	35.8	128	.1	-25	45.3
4	242	45.3	-4	6.4	72	17.4	213	12.1	-15	37.9	158	1.4	-25	45.2
6	272	45.6	-4	8.3	102	22.3	243	11.1	-15	40.0	188	2.6	-25	45.0
8	302	46.0	-4	10.3	132	27.2	273	10.1	-15	42.2	218	3.8	-25	44.8
10	332	46.4	-4	12.2	162	32.2	303	9.1	-15	44.3	248	5.0	-25	44.6
12	2	46.8	-4	14.1	192	37.1	333	8.1	-15	46.4	278	6.2	-25	44.5
14	32	47.2	-4	16.1	222	42.0	3	7.1	-15	48.5	308	7.4	-25	44.3
16	62	47.6	-4	18.0	252	47.0	33	6.1	-15	50.6	338	8.7	-25	44.1
18	92	47.9	-4	19.9	282	51.9	63	5.1	-15	52.7	8	9.9	-25	43.9
20	122	48.3	-4	21.9	312	56.8	93	4.0	-15	54.8	38	11.1	-25	43.8
22	152	48.7	-4	23.8	343	1.7	123	3.0	-15	56.9	68	12.3	-25	43.6
Δ		2		-10				-5		-11		6		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	17 25	0 41	2 20	6 23	.8	21 14	2.8
55	6 7	17 30	0 36	2 1	6 34	1.0	20 59	2.6
50	6 4	17 33	0 32	1 48	6 44	1.2	20 48	2.5
45	6 1	17 36	0 29	1 38	6 51	1.3	20 39	2.4
40	5 59	17 39	0 27	1 30	6 57	1.4	20 31	2.3
35	5 56	17 41	0 25	1 24	7 3	1.4	20 24	2.2
30	5 55	17 43	0 24	1 19	7 8	1.5	20 18	2.2
20	5 51	17 46	0 22	1 13	7 16	1.6	20 8	2.0
10	5 48	17 49	0 21	1 10	7 23	1.7	19 60	1.9
0	5 46	17 52	0 21	1 9	7 30	1.8	19 52	1.9
10	5 43	17 55	0 21	1 10	7 37	1.9	19 43	1.8
20	5 39	17 59	0 22	1 14	7 45	2.0	19 35	1.7
30	5 36	18 3	0 24	1 21	7 53	2.2	19 25	1.5
35	5 33	18 5	0 25	1 26	7 58	2.2	19 19	1.5
40	5 31	18 8	0 27	1 33	8 4	2.3	19 12	1.4
45	5 28	18 11	0 30	1 42	8 11	2.4	19 5	1.3
50	5 24	18 15	0 33	1 54	8 19	2.5	18 56	1.2
55	5 19	18 20	0 37	2 11	8 29	2.7	18 45	1.1
60	5 13	18 26	0 43	2 38	8 42	2.9	18 30	.9

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	160	48.1	146	8	28.4	84	187	2.9	-1	.5	121	40.9	-20	46.3
2	189	55.4	146	8	45.3	83	217	6.8	-1	.9	151	45.4	-20	46.4
4	219	2.6	146	9	2.0	83	247	10.7	-1	1.4	181	49.9	-20	46.5
6	248	9.8	146	9	18.5	82	277	14.7	-1	1.8	211	54.5	-20	46.5
8	277	16.9	145	9	34.9	81	307	18.6	-1	2.2	241	59.0	-20	46.6
10	306	24.0	145	9	51.1	80	337	22.5	-1	2.6	272	3.5	-20	46.7
12	335	31.0	145	10	7.1	79	7	26.5	-1	3.1	302	8.0	-20	46.7
14	4	37.9	144	10	22.9	78	37	30.4	-1	3.5	332	12.6	-20	46.8
16	33	44.8	144	10	38.6	77	67	34.3	-1	3.9	2	17.1	-20	46.9
18	62	51.5	144	10	54.1	76	97	38.3	-1	4.3	32	21.6	-20	46.9
20	91	58.2	143	11	9.4	76	127	42.2	-1	4.8	62	26.2	-20	47.0
22	121	4.9	143	11	24.5	75	157	46.2	-1	5.2	92	30.7	-20	47.1
Δ							20			-2		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 57.9	.8	16.0	T _m	13 41	1.8	54.1 14.7
12	11 7.1	T _{m☉}	11 h 48.9 min	Starost	2.0 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 48	.1	141	-3.3	♄	11 30	.0	175	-1.2
♂	17 27	.1	86	-4	♂	15 51	.0	110	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	49.1	-4	25.7	13	6.7	153	2.0	-15	59.0	98	13.5	-25	43.4
2	212	49.5	-4	27.6	43	11.6	183	1.0	-16	1.1	128	14.7	-25	43.2
4	242	49.9	-4	29.6	73	16.5	212	60.0	-16	3.2	158	15.9	-25	43.0
6	272	50.2	-4	31.5	103	21.5	242	58.9	-16	5.3	188	17.2	-25	42.9
8	302	50.6	-4	33.4	133	26.4	272	57.9	-16	7.3	218	18.4	-25	42.7
10	332	51.0	-4	35.3	163	31.3	302	56.9	-16	9.4	248	19.6	-25	42.5
12	2	51.4	-4	37.3	193	36.2	332	55.9	-16	11.5	278	20.8	-25	42.3
14	32	51.7	-4	39.2	223	41.2	2	54.8	-16	13.6	308	22.0	-25	42.1
16	62	52.1	-4	41.1	253	46.1	32	53.8	-16	15.6	338	23.2	-25	41.9
18	92	52.5	-4	43.0	283	51.0	62	52.7	-16	17.7	8	24.4	-25	41.7
20	122	52.9	-4	45.0	313	56.0	92	51.7	-16	19.8	38	25.6	-25	41.5
22	152	53.3	-4	46.9	344	.9	122	50.7	-16	21.9	68	26.8	-25	41.3
Δ		2		-10				-5		-10		6		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 13	17 22	0 41	2 20	6 42	1.0	22 23	2.7
55	6 9	17 27	0 36	2 1	6 59	1.2	22 3	2.5
50	6 5	17 31	0 32	1 48	7 11	1.3	21 48	2.4
45	6 2	17 34	0 29	1 37	7 22	1.4	21 36	2.3
40	5 60	17 37	0 27	1 30	7 30	1.5	21 26	2.3
35	5 57	17 39	0 25	1 24	7 37	1.5	21 18	2.2
30	5 55	17 41	0 24	1 19	7 44	1.6	21 10	2.1
20	5 52	17 45	0 22	1 13	7 55	1.7	20 57	2.1
10	5 48	17 49	0 21	1 10	8 5	1.8	20 46	2.0
0	5 45	17 52	0 21	1 9	8 14	1.9	20 36	1.9
10	5 42	17 55	0 21	1 10	8 24	2.0	20 26	1.8
20	5 38	17 59	0 22	1 14	8 34	2.0	20 14	1.7
30	5 34	18 3	0 24	1 21	8 45	2.1	20 2	1.7
35	5 32	18 6	0 26	1 26	8 52	2.2	19 55	1.6
40	5 29	18 9	0 27	1 33	8 60	2.3	19 46	1.5
45	5 26	18 12	0 30	1 42	9 8	2.4	19 37	1.5
50	5 22	18 16	0 33	1 54	9 19	2.5	19 25	1.4
55	5 17	18 21	0 37	2 12	9 33	2.6	19 10	1.2
60	5 10	18 28	0 43	2 40	9 51	2.8	18 51	1.1

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	150	11.4	142	11	39.4	74	187	50.1	-1	5.6	122	35.2	-20	47.1
2	179	17.9	142	11	54.1	73	217	54.0	-1	6.0	152	39.7	-20	47.2
4	208	24.2	141	12	8.6	71	247	58.0	-1	6.5	182	44.3	-20	47.3
6	237	30.5	141	12	22.9	70	278	1.9	-1	6.9	212	48.8	-20	47.3
8	266	36.7	140	12	37.0	69	308	5.8	-1	7.3	242	53.3	-20	47.4
10	295	42.8	140	12	50.9	68	338	9.8	-1	7.7	272	57.8	-20	47.4
12	324	48.8	140	13	4.5	67	8	13.7	-1	8.2	303	2.4	-20	47.5
14	353	54.7	139	13	17.9	66	38	17.6	-1	8.6	333	6.9	-20	47.6
16	23	.5	139	13	31.1	65	68	21.6	-1	9.0	3	11.4	-20	47.6
18	52	6.2	138	13	44.1	64	98	25.5	-1	9.4	33	15.9	-20	47.7
20	81	11.8	137	13	56.8	62	128	29.5	-1	9.9	63	20.5	-20	47.8
22	110	17.3	137	14	9.3	61	158	33.4	-1	10.3	93	25.0	-20	47.8
Δ							20			-2		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 16.4	.8	16.0	T _m	14 25	1.9	54.0 14.7
12	11 25.4	T _{m☉}	11 h 48.6 min	Starost	3.0 d	Faza	●

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 53.6 - 4 48.8		14 5.8	152 49.6 -16 23.9		98 28.0 -25 41.1	
2	212 54.0 - 4 50.7		44 10.7	182 48.6 -16 26.0		128 29.2 -25 40.9	
4	242 54.4 - 4 52.7		74 15.7	212 47.5 -16 28.0		158 30.4 -25 40.7	
6	272 54.7 - 4 54.6		104 20.6	242 46.5 -16 30.1		188 31.6 -25 40.5	
8	302 55.1 - 4 56.5		134 25.5	272 45.4 -16 32.1		218 32.8 -25 40.3	
10	332 55.5 - 4 58.4		164 30.5	302 44.4 -16 34.2		248 34.0 -25 40.1	
12	2 55.9 - 5 .3		194 35.4	332 43.3 -16 36.2		278 35.2 -25 39.9	
14	32 56.2 - 5 2.3		224 40.3	2 42.3 -16 38.3		308 36.4 -25 39.7	
16	62 56.6 - 5 4.2		254 45.2	32 41.2 -16 40.3		338 37.6 -25 39.5	
18	92 57.0 - 5 6.1		284 50.2	62 40.2 -16 42.3		8 38.8 -25 39.2	
20	122 57.3 - 5 8.0		314 55.1	92 39.1 -16 44.4		38 40.0 -25 39.0	
22	152 57.7 - 5 9.9		345 .0	122 38.0 -16 46.4		68 41.1 -25 38.8	
Δ	2	-10		-5	-10	6	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 16	17 19	0 41	2 20	7 5	1.2	23 28	2.5
55	6 11	17 25	0 36	2 1	7 26	1.4	23 4	2.4
50	6 7	17 29	0 32	1 47	7 42	1.5	22 46	2.3
45	6 3	17 33	0 29	1 37	7 55	1.5	22 32	2.3
40	6 1	17 35	0 27	1 30	8 5	1.6	22 20	2.2
35	5 58	17 38	0 25	1 24	8 14	1.7	22 10	2.2
30	5 56	17 40	0 24	1 19	8 22	1.7	22 2	2.1
20	5 52	17 44	0 22	1 13	8 36	1.8	21 47	2.1
10	5 48	17 48	0 21	1 10	8 48	1.9	21 34	2.0
0	5 45	17 52	0 21	1 9	8 59	1.9	21 21	2.0
10	5 41	17 55	0 21	1 10	9 11	2.0	21 9	1.9
20	5 38	17 59	0 22	1 14	9 23	2.1	20 56	1.8
30	5 33	18 4	0 24	1 21	9 37	2.1	20 42	1.8
35	5 30	18 7	0 26	1 26	9 45	2.2	20 33	1.7
40	5 27	18 10	0 27	1 33	9 54	2.2	20 23	1.7
45	5 24	18 13	0 30	1 42	10 5	2.3	20 12	1.6
50	5 20	18 18	0 33	1 55	10 18	2.4	19 58	1.6
55	5 14	18 23	0 37	2 13	10 35	2.5	19 40	1.5
60	5 7	18 31	0 43	2 41	10 57	2.6	19 17	1.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	139 22.7 136	14 21.5	60	188 37.3 - 1 10.7		123 29.5 -20 47.9		
2	168 28.0 136	14 33.5	59	218 41.3 - 1 11.1		153 34.0 -20 48.0		
4	197 33.1 135	14 45.3	57	248 45.2 - 1 11.6		183 38.5 -20 48.0		
6	226 38.2 135	14 56.7	56	278 49.1 - 1 12.0		213 43.1 -20 48.1		
8	255 43.1 134	15 8.0	55	308 53.1 - 1 12.4		243 47.6 -20 48.2		
10	284 47.9 134	15 18.9	54	338 57.0 - 1 12.8		273 52.1 -20 48.2		
12	313 52.6 133	15 29.6	52	9 1.0 - 1 13.3		303 56.6 -20 48.3		
14	342 57.2 132	15 40.1	51	39 4.9 - 1 13.7		334 1.1 -20 48.4		
16	12 1.7 132	15 50.2	49	69 8.8 - 1 14.1		4 5.6 -20 48.4		
18	41 6.0 131	16 .1	48	99 12.8 - 1 14.5		34 10.2 -20 48.5		
20	70 10.3 131	16 9.7	47	129 16.7 - 1 14.9		64 14.7 -20 48.6		
22	99 14.4 130	16 19.1	45	159 20.6 - 1 15.4		94 19.2 -20 48.6		
Δ				20	-2	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 34.5	.7	16.0	T _m	15 10	2.0	54.0 14.7
12	11 43.4	T _{m☉}	11 h 48.3 min	Starost	4.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 49	.1	139	-3.4	♄	11 24	.0	175	-1.2
♂	17 25	.1	84	-4	♄	15 44	.0	109	.8

6. OKTOBAR

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 58.1 - 5 11.9		15 4.9	152 37.0 -16 48.4		98 42.3 -25 38.6	
2	212 58.4 - 5 13.8		45 9.9	182 35.9 -16 50.5		128 43.5 -25 38.4	
4	242 58.8 - 5 15.7		75 14.8	212 34.8 -16 52.5		158 44.7 -25 38.2	
6	272 59.2 - 5 17.6		105 19.7	242 33.8 -16 54.5		188 45.9 -25 37.9	
8	302 59.5 - 5 19.5		135 24.7	272 32.7 -16 56.5		218 47.1 -25 37.7	
10	332 59.9 - 5 21.4		165 29.6	302 31.6 -16 58.5		248 48.3 -25 37.5	
12	3 .2 - 5 23.4		195 34.5	332 30.5 -17 .6		278 49.5 -25 37.3	
14	33 .6 - 5 25.3		225 39.4	2 29.5 -17 2.6		308 50.6 -25 37.0	
16	63 1.0 - 5 27.2		255 44.4	32 28.4 -17 4.6		338 51.8 -25 36.8	
18	93 1.3 - 5 29.1		285 49.3	62 27.3 -17 6.6		8 53.0 -25 36.6	
20	123 1.7 - 5 31.0		315 54.2	92 26.2 -17 8.6		38 54.2 -25 36.3	
22	153 2.1 - 5 32.9		345 59.2	122 25.1 -17 10.6		68 55.4 -25 36.1	
Δ	2	-10		-5	-10	6	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 18	17 16	0 41	2 19	7 34	1.5	...	.0
55	6 13	17 22	0 36	2 1	7 59	1.6	...	.0
50	6 8	17 27	0 32	1 47	8 17	1.7	23 41	2.2
45	6 5	17 31	0 29	1 37	8 32	1.7	23 26	2.1
40	6 2	17 34	0 27	1 30	8 44	1.8	23 13	2.1
35	5 59	17 37	0 25	1 24	8 54	1.8	23 2	2.1
30	5 56	17 39	0 24	1 19	9 3	1.8	22 52	2.1
20	5 52	17 43	0 22	1 13	9 19	1.9	22 36	2.1
10	5 48	17 47	0 21	1 10	9 33	1.9	22 22	2.0
0	5 45	17 51	0 21	1 9	9 45	2.0	22 8	2.0
10	5 41	17 55	0 21	1 10	9 58	2.0	21 55	2.0
20	5 37	17 59	0 22	1 14	10 12	2.1	21 41	2.0
30	5 32	18 4	0 24	1 21	10 28	2.1	21 24	1.9
35	5 29	18 7	0 26	1 27	10 37	2.1	21 15	1.9
40	5 26	18 11	0 27	1 33	10 48	2.2	21 4	1.9
45	5 22	18 15	0 30	1 43	11 0	2.2	20 51	1.8
50	5 18	18 19	0 33	1 55	11 15	2.2	20 35	1.8
55	5 12	18 25	0 37	2 14	11 35	2.3	20 16	1.8
60	5 4	18 33	0 43	2 43	12 1	2.4	19 49	1.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	' / "
0	128 18.4 129	16 28.1	44	189 24.6 - 1 15.8		124 23.7 -20 48.7		
2	157 22.2 129	16 36.8	42	219 28.5 - 1 16.2		154 28.2 -20 48.8		
4	186 26.0 128	16 45.3	41	249 32.5 - 1 16.6		184 32.7 -20 48.8		
6	215 29.6 127	16 53.5	39	279 36.4 - 1 17.1		214 37.2 -20 48.9		
8	244 33.1 127	17 1.3	38	309 40.3 - 1 17.5		244 41.8 -20 49.0		
10	273 36.5 126	17 8.9	36	339 44.3 - 1 17.9		274 46.3 -20 49.0		
12	302 39.7 126	17 16.1	35	9 48.2 - 1 18.3		304 50.8 -20 49.1		
14	331 42.8 125	17 23.1	33	39 52.1 - 1 18.8		334 55.3 -20 49.2		
16	0 45.8 124	17 29.7	32	69 56.1 - 1 19.2		4 59.8 -20 49.2		
18	29 48.7 124	17 36.0	30	100 .0 - 1 19.6		35 4.3 -20 49.3		
20	58 51.5 123	17 42.0	28	130 4.0 - 1 20.0		65 8.8 -20 49.4		
22	87 54.1 123	17 47.7	27	160 7.9 - 1 20.5		95 13.3 -20 49.4		
Δ				20	-2	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 52.3	.7	16.0	T _m	15 57	2.0	54.1 14.8
12	12 1.0	T _{m☉}	11 h 48.0 min	Starost	5.0 d	Faza	☉

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 50	.1	138	-3.4	♄	11 21	.0	174	-1.2
♂	17 24	.1	84	-4					

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	2.4	-5	34.8	16	4.1	152	24.0	-17	12.6	98	56.6	-25	35.9
2	213	2.8	-5	36.7	46	9.0	182	22.9	-17	14.6	128	57.7	-25	35.6
4	243	3.1	-5	38.7	76	13.9	212	21.8	-17	16.6	158	58.9	-25	35.4
6	273	3.5	-5	40.6	106	18.9	242	20.8	-17	18.5	189	.1	-25	35.1
8	303	3.8	-5	42.5	136	23.8	272	19.7	-17	20.5	219	1.3	-25	34.9
10	333	4.2	-5	44.4	166	28.7	302	18.6	-17	22.5	249	2.4	-25	34.7
12	3	4.5	-5	46.3	196	33.7	332	17.5	-17	24.5	279	3.6	-25	34.4
14	33	4.9	-5	48.2	226	38.6	2	16.4	-17	26.5	309	4.8	-25	34.2
16	63	5.3	-5	50.1	256	43.5	32	15.3	-17	28.4	339	6.0	-25	33.9
18	93	5.6	-5	52.0	286	48.4	62	14.1	-17	30.4	9	7.1	-25	33.7
20	123	6.0	-5	53.9	316	53.4	92	13.0	-17	32.4	39	8.3	-25	33.4
22	153	6.3	-5	55.8	346	58.3	122	11.9	-17	34.3	69	9.5	-25	33.2
Δ		2		-10				-6		-10		6		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 21	17 14	0 41	2 19	8 10	1.9	0 28	2.3
55	6 15	17 20	0 36	2 1	8 38	1.9	0 1	2.2
50	6 10	17 25	0 32	1 47	8 58	1.9	...	2.0
45	6 6	17 29	0 29	1 37	9 14	2.0	...	.0
40	6 3	17 32	0 27	1 30	9 27	2.0	...	.0
35	5 60	17 35	0 25	1 24	9 38	2.0	23 52	2.0
30	5 57	17 38	0 24	1 19	9 48	2.0	23 42	2.0
20	5 52	17 43	0 22	1 13	10 5	2.0	23 25	2.0
10	5 48	17 47	0 21	1 10	10 19	2.0	23 10	2.0
0	5 44	17 51	0 21	1 9	10 33	2.0	22 56	2.1
10	5 40	17 55	0 21	1 10	10 47	2.0	22 42	2.1
20	5 36	17 60	0 22	1 14	11 2	2.0	22 27	2.1
30	5 31	18 5	0 24	1 21	11 19	2.1	22 10	2.1
35	5 28	18 8	0 26	1 27	11 28	2.1	22 0	2.1
40	5 24	18 12	0 27	1 34	11 40	2.1	21 49	2.1
45	5 20	18 16	0 30	1 43	11 53	2.1	21 35	2.1
50	5 15	18 21	0 33	1 56	12 9	2.1	21 19	2.1
55	5 9	18 27	0 37	2 15	12 30	2.1	20 58	2.1
60	5 1	18 36	0 44	2 45	12 58	2.1	20 30	2.1
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	116	56.6	122	17 53.0	25	190	11.8	-1 20.9	125	17.8	-20	49.5
2	145	59.0	121	17 58.1	23	220	15.8	-1 21.3	155	22.3	-20	49.6
4	175	1.3	121	18 2.8	22	250	19.7	-1 21.7	185	26.8	-20	49.6
6	204	3.4	120	18 7.1	20	280	23.7	-1 22.1	215	31.3	-20	49.7
8	233	5.4	120	18 11.2	18	310	27.6	-1 22.6	245	35.9	-20	49.8
10	262	7.3	119	18 14.9	17	340	31.5	-1 23.0	275	40.4	-20	49.8
12	291	9.1	118	18 18.2	15	10	35.5	-1 23.4	305	44.9	-20	49.9
14	320	10.8	118	18 21.2	13	40	39.4	-1 23.8	335	49.4	-20	50.0
16	349	12.3	117	18 23.9	12	70	43.3	-1 24.3	5	53.9	-20	50.0
18	18	13.8	117	18 26.2	10	100	47.3	-1 24.7	35	58.4	-20	50.1
20	47	15.1	116	18 28.2	8	130	51.2	-1 25.1	66	2.9	-20	50.2
22	76	16.3	116	18 29.8	6	160	55.2	-1 25.5	96	7.4	-20	50.2
Δ						20		-2		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 9.6	.7	16.0	T _m	16 45	2.0	54.4 14.8		
12	12 18.1	T _{m☉}	11 h 47.7 min	Starost	6.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	13 51	.1	136	-3.4	♃	11 18	.0	174	-1.2
♂	17 24	.1	83	-4	♄	15 36	.0	109	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	6.7	-5	57.7	17	3.2	152	10.8	-17	36.3	99	10.6	-25	32.9
2	213	7.0	-5	59.6	47	8.2	182	9.7	-17	38.2	129	11.8	-25	32.6
4	243	7.4	-6	1.5	77	13.1	212	8.6	-17	40.2	159	13.0	-25	32.4
6	273	7.7	-6	3.5	107	18.0	242	7.5	-17	42.1	189	14.2	-25	32.1
8	303	8.0	-6	5.4	137	22.9	272	6.3	-17	44.1	219	15.3	-25	31.9
10	333	8.4	-6	7.3	167	27.9	302	5.2	-17	46.0	249	16.5	-25	31.6
12	3	8.7	-6	9.2	197	32.8	332	4.1	-17	48.0	279	17.6	-25	31.3
14	33	9.1	-6	11.1	227	37.7	2	3.0	-17	49.9	309	18.8	-25	31.1
16	63	9.4	-6	13.0	257	42.7	32	1.8	-17	51.8	339	20.0	-25	30.8
18	93	9.8	-6	14.9	287	47.6	62	.7	-17	53.8	9	21.1	-25	30.5
20	123	10.1	-6	16.8	317	52.5	91	59.6	-17	55.7	39	22.3	-25	30.3
22	153	10.5	-6	18.7	347	57.4	121	58.4	-17	57.6	69	23.5	-25	30.0
Δ		2		-10				-6		-10		6		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 11	0 42	2 19	8 55	2.3	1 22	1.9
55	6 16	17 17	0 36	2 1	9 24	2.3	0 54	2.0
50	6 11	17 23	0 32	1 47	9 45	2.2	0 33	2.0
45	6 7	17 27	0 29	1 37	10 1	2.2	0 17	2.0
40	6 4	17 31	0 27	1 30	10 14	2.2	0 4	2.0
35	6 0	17 34	0 25	1 24	10 26	2.2	...	.0
30	5 58	17 37	0 24	1 19	10 36	2.1	...	.0
20	5 53	17 42	0 22	1 13	10 53	2.1	...	.0
10	5 48	17 46	0 21	1 10	11 8	2.1	23 59	2.1
0	5 44	17 51	0 21	1 9	11 22	2.1	23 46	2.1
10	5 40	17 55	0 21	1 10	11 36	2.1	23 32	2.1
20	5 35	18 0	0 22	1 14	11 51	2.0	23 17	2.2
30	5 30	18 6	0 24	1 22	12 8	2.0	22 60	2.2
35	5 26	18 9	0 26	1 27	12 18	2.0	22 50	2.2
40	5 23	18 13	0 28	1 34	12 29	2.0	22 39	2.3
45	5 18	18 17	0 30	1 43	12 43	1.9	22 25	2.3
50	5 13	18 23	0 33	1 56	12 59	1.9	22 9	2.4
55	5 7	18 29	0 38	2 16	13 20	1.8	21 48	2.4
60	4 58	18 38	0 44	2 47	13 49	1.8	21 20	2.5
S								

UT	MESEC				JUPITER		SATURN					
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄				
h	°	'	°	'	°	'	°	'				
0	105	17.4	115	18 31.1	5	190	59.1	-1 25.9	126	11.9	-20	50.3
2	134	18.4	114	18 32.0	3	221	3.0	-1 26.4	156	16.4	-20	50.4
4	163	19.3	114	18 32.5	1	251	7.0	-1 26.8	186	20.9	-20	50.4
6	192	20.1	113	18 32.7	-1	281	10.9	-1 27.2	216	25.4	-20	50.5
8	221	20.7	113	18 32.6	-3	311	14.9	-1 27.6	246	29.9	-20	50.6
10	250	21.3	112	18 32.0	-4	341	18.8	-1 28.1	276	34.4	-20	50.6
12	279	21.8	112	18 31.2	-6	11	22.7	-1 28.5	306	38.9	-20	50.7
14	308	22.1	111	18 29.9	-8	41	26.7	-1 28.9	336	43.4	-20	50.8
16	337	22.4	111	18 28.3	-10	71	30.6	-1 29.3	6	47.9	-20	50.8
18	6	22.5	110	18 26.3	-12	101	34.6	-1 29.7	36	52.4	-20	50.9
20	35	22.6	110	18 23.9	-14	131	38.5	-1 30.2	66	56.9	-20	51.0
22	64	22.6	109	18 21.2	-16	161	42.4	-1 30.6	97	1.4	-20	51.0
Δ						20		-2		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 26.6	.7	16.0	T _m	17 34	2.1	54.9 15.0		
12	12 34.9	T _{m☉}	11 h 47.4 min	Starost	7.0 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	10.8	-6	20.6	151	57.3	-17	59.6	99	24.6	-25	29.7
2	213	11.1	-6	22.5	181	56.2	-18	1.5	129	25.8	-25	29.4
4	243	11.5	-6	24.4	211	55.0	-18	3.4	159	26.9	-25	29.2
6	273	11.8	-6	26.3	241	53.9	-18	5.3	189	28.1	-25	28.9
8	303	12.2	-6	28.2	271	52.7	-18	7.2	219	29.3	-25	28.6
10	333	12.5	-6	30.1	301	51.6	-18	9.1	249	30.4	-25	28.3
12	3	12.8	-6	31.9	331	50.5	-18	11.0	279	31.6	-25	28.0
14	33	13.2	-6	33.8	1	49.3	-18	12.9	309	32.7	-25	27.8
16	63	13.5	-6	35.7	31	48.1	-18	14.8	339	33.9	-25	27.5
18	93	13.8	-6	37.6	61	47.0	-18	16.7	9	35.0	-25	27.2
20	123	14.2	-6	39.5	91	45.8	-18	18.6	39	36.2	-25	26.9
22	153	14.5	-6	41.4	121	44.7	-18	20.5	69	37.3	-25	26.6
Δ	2	-9			-6	-10			6	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 8	0 42	2 19	9 51	2.7	2 9	1.6
55	6 18	17 15	0 36	2 1	10 18	2.6	1 41	1.7
50	6 13	17 21	0 32	1 47	10 38	2.5	1 21	1.8
45	6 8	17 25	0 29	1 37	10 54	2.4	1 5	1.9
40	6 5	17 29	0 27	1 30	11 7	2.4	0 52	1.9
35	6 1	17 33	0 25	1 24	11 18	2.3	0 41	1.9
30	5 58	17 36	0 24	1 19	11 27	2.3	0 31	2.0
20	5 53	17 41	0 22	1 13	11 44	2.2	0 14	2.0
10	5 48	17 46	0 21	1 10	11 58	2.2	...	2.0
0	5 44	17 50	0 21	1 9	12 12	2.1	...	2.0
10	5 39	17 55	0 21	1 11	12 25	2.1	...	2.0
20	5 34	18 0	0 22	1 14	12 39	2.0	...	2.0
30	5 28	18 6	0 24	1 22	12 56	1.9	23 53	2.4
35	5 25	18 10	0 26	1 27	13 5	1.9	23 44	2.4
40	5 21	18 14	0 28	1 34	13 16	1.8	23 33	2.5
45	5 17	18 19	0 30	1 44	13 29	1.8	23 21	2.5
50	5 11	18 24	0 33	1 57	13 45	1.7	23 6	2.6
55	5 4	18 31	0 38	2 17	14 5	1.6	22 46	2.7
60	4 55	18 40	0 44	2 49	14 31	1.5	22 20	2.9
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	93	22.5	109	18	18.0	-17	191	46.4	-1	31.0	127	5.9	-20	51.1
2	122	22.2	108	18	14.6	-19	221	50.3	-1	31.4	157	10.4	-20	51.2
4	151	21.9	108	18	10.7	-21	251	54.3	-1	31.9	187	14.8	-20	51.2
6	180	21.6	108	18	6.4	-23	281	58.2	-1	32.3	217	19.3	-20	51.3
8	209	21.1	107	18	1.8	-25	312	2.1	-1	32.7	247	23.8	-20	51.4
10	238	20.5	107	17	56.8	-27	342	6.1	-1	33.1	277	28.3	-20	51.4
12	267	19.9	106	17	51.5	-29	12	10.0	-1	33.5	307	32.8	-20	51.5
14	296	19.2	106	17	45.7	-31	42	14.0	-1	34.0	337	37.3	-20	51.6
16	325	18.4	106	17	39.6	-33	72	17.9	-1	34.4	7	41.8	-20	51.6
18	354	17.5	105	17	33.1	-34	102	21.9	-1	34.8	37	46.3	-20	51.7
20	23	16.5	105	17	26.2	-36	132	25.8	-1	35.2	67	50.8	-20	51.8
22	52	15.5	104	17	18.9	-38	162	29.7	-1	35.6	97	55.3	-20	51.8
Δ							20	-2			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 43.2	.7	16.0	T _m	18 24	2.1	55.5	15.1	
12	12 51.3	T _{m☉}	11 h 47.1 min	Starost	8.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	13 53	.1	134	-3.4	♄	11 11	.0	174	-1.2
♂	17 22	.1	81	-3.3	♂	15 29	.0	109	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS						
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂					
h	°	'	°	'	°	'	°	'				
0	183	14.8	-6	43.3	151	43.5	-18	22.4	99	38.5	-25	26.3
2	213	15.2	-6	45.2	181	42.4	-18	24.3	129	39.6	-25	26.0
4	243	15.5	-6	47.1	211	41.2	-18	26.1	159	40.8	-25	25.7
6	273	15.8	-6	49.0	241	40.0	-18	28.0	189	41.9	-25	25.4
8	303	16.2	-6	50.9	271	38.9	-18	29.9	219	43.1	-25	25.1
10	333	16.5	-6	52.8	301	37.7	-18	31.8	249	44.2	-25	24.8
12	3	16.8	-6	54.6	331	36.5	-18	33.6	279	45.4	-25	24.5
14	33	17.1	-6	56.5	1	35.3	-18	35.5	309	46.5	-25	24.2
16	63	17.5	-6	58.4	31	34.2	-18	37.3	339	47.7	-25	23.9
18	93	17.8	-7	.3	61	33.0	-18	39.2	9	48.8	-25	23.6
20	123	18.1	-7	2.2	91	31.8	-18	41.1	39	50.0	-25	23.3
22	153	18.4	-7	4.1	121	30.6	-18	42.9	69	51.1	-25	23.0
Δ	2	-9			-6	-9			6	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	6 28	17 5	0 42	2 19	10 56	3.1	2 48	1.3
55	6 20	17 12	0 36	2 0	11 20	2.9	2 23	1.5
50	6 14	17 18	0 32	1 47	11 38	2.7	2 4	1.6
45	6 10	17 23	0 29	1 37	11 52	2.6	1 50	1.7
40	6 6	17 28	0 27	1 30	12 4	2.6	1 37	1.8
35	6 2	17 31	0 25	1 24	12 13	2.5	1 27	1.8
30	5 59	17 34	0 24	1 19	12 22	2.4	1 18	1.9
20	5 53	17 40	0 22	1 13	12 37	2.3	1 2	2.0
10	5 48	17 45	0 21	1 10	12 50	2.2	0 49	2.1
0	5 44	17 50	0 21	1 9	13 2	2.1	0 36	2.1
10	5 39	17 55	0 21	1 11	13 14	2.1	0 23	2.2
20	5 33	18 1	0 22	1 15	13 27	2.0	0 9	2.3
30	5 27	18 7	0 24	1 22	13 42	1.9	...	2.3
35	5 24	18 11	0 26	1 27	13 51	1.8	...	2.3
40	5 20	18 15	0 28	1 35	14 0	1.7	...	2.3
45	5 15	18 20	0 30	1 44	14 12	1.6	...	2.3
50	5 9	18 26	0 33	1 58	14 26	1.5	...	2.3
55	5 2	18 33	0 38	2 18	14 43	1.4	23 52	3.0
60	4 52	18 43	0 44	2 51	15 6	1.2	23 30	3.2
S								

UT	MESEC				JUPITER		SATURN							
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄						
h	°	'	°	'	°	'	°	'						
0	81	14.4	104	17	11.3	-40	192	33.7	-1	36.1	127	59.8	-20	51.9
2	110	13.2	104	17	3.3	-42	222	37.6	-1	36.5	158	4.3	-20	52.0
4	139	12.0	103	16	54.9	-44	252	41.6	-1	36.9	188	8.7	-20	52.0
6	168	10.7	103	16	46.1	-46	282	45.5	-1	37.3	218	13.2	-20	52.1
8	197	9.3	103	16	37.0	-48	312	49.4	-1	37.7	248	17.7	-20	52.2
10	226	7.9	102	16	27.4	-50	342	53.4	-1	38.2	278	22.2	-20	52.2
12	255	6.3	102	16	17.5	-51	12	57.3	-1	38.6	308	26.7	-20	52.3
14	284	4.8	102	16	7.3	-53	43	1.3	-1	39.0	338	31.2	-20	52.4
16	313	3.1	102	15	56.6	-55	73	5.2	-1	39.4	8	35.7	-20	52.5
18	342	1.5	101	15	45.6	-57	103	9.2	-1	39.8	38	40.1	-20	52.5
20	10	59.7	101	15	34.2	-59	133	13.1	-1	40.3	68	44.6	-20	52.6
22	39	57.9	101	15	22.5	-61	163	17.0	-1	40.7	98	49.1	-20	52.7
Δ							20	-2			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 59.3	.7	16.0	T _m	19 14	2.2	56.2	15.3	
12	13 7.2	T _{m☉}	11 h 46.9 min	Starost	9.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	13 54	.1	133	-3.4	♄	11 8	.0	174	-1.2
♂	17 21	.1	81	-3.3	♂	15 26	.0	109	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	'	'	'	
0	183	18.8	-7	6.0	20	.6	151 29.4 -18 44.8	99 52.3 -25 22.7
2	213	19.1	-7	7.8	50	5.6	181 28.3 -18 46.6	129 53.4 -25 22.4
4	243	19.4	-7	9.7	80	10.5	211 27.1 -18 48.4	159 54.6 -25 22.0
6	273	19.7	-7	11.6	110	15.4	241 25.9 -18 50.3	189 55.7 -25 21.7
8	303	20.0	-7	13.5	140	20.4	271 24.7 -18 52.1	219 56.8 -25 21.4
10	333	20.4	-7	15.4	170	25.3	301 23.5 -18 53.9	249 58.0 -25 21.1
12	3 20.7	-7	17.2	200 30.2	331 22.3 -18 55.8	279 59.1 -25 20.8		
14	33 21.0	-7	19.1	230 35.1	1 21.1 -18 57.6	310 .3 -25 20.4		
16	63 21.3	-7	21.0	260 40.1	31 19.9 -18 59.4	340 1.4 -25 20.1		
18	93 21.6	-7	22.9	290 45.0	61 18.7 -19 1.2	10 2.5 -25 19.8		
20	123 21.9	-7	24.8	320 49.9	91 17.5 -19 3.0	40 3.7 -25 19.5		
22	153 22.2	-7	26.6	350 54.9	121 16.3 -19 4.8	70 4.8 -25 19.1		
Δ	2	-9			-6	-9	6	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	6 30	17 2	0 42	2 19	12 10	3.3	3 19	1.1
55	6 22	17 10	0 36	2 0	12 29	3.1	2 59	1.3
50	6 16	17 16	0 32	1 47	12 44	2.9	2 43	1.5
45	6 11	17 22	0 29	1 37	12 55	2.8	2 30	1.6
40	6 7	17 26	0 27	1 30	13 5	2.7	2 20	1.7
35	6 3	17 30	0 25	1 24	13 13	2.6	2 11	1.8
30	5 60	17 33	0 24	1 19	13 20	2.5	2 3	1.8
20	5 54	17 39	0 22	1 13	13 33	2.4	1 50	1.9
10	5 48	17 45	0 21	1 10	13 43	2.3	1 38	2.1
0	5 43	17 50	0 21	1 9	13 54	2.2	1 27	2.1
10	5 38	17 55	0 21	1 11	14 4	2.1	1 15	2.2
20	5 33	18 1	0 22	1 15	14 14	1.9	1 3	2.4
30	5 26	18 8	0 24	1 22	14 27	1.8	0 50	2.5
35	5 22	18 12	0 26	1 28	14 34	1.7	0 42	2.5
40	5 18	18 16	0 28	1 35	14 42	1.6	0 32	2.6
45	5 13	18 21	0 30	1 45	14 51	1.5	0 22	2.7
50	5 7	18 27	0 33	1 58	15 3	1.4	0 8	2.8
55	4 59	18 35	0 38	2 19	15 17	1.2	...	...
60	4 49	18 45	0 45	2 54	15 35	1.0	...	...
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	68	56.0	100	15 10.3	-62	193 21.0 -1 41.1	128 53.6 -20 52.7	
2	97	54.1	100	14 57.9	-64	223 24.9 -1 41.5	158 58.1 -20 52.8	
4	126	52.1	100	14 45.0	-66	253 28.9 -1 41.9	189 2.6 -20 52.9	
6	155	50.1	99	14 31.8	-68	283 32.8 -1 42.4	219 7.0 -20 52.9	
8	184	48.0	99	14 18.3	-70	313 36.8 -1 42.8	249 11.5 -20 53.0	
10	213	45.8	99	14 4.4	-71	343 40.7 -1 43.2	279 16.0 -20 53.1	
12	242	43.6	99	13 50.1	-73	13 44.6 -1 43.6	309 20.5 -20 53.1	
14	271	41.3	98	13 35.5	-75	43 48.6 -1 44.0	339 25.0 -20 53.2	
16	300	39.0	98	13 20.5	-76	73 52.5 -1 44.5	9 29.5 -20 53.3	
18	329	36.6	98	13 5.3	-78	103 56.5 -1 44.9	39 33.9 -20 53.3	
20	358	34.2	98	12 49.6	-80	134 .4 -1 45.3	69 38.4 -20 53.4	
22	27 31.7	97	12 33.7	-81	164 4.4 -1 45.7	99 42.9 -20 53.5		
Δ					20	-2	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 15.0	.6	16.0	T _m	20 6	2.2	57.1 15.6		
12	13 22.6	T _{m☉}	11 h 46.6 min	Starost	10.0 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 55	.1	131	-3.4	♃	11 5	.0	173	-1.2
♂	17 20	.1	80	-3.3	♄	15 22	.0	109	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS		
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂	
h	°	'	°	'	'	'	'	
0	183	22.6	-7	28.5	20 59.8	151 15.1 -19 6.7	100 6.0 -25 18.8	
2	213	22.9	-7	30.4	51 4.7	181 13.9 -19 8.5	130 7.1 -25 18.5	
4	243	23.2	-7	32.3	81 9.6	211 12.7 -19 10.3	160 8.2 -25 18.1	
6	273	23.5	-7	34.1	111 14.6	241 11.4 -19 12.1	190 9.4 -25 17.8	
8	303	23.8	-7	36.0	141 19.5	271 10.2 -19 13.8	220 10.5 -25 17.5	
10	333	24.1	-7	37.9	171 24.4	301 9.0 -19 15.6	250 11.6 -25 17.1	
12	3 24.4	-7	39.7	201 29.4	331 7.8 -19 17.4	280 12.8 -25 16.8		
14	33 24.7	-7	41.6	231 34.3	1 6.6 -19 19.2	310 13.9 -25 16.4		
16	63 25.0	-7	43.5	261 39.2	31 5.3 -19 21.0	340 15.0 -25 16.1		
18	93 25.3	-7	45.4	291 44.1	61 4.1 -19 22.8	10 16.2 -25 15.8		
20	123 25.6	-7	47.2	321 49.1	91 2.9 -19 24.5	40 17.3 -25 15.4		
22	153 25.9	-7	49.1	351 54.0	121 1.7 -19 26.3	70 18.4 -25 15.1		
Δ	2	-9			-6	-9	6	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	6 33	16 59	0 42	2 19	13 30	3.5	3 45	.9
55	6 24	17 8	0 36	2 0	13 44	3.3	3 30	1.2
50	6 18	17 14	0 32	1 47	13 54	3.1	3 18	1.3
45	6 12	17 20	0 29	1 37	14 3	3.0	3 8	1.5
40	6 8	17 25	0 27	1 30	14 10	2.8	3 0	1.6
35	6 4	17 29	0 25	1 24	14 16	2.7	2 53	1.7
30	6 0	17 32	0 24	1 19	14 21	2.6	2 47	1.8
20	5 54	17 39	0 22	1 13	14 30	2.5	2 37	1.9
10	5 48	17 44	0 21	1 10	14 38	2.3	2 27	2.1
0	5 43	17 50	0 21	1 9	14 46	2.2	2 18	2.2
10	5 38	17 55	0 21	1 11	14 53	2.1	2 9	2.3
20	5 32	18 1	0 22	1 15	15 1	1.9	1 60	2.4
30	5 25	18 8	0 24	1 22	15 10	1.8	1 49	2.6
35	5 21	18 12	0 26	1 28	15 15	1.7	1 43	2.7
40	5 16	18 17	0 28	1 35	15 21	1.6	1 35	2.8
45	5 11	18 22	0 30	1 45	15 28	1.5	1 27	2.9
50	5 5	18 29	0 34	1 59	15 36	1.3	1 17	3.0
55	4 57	18 37	0 38	2 20	15 46	1.1	1 4	3.2
60	4 46	18 48	0 45	2 56	15 59	.9	0 47	3.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	°	'	'	'	'	'
0	56	29.1	97	12 17.4	-83	194 8.3 -1 46.1	129 47.4 -20 53.5	
2	85	26.5	97	12 .8	-85	224 12.2 -1 46.6	159 51.8 -20 53.6	
4	114	23.9	96	11 43.8	-86	254 16.2 -1 47.0	189 56.3 -20 53.7	
6	143	21.1	96	11 26.6	-88	284 20.1 -1 47.4	220 .8 -20 53.7	
8	172	18.4	96	11 9.0	-89	314 24.1 -1 47.8	250 5.3 -20 53.8	
10	201	15.5	95	10 51.2	-91	344 28.0 -1 48.2	280 9.7 -20 53.9	
12	230	12.6	95	10 33.0	-92	14 32.0 -1 48.6	310 14.2 -20 54.0	
14	259	9.6	95	10 14.5	-94	44 35.9 -1 49.1	340 18.7 -20 54.0	
16	288	6.6	95	9 55.8	-95	74 39.9 -1 49.5	10 23.2 -20 54.1	
18	317	3.5	94	9 36.7	-97	104 43.8 -1 49.9	40 27.6 -20 54.2	
20	346	.3	94	9 17.4	-98	134 47.8 -1 50.3	70 32.1 -20 54.2	
22	14 57.1	93	8 57.9	-99	164 51.7 -1 50.7	100 36.6 -20 54.3		
Δ					20	-2	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 30.2	.6	16.1	T _m	20 58	2.2	58.1 15.8		
12	13 37.6	T _{m☉}	11 h 46.4 min	Starost	11.0 d	Faza ☉			
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	13 56	.1	130	-3.4	♃	11 2	.0	173	-1.2
♂	17 19	.1	79	-3.3	♄	15 19	.0	109	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 26.2 - 7 51.0		21 58.9	151 .4 -19 28.1	100 19.5 -25 14.7		
2	213 26.5 - 7 52.8		52 3.8	180 59.2 -19 29.8	130 20.7 -25 14.4		
4	243 26.8 - 7 54.7		82 8.8	210 58.0 -19 31.6	160 21.8 -25 14.0		
6	273 27.1 - 7 56.5		112 13.7	240 56.7 -19 33.4	190 22.9 -25 13.6		
8	303 27.4 - 7 58.4		142 18.6	270 55.5 -19 35.1	220 24.1 -25 13.3		
10	333 27.7 - 8 .3		172 23.6	300 54.2 -19 36.9	250 25.2 -25 12.9		
12	3 28.0 - 8 2.1		202 28.5	330 53.0 -19 38.6	280 26.3 -25 12.6		
14	33 28.3 - 8 4.0		232 33.4	0 51.8 -19 40.3	310 27.4 -25 12.2		
16	63 28.6 - 8 5.9		262 38.3	30 50.5 -19 42.1	340 28.6 -25 11.8		
18	93 28.9 - 8 7.7		292 43.3	60 49.3 -19 43.8	10 29.7 -25 11.5		
20	123 29.2 - 8 9.6		322 48.2	90 48.0 -19 45.5	40 30.8 -25 11.1		
22	153 29.5 - 8 11.4		352 53.1	120 46.7 -19 47.3	70 31.9 -25 10.7		
Δ	1	-9		-6 -9	6 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	6 35	16 56	0 42	2 19	14 55	3.7	4 8	.9
55	6 26	17 5	0 36	2 0	15 3	3.4	3 58	1.1
50	6 19	17 12	0 32	1 47	15 9	3.2	3 50	1.3
45	6 13	17 18	0 29	1 37	15 13	3.1	3 44	1.4
40	6 9	17 23	0 27	1 30	15 17	2.9	3 39	1.6
35	6 4	17 27	0 25	1 24	15 21	2.8	3 34	1.7
30	6 1	17 31	0 24	1 20	15 24	2.7	3 30	1.8
20	5 54	17 38	0 22	1 13	15 29	2.5	3 23	1.9
10	5 48	17 44	0 21	1 10	15 34	2.4	3 16	2.1
0	5 43	17 49	0 21	1 9	15 38	2.2	3 11	2.2
10	5 37	17 55	0 21	1 11	15 43	2.1	3 5	2.3
20	5 31	18 2	0 22	1 15	15 47	1.9	2 58	2.5
30	5 24	18 9	0 24	1 22	15 52	1.8	2 51	2.7
35	5 20	18 13	0 26	1 28	15 55	1.7	2 47	2.8
40	5 15	18 18	0 28	1 35	15 59	1.6	2 42	2.9
45	5 9	18 24	0 30	1 45	16 3	1.4	2 36	3.0
50	5 3	18 31	0 34	1 60	16 7	1.3	2 29	3.2
55	4 54	18 39	0 38	2 21	16 13	1.1	2 21	3.4
60	4 43	18 50	0 45	2 59	16 21	.8	2 10	3.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	43 53.8 93	8 38.0 -101			194 55.6 - 1 51.2	130 41.1 -20 54.4		
2	72 50.4 93	8 17.9 -102			224 59.6 - 1 51.6	160 45.5 -20 54.4		
4	101 47.0 92	7 57.5 -103			255 3.5 - 1 52.0	190 50.0 -20 54.5		
6	130 43.5 92	7 36.9 -104			285 7.5 - 1 52.4	220 54.5 -20 54.6		
8	159 39.9 92	7 16.1 -105			315 11.4 - 1 52.8	250 58.9 -20 54.6		
10	188 36.2 91	6 55.0 -106			345 15.4 - 1 53.2	281 3.4 -20 54.7		
12	217 32.4 91	6 33.7 -108			15 19.3 - 1 53.7	311 7.9 -20 54.8		
14	246 28.6 90	6 12.2 -109			45 23.3 - 1 54.1	341 12.4 -20 54.8		
16	275 24.7 90	5 50.5 -110			75 27.2 - 1 54.5	11 16.8 -20 54.9		
18	304 20.7 89	5 28.6 -110			105 31.2 - 1 54.9	41 21.3 -20 55.0		
20	333 16.5 89	5 6.5 -111			135 35.1 - 1 55.3	71 25.8 -20 55.0		
22	2 12.4 89	4 44.3 -112			165 39.0 - 1 55.7	101 30.2 -20 55.1		
Δ					20 -2	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	13 45.0	.6 16.1	T _m	21 51	2.2	59.0	16.1		
12	13 52.1	T _{m☉} 11 h 46.1 min	Starost 12.0 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	.	°		♃	h min / ' / "	.	°	
♂	17 18	.1	78	-3.4	♄	10 59	.0	173	-1.2
				h					.8

14. OKTOBAR

PETAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 29.8 - 8 13.3		22 58.1	150 45.5 -19 49.0	100 33.1 -25 10.4		
2	213 30.1 - 8 15.1		53 3.0	180 44.2 -19 50.7	130 34.2 -25 10.0		
4	243 30.4 - 8 17.0		83 7.9	210 43.0 -19 52.4	160 35.3 -25 9.6		
6	273 30.7 - 8 18.9		113 12.8	240 41.7 -19 54.2	190 36.4 -25 9.3		
8	303 30.9 - 8 20.7		143 17.8	270 40.5 -19 55.9	220 37.5 -25 8.9		
10	333 31.2 - 8 22.6		173 22.7	300 39.2 -19 57.6	250 38.7 -25 8.5		
12	3 31.5 - 8 24.4		203 27.6	330 37.9 -19 59.3	280 39.8 -25 8.1		
14	33 31.8 - 8 26.3		233 32.6	0 36.6 -20 1.0	310 40.9 -25 7.7		
16	63 32.1 - 8 28.1		263 37.5	30 35.4 -20 2.7	340 42.0 -25 7.4		
18	93 32.4 - 8 30.0		293 42.4	60 34.1 -20 4.4	10 43.1 -25 7.0		
20	123 32.7 - 8 31.8		323 47.3	90 32.8 -20 6.0	40 44.3 -25 6.6		
22	153 32.9 - 8 33.7		353 52.3	120 31.5 -20 7.7	70 45.4 -25 6.2		
Δ	1	-9		-6 -9	6 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	6 38	16 53	0 42	2 19	16 24	1.6	4 28	1.6
55	6 28	17 3	0 37	2 0	16 25	1.7	4 24	1.7
50	6 21	17 10	0 33	1 47	16 26	1.8	4 21	1.8
45	6 15	17 16	0 30	1 37	16 27	1.9	4 18	1.9
40	6 10	17 22	0 27	1 30	16 28	1.9	4 16	1.9
35	6 5	17 26	0 25	1 24	16 28	2.0	4 14	2.0
30	6 1	17 30	0 24	1 20	16 29	2.0	4 12	2.0
20	5 55	17 37	0 22	1 13	16 30	2.1	4 9	2.1
10	5 48	17 43	0 21	1 10	16 31	2.2	4 6	2.2
0	5 43	17 49	0 21	1 9	16 32	2.3	4 4	2.3
10	5 37	17 55	0 21	1 11	16 33	2.4	4 1	2.3
20	5 30	18 2	0 22	1 15	16 34	2.4	3 58	2.4
30	5 23	18 10	0 24	1 23	16 35	2.5	3 55	2.5
35	5 18	18 14	0 26	1 28	16 35	2.6	3 53	2.5
40	5 13	18 19	0 28	1 36	16 36	2.7	3 51	2.6
45	5 8	18 25	0 30	1 46	16 37	2.7	3 48	2.7
50	5 1	18 32	0 34	2 0	16 38	2.8	3 45	2.8
55	4 52	18 41	0 38	2 22	16 39	2.9	3 41	2.9
60	4 40	18 53	0 45	3 2	16 41	3.1	3 37	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	31 8.1 88	4 21.8 -113			195 43.0 - 1 56.2	131 34.7 -20 55.2		
2	60 3.7 88	3 59.2 -114			225 46.9 - 1 56.6	161 39.2 -20 55.3		
4	88 59.2 87	3 36.5 -114			255 50.9 - 1 57.0	191 43.6 -20 55.3		
6	117 54.6 87	3 13.6 -115			285 54.8 - 1 57.4	221 48.1 -20 55.4		
8	146 49.9 86	2 50.5 -116			315 58.8 - 1 57.8	251 52.6 -20 55.5		
10	175 45.1 85	2 27.4 -116			346 2.7 - 1 58.2	281 57.0 -20 55.5		
12	204 40.2 85	2 4.1 -117			16 6.7 - 1 58.7	312 1.5 -20 55.6		
14	233 35.1 84	1 40.7 -117			46 10.6 - 1 59.1	342 5.9 -20 55.7		
16	262 30.0 84	1 17.3 -118			76 14.6 - 1 59.5	12 10.4 -20 55.7		
18	291 24.7 83	0 53.7 -118			106 18.5 - 1 59.9	42 14.9 -20 55.8		
20	320 19.3 82	0 30.1 -118			136 22.5 - 2 .3	72 19.3 -20 55.9		
22	349 13.8 82	0 6.5 54			166 26.4 - 2 .7	102 23.8 -20 55.9		
Δ					20 -2	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	13 59.2	.6 16.1	T _m	22 45	2.3	59.9	16.3		
12	14 6.0	T _{m☉} 11 h 45.9 min	Starost 13.0 d	Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	.	°		♃	h min / ' / "	.	°	
♂	17 17	.1	78	-3.4	♄	10 56	.0	173	-1.2
				h					.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 33.2	- 8 35.5	23 57.2	150 30.3	-20 9.4	100 46.5	-25 5.8
2	213 33.5	- 8 37.4	54 2.1	180 29.0	-20 11.1	130 47.6	-25 5.4
4	243 33.8	- 8 39.2	84 7.1	210 27.7	-20 12.8	160 48.7	-25 5.0
6	273 34.0	- 8 41.0	114 12.0	240 26.4	-20 14.4	190 49.9	-25 4.6
8	303 34.3	- 8 42.9	144 16.9	270 25.1	-20 16.1	220 51.0	-25 4.3
10	333 34.6	- 8 44.7	174 21.8	300 23.8	-20 17.8	250 52.1	-25 3.9
12	3 34.9	- 8 46.6	204 26.8	330 22.5	-20 19.4	280 53.2	-25 3.5
14	33 35.1	- 8 48.4	234 31.7	0 21.3	-20 21.1	310 54.3	-25 3.1
16	63 35.4	- 8 50.3	264 36.6	30 20.0	-20 22.7	340 55.4	-25 2.7
18	93 35.7	- 8 52.1	294 41.6	60 18.7	-20 24.4	10 56.5	-25 2.3
20	123 36.0	- 8 53.9	324 46.5	90 17.4	-20 26.0	40 57.6	-25 1.8
22	153 36.2	- 8 55.8	354 51.4	120 16.1	-20 27.7	70 58.8	-25 1.4
Δ	1	-9		-6	-8	6	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	6 40	16 50	0 42	2 19	17 1	.9	5 7	3.8
55	6 30	17 0	0 37	2 1	17 5	1.2	5 5	3.6
50	6 22	17 8	0 33	1 47	17 9	1.4	5 4	3.3
45	6 16	17 15	0 30	1 38	17 12	1.5	5 3	3.2
40	6 11	17 20	0 27	1 30	17 14	1.7	5 2	3.0
35	6 6	17 25	0 25	1 24	17 16	1.8	5 1	2.9
30	6 2	17 29	0 24	1 20	17 18	1.9	5 1	2.8
20	5 55	17 36	0 22	1 13	17 21	2.0	4 60	2.6
10	5 48	17 43	0 21	1 10	17 24	2.2	4 59	2.5
0	5 42	17 49	0 21	1 10	17 27	2.4	4 58	2.3
10	5 36	17 55	0 21	1 11	17 29	2.5	4 57	2.2
20	5 29	18 2	0 22	1 15	17 32	2.7	4 56	2.0
30	5 22	18 10	0 24	1 23	17 36	2.8	4 55	1.8
35	5 17	18 15	0 26	1 28	17 38	2.9	4 54	1.7
40	5 12	18 20	0 28	1 36	17 40	3.1	4 53	1.6
45	5 6	18 26	0 30	1 46	17 43	3.2	4 52	1.5
50	4 59	18 34	0 34	2 1	17 46	3.4	4 51	1.3
55	4 49	18 43	0 39	2 24	17 50	3.6	4 50	1.1
60	4 38	18 55	0 46	3 6	17 55	3.9	4 48	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	18 8.2	81	0 17.2	119	196 30.4	- 2 1.2	132 28.3	-20 56.0
2	47 2.4	81	0 41.0	119	226 34.3	- 2 1.6	162 32.7	-20 56.1
4	75 56.5	80	1 4.8	119	256 38.3	- 2 2.0	192 37.2	-20 56.2
6	104 50.5	79	1 28.5	119	286 42.2	- 2 2.4	222 41.6	-20 56.2
8	133 44.4	79	1 52.3	119	316 46.2	- 2 2.8	252 46.1	-20 56.3
10	162 38.1	78	2 16.1	119	346 50.1	- 2 3.2	282 50.6	-20 56.4
12	191 31.6	77	2 39.9	119	16 54.1	- 2 3.6	312 55.0	-20 56.4
14	220 25.1	76	3 3.6	118	46 58.0	- 2 4.1	342 59.5	-20 56.5
16	249 18.3	76	3 27.2	118	77 2.0	- 2 4.5	13 3.9	-20 56.6
18	278 11.5	75	3 50.8	118	107 5.9	- 2 4.9	43 8.4	-20 56.6
20	307 4.5	74	4 14.4	117	137 9.9	- 2 5.3	73 12.8	-20 56.7
22	335 57.3	73	4 37.8	117	167 13.8	- 2 5.7	103 17.3	-20 56.8
Δ					20	-2	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 12.9	.5	16.1	T _m	23 40	2.4	60.6 16.5		
12	14 19.4	T _{m☉}	11 h 45.7 min	Starost	14.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 59	.1	127	-3.5	♃	10 53	.0	173	-1.2
	17 16	.1	77	-3	♄	15 8	.0	109	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 36.5	- 8 57.6	24 56.3	150 14.8	-20 29.3	100 59.9	-25 1.0
2	213 36.8	- 8 59.4	55 1.3	180 13.5	-20 30.9	131 1.0	-25 .6
4	243 37.0	- 9 1.3	85 6.2	210 12.1	-20 32.6	161 2.1	-25 .2
6	273 37.3	- 9 3.1	115 11.1	240 10.8	-20 34.2	191 3.2	-24 59.8
8	303 37.6	- 9 4.9	145 16.0	270 9.5	-20 35.8	221 4.3	-24 59.4
10	333 37.8	- 9 6.8	175 21.0	300 8.2	-20 37.4	251 5.4	-24 59.0
12	3 38.1	- 9 8.6	205 25.9	330 6.9	-20 39.1	281 6.5	-24 58.6
14	33 38.3	- 9 10.4	235 30.8	0 5.6	-20 40.7	311 7.6	-24 58.1
16	63 38.6	- 9 12.3	265 35.8	30 4.3	-20 42.3	341 8.8	-24 57.7
18	93 38.9	- 9 14.1	295 40.7	60 2.9	-20 43.9	11 9.9	-24 57.3
20	123 39.1	- 9 15.9	325 45.6	90 1.6	-20 45.5	41 11.0	-24 56.9
22	153 39.4	- 9 17.8	355 50.5	120 .3	-20 47.1	71 12.1	-24 56.4
Δ	1	-9		-7	-8	6	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	6 43	16 47	0 42	2 19	17 23	1.1	6 38	3.8
55	6 32	16 58	0 37	2 1	17 33	1.3	6 30	3.6
50	6 24	17 6	0 33	1 47	17 41	1.5	6 24	3.4
45	6 17	17 13	0 30	1 38	17 48	1.7	6 19	3.2
40	6 12	17 19	0 27	1 30	17 54	1.8	6 15	3.1
35	6 7	17 23	0 26	1 24	17 59	1.9	6 11	2.9
30	6 3	17 28	0 24	1 20	18 3	2.0	6 8	2.8
20	5 55	17 35	0 22	1 14	18 10	2.1	6 3	2.7
10	5 49	17 42	0 21	1 10	18 17	2.3	5 58	2.5
0	5 42	17 49	0 21	1 10	18 23	2.4	5 53	2.4
10	5 36	17 55	0 21	1 11	18 29	2.5	5 49	2.2
20	5 29	18 3	0 22	1 15	18 36	2.7	5 44	2.1
30	5 21	18 11	0 24	1 23	18 44	2.9	5 38	1.9
35	5 16	18 16	0 26	1 29	18 48	2.9	5 35	1.8
40	5 10	18 21	0 28	1 36	18 53	3.1	5 32	1.7
45	5 4	18 28	0 31	1 47	18 59	3.2	5 28	1.6
50	4 56	18 36	0 34	2 2	19 7	3.3	5 23	1.4
55	4 47	18 45	0 39	2 25	19 16	3.5	5 17	1.2
60	4 35	18 58	0 46	3 9	19 27	3.8	5 9	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	4 50.0	73	5 1.1	116	197 17.8	- 2 6.1	133 21.8	-20 56.8
2	33 42.6	72	5 24.4	116	227 21.7	- 2 6.5	163 26.2	-20 56.9
4	62 34.9	71	5 47.5	115	257 25.7	- 2 7.0	193 30.7	-20 57.0
6	91 27.2	70	6 10.5	114	287 29.6	- 2 7.4	223 35.1	-20 57.1
8	120 19.3	70	6 33.3	113	317 33.6	- 2 7.8	253 39.6	-20 57.1
10	149 11.2	69	6 56.0	112	347 37.5	- 2 8.2	283 44.0	-20 57.2
12	178 3.0	68	7 18.4	112	17 41.5	- 2 8.6	313 48.5	-20 57.3
14	206 54.7	67	7 40.8	111	47 45.4	- 2 9.0	343 52.9	-20 57.3
16	235 46.1	67	8 2.9	109	77 49.4	- 2 9.4	13 57.4	-20 57.4
18	264 37.5	66	8 24.8	108	107 53.3	- 2 9.9	44 1.8	-20 57.5
20	293 28.7	65	8 46.4	107	137 57.3	- 2 10.3	74 6.3	-20 57.5
22	322 19.7	64	9 7.9	106	168 1.2	- 2 10.7	104 10.7	-20 57.6
Δ					20	-2	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 26.0	.5	16.1	T _m	...	1.0	61.1 16.7		
12	14 32.3	T _{m☉}	11 h 45.5 min	Starost	15.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	13 60	.1	125	-3.5	♃	10 49	.0	172	-1.2
	17 15	.1	76	-3	♄	15 4	.0	108	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	39.6	- 9	19.6	25	55.5	149	59.0	-20	48.7	101	13.2	-24	56.0	
2	213	39.9	- 9	21.4	56	.4	179	57.6	-20	50.3	131	14.3	-24	55.6	
4	243	40.1	- 9	23.2	86	5.3	209	56.3	-20	51.9	161	15.4	-24	55.2	
6	273	40.4	- 9	25.1	116	10.3	239	55.0	-20	53.4	191	16.5	-24	54.7	
8	303	40.6	- 9	26.9	146	15.2	269	53.6	-20	55.0	221	17.6	-24	54.3	
10	333	40.9	- 9	28.7	176	20.1	299	52.3	-20	56.6	251	18.7	-24	53.9	
12	3	41.1	- 9	30.5	206	25.0	329	51.0	-20	58.2	281	19.8	-24	53.4	
14	33	41.4	- 9	32.3	236	30.0	359	49.6	-20	59.7	311	20.9	-24	53.0	
16	63	41.6	- 9	34.2	266	34.9	29	48.3	-21	1.3	341	22.0	-24	52.5	
18	93	41.9	- 9	36.0	296	39.8	59	46.9	-21	2.9	11	23.1	-24	52.1	
20	123	42.1	- 9	37.8	326	44.8	89	45.6	-21	4.4	41	24.2	-24	51.7	
22	153	42.4	- 9	39.6	356	49.7	119	44.2	-21	6.0	71	25.3	-24	51.2	
Δ		1		-9				-7		-8		6			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	6 45	16 44	0 42	2 19	17 48	1.3	8 11	3.7
55	6 34	16 55	0 37	2 1	18 5	1.6	7 56	3.5
50	6 26	17 4	0 33	1 47	18 18	1.7	7 45	3.3
45	6 19	17 11	0 30	1 38	18 28	1.8	7 36	3.1
40	6 13	17 17	0 27	1 30	18 37	2.0	7 28	3.0
35	6 8	17 22	0 26	1 24	18 44	2.0	7 22	2.9
30	6 3	17 27	0 24	1 20	18 50	2.1	7 16	2.8
20	5 56	17 35	0 22	1 14	19 2	2.2	7 7	2.7
10	5 49	17 42	0 21	1 10	19 12	2.4	6 58	2.6
0	5 42	17 49	0 21	1 10	19 21	2.5	6 50	2.4
10	5 35	17 55	0 21	1 11	19 31	2.6	6 43	2.3
20	5 28	18 3	0 22	1 15	19 41	2.7	6 34	2.2
30	5 19	18 12	0 25	1 23	19 52	2.8	6 25	2.0
35	5 15	18 17	0 26	1 29	19 59	2.9	6 19	2.0
40	5 9	18 22	0 28	1 37	20 7	3.0	6 13	1.9
45	5 2	18 29	0 31	1 47	20 16	3.1	6 6	1.7
50	4 54	18 37	0 34	2 3	20 27	3.2	5 57	1.6
55	4 45	18 47	0 39	2 26	20 41	3.4	5 46	1.4
60	4 32	19 1	0 46	3 13	20 59	3.6	5 32	1.2
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	351	10.6	64	9	29.0	105	198	5.2	- 2	11.1	134	15.2	-20	57.7	
2	20	1.3	63	9	50.0	103	228	9.1	- 2	11.5	164	19.6	-20	57.7	
4	48	51.9	62	10	10.6	102	258	13.1	- 2	11.9	194	24.1	-20	57.8	
6	77	42.4	62	10	31.0	100	288	17.0	- 2	12.3	224	28.5	-20	57.9	
8	106	32.7	61	10	51.1	99	318	21.0	- 2	12.8	254	33.0	-20	58.0	
10	135	22.9	60	11	10.9	97	348	24.9	- 2	13.2	284	37.4	-20	58.0	
12	164	12.9	60	11	30.3	96	18	28.9	- 2	13.6	314	41.9	-20	58.1	
14	193	2.9	59	11	49.4	94	48	32.8	- 2	14.0	344	46.3	-20	58.2	
16	221	52.6	58	12	8.2	92	78	36.8	- 2	14.4	14	50.8	-20	58.2	
18	250	42.3	58	12	26.7	90	108	40.7	- 2	14.8	44	55.2	-20	58.3	
20	279	31.9	57	12	44.7	89	138	44.7	- 2	15.2	74	59.7	-20	58.4	
22	308	21.3	57	13	2.4	87	168	48.6	- 2	15.6	105	4.1	-20	58.4	
Δ							20			-2		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 38.5	.5	16.1	T _m	0 37	2.4	61.3	16.7	
12	14 44.5	T _{m☉}	11 h 45.3 min	Starost	16.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 1	.1	124	-3.5	♃	10 46	.0	172	-1.2
♂	17 14	.1	75	-3	♄	15 1	.0	108	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	42.6	- 9	41.4	26	54.6	149	42.9	-21	7.5	101	26.4	-24	50.8	
2	213	42.9	- 9	43.2	56	59.5	179	41.5	-21	9.0	131	27.5	-24	50.3	
4	243	43.1	- 9	45.0	87	4.5	209	40.2	-21	10.6	161	28.6	-24	49.9	
6	273	43.3	- 9	46.9	117	9.4	239	38.8	-21	12.1	191	29.7	-24	49.4	
8	303	43.6	- 9	48.7	147	14.3	269	37.5	-21	13.7	221	30.8	-24	49.0	
10	333	43.8	- 9	50.5	177	19.3	299	36.1	-21	15.2	251	31.9	-24	48.5	
12	3	44.1	- 9	52.3	207	24.2	329	34.7	-21	16.7	281	33.0	-24	48.0	
14	33	44.3	- 9	54.1	237	29.1	359	33.4	-21	18.2	311	34.1	-24	47.6	
16	63	44.5	- 9	55.9	267	34.0	29	32.0	-21	19.7	341	35.2	-24	47.1	
18	93	44.8	- 9	57.7	297	39.0	59	30.6	-21	21.3	11	36.3	-24	46.7	
20	123	45.0	- 9	59.5	327	43.9	89	29.3	-21	22.8	41	37.4	-24	46.2	
22	153	45.2	-10	1.3	357	48.8	119	27.9	-21	24.3	71	38.5	-24	45.7	
Δ		1		-9				-7		-8		5			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	6 48	16 41	0 43	2 19	18 20	1.7	9 40	3.4
55	6 36	16 53	0 37	2 1	18 42	1.9	9 19	3.2
50	6 27	17 2	0 33	1 48	18 59	2.0	9 4	3.1
45	6 20	17 9	0 30	1 38	19 12	2.1	8 51	3.0
40	6 14	17 16	0 27	1 30	19 23	2.1	8 41	2.9
35	6 9	17 21	0 26	1 24	19 33	2.2	8 32	2.8
30	6 4	17 26	0 24	1 20	19 41	2.3	8 25	2.8
20	5 56	17 34	0 22	1 14	19 56	2.3	8 11	2.7
10	5 49	17 41	0 22	1 11	20 8	2.4	7 60	2.6
0	5 42	17 48	0 21	1 10	20 20	2.5	7 49	2.5
10	5 35	17 56	0 21	1 11	20 32	2.5	7 38	2.4
20	5 27	18 3	0 22	1 16	20 45	2.6	7 27	2.3
30	5 18	18 12	0 25	1 23	20 60	2.7	7 14	2.2
35	5 13	18 17	0 26	1 29	21 9	2.8	7 6	2.1
40	5 7	18 23	0 28	1 37	21 18	2.8	6 57	2.0
45	5 1	18 30	0 31	1 48	21 30	2.9	6 47	2.0
50	4 52	18 39	0 34	2 3	21 44	3.0	6 35	1.8
55	4 42	18 49	0 39	2 28	22 2	3.1	6 20	1.7
60	4 29	19 3	0 47	3 18	22 26	3.2	6 0	1.5
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	337	10.6	56	13	19.8	85	198	52.6	- 2	16.1	135	8.6	-20	58.5	
2	5	59.8	56	13	36.7	83	228	56.6	- 2	16.5	165	13.0	-20	58.6	
4	34	49.0	55	13	53.2	81	259	.5	- 2	16.9	195	17.4	-20	58.6	
6	63	38.0	55	14	9.4	79	289	4.5	- 2	17.3	225	21.9	-20	58.7	
8	92	26.9	54	14	25.1	76	319	8.4	- 2	17.7	255	26.3	-20	58.8	
10	121	15.8	54	14	40.4	74	349	12.4	- 2	18.1	285	30.8	-20	58.9	
12	150	4.6	54	14	55.2	72	19	16.3	- 2	18.5	315	35.2	-20	58.9	
14	178	53.3	53	15	9.6	70	49	20.3	- 2	18.9	345	39.7	-20	59.0	
16	207	42.0	53	15	23.6	68	79	24.2	- 2	19.3	15	44.1	-20	59.1	
18	236	30.6	53	15	37.1	65	109	28.2	- 2	19.8	45	48.5	-20	59.1	
20	265	19.1	53	15	50.2	63	139	32.1	- 2	20.2	75	53.0	-20	59.2	
22	294	7.6	52	16	2.8	61	169	36.1	- 2	20.6	105	57.4	-20	59.3	
Δ							20			-2		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 50.5	.5	16.1	T _m	1 35	2.5	61.1	16.6
12	1							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	45.4	-10	3.1	27	53.8	149	26.5	-21	25.8	101	39.6	-24	45.3
2	213	45.7	-10	4.9	57	58.7	179	25.1	-21	27.3	131	40.7	-24	44.8
4	243	45.9	-10	6.7	88	3.6	209	23.8	-21	28.8	161	41.8	-24	44.3
6	273	46.1	-10	8.5	118	8.5	239	22.4	-21	30.3	191	42.9	-24	43.9
8	303	46.4	-10	10.3	148	13.5	269	21.0	-21	31.7	221	44.0	-24	43.4
10	333	46.6	-10	12.1	178	18.4	299	19.6	-21	33.2	251	45.1	-24	42.9
12	3	46.8	-10	13.9	208	23.3	329	18.2	-21	34.7	281	46.2	-24	42.4
14	33	47.0	-10	15.7	238	28.3	359	16.8	-21	36.2	311	47.3	-24	42.0
16	63	47.2	-10	17.5	268	33.2	29	15.4	-21	37.6	341	48.4	-24	41.5
18	93	47.5	-10	19.3	298	38.1	59	14.1	-21	39.1	11	49.5	-24	41.0
20	123	47.7	-10	21.1	328	43.0	89	12.7	-21	40.6	41	50.6	-24	40.5
22	153	47.9	-10	22.9	358	48.0	119	11.3	-21	42.0	71	51.7	-24	40.0
Δ		1		-9				-7		-7		5		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	6 50	16 39	0 43	2 19	19 0	2.1	11 3	3.0
55	6 38	16 51	0 37	2 1	19 27	2.2	10 37	2.9
50	6 29	17 0	0 33	1 48	19 47	2.3	10 18	2.8
45	6 21	17 8	0 30	1 38	20 2	2.3	10 3	2.7
40	6 15	17 14	0 27	1 30	20 15	2.3	9 51	2.7
35	6 10	17 20	0 26	1 24	20 26	2.3	9 40	2.7
30	6 5	17 25	0 24	1 20	20 35	2.4	9 31	2.6
20	5 56	17 33	0 22	1 14	20 52	2.4	9 15	2.6
10	5 49	17 41	0 21	1 11	21 6	2.4	9 1	2.5
0	5 42	17 48	0 21	1 10	21 20	2.4	8 49	2.5
10	5 34	17 56	0 21	1 11	21 33	2.5	8 36	2.4
20	5 26	18 4	0 23	1 16	21 48	2.5	8 22	2.4
30	5 17	18 13	0 25	1 24	22 5	2.5	8 6	2.3
35	5 12	18 18	0 26	1 30	22 15	2.5	7 57	2.3
40	5 6	18 24	0 28	1 37	22 26	2.6	7 47	2.2
45	4 59	18 32	0 31	1 48	22 39	2.6	7 34	2.2
50	4 50	18 40	0 34	2 4	22 55	2.6	7 20	2.1
55	4 40	18 51	0 39	2 29	23 16	2.6	7 1	2.0
60	4 26	19 6	0 47	3 23	23 44	2.5	6 36	1.9

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	322	56.1	52	16	14.9	58	199	40.0	-2	21.0	136	1.9	-20	59.3		
2	351	44.6	52	16	26.6	56	229	44.0	-2	21.4	166	6.3	-20	59.4		
4	20	33.1	52	16	37.7	53	259	48.0	-2	21.8	196	10.7	-20	59.5		
6	49	21.5	52	16	48.4	51	289	51.9	-2	22.2	226	15.2	-20	59.6		
8	78	10.0	52	16	58.6	49	319	55.9	-2	22.6	256	19.6	-20	59.6		
10	106	58.5	52	17	8.3	46	349	59.8	-2	23.0	286	24.0	-20	59.7		
12	135	46.9	53	17	17.5	44	20	3.8	-2	23.5	316	28.5	-20	59.8		
14	164	35.5	53	17	26.2	41	50	7.7	-2	23.9	346	32.9	-20	59.8		
16	193	24.0	53	17	34.4	38	80	11.7	-2	24.3	16	37.4	-20	59.9		
18	222	12.6	53	17	42.1	36	110	15.6	-2	24.7	46	41.8	-20	60.0		
20	251	1.3	54	17	49.3	33	140	19.6	-2	25.1	76	46.2	-21	.0		
22	279	50.0	54	17	56.0	31	170	23.6	-2	25.5	106	50.7	-21	.1		
Δ							20			-2	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	1.8	.4	16.1	T _m	2 34	2.5	60.6	16.5
12	15	7.1	T _{m☉}	11 h 44.9 min	Starost	18.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	min	'	°		h	min	'	°	
♀	14 3	.1	122	-3.5	♃	10 40	.0	172	-1.2
♂	17 13	.1	74	-.2	♄	14 54	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	48.1	-10	24.7	28	52.9	149	9.9	-21	43.5	101	52.8	-24	39.6
2	213	48.3	-10	26.5	58	57.8	179	8.5	-21	44.9	131	53.9	-24	39.1
4	243	48.5	-10	28.2	89	2.7	209	7.1	-21	46.4	161	55.0	-24	38.6
6	273	48.8	-10	30.0	119	7.7	239	5.7	-21	47.8	191	56.1	-24	38.1
8	303	49.0	-10	31.8	149	12.6	269	4.3	-21	49.3	221	57.2	-24	37.6
10	333	49.2	-10	33.6	179	17.5	299	2.9	-21	50.7	251	58.2	-24	37.1
12	3	49.4	-10	35.4	209	22.5	329	1.4	-21	52.1	281	59.3	-24	36.6
14	33	49.6	-10	37.2	239	27.4	359	.0	-21	53.5	312	.4	-24	36.1
16	63	49.8	-10	39.0	269	32.3	28	58.6	-21	55.0	342	1.5	-24	35.6
18	93	50.0	-10	40.7	299	37.2	58	57.2	-21	56.4	12	2.6	-24	35.1
20	123	50.2	-10	42.5	329	42.2	88	55.8	-21	57.8	42	3.7	-24	34.6
22	153	50.4	-10	44.3	359	47.1	118	54.4	-21	59.2	72	4.8	-24	34.1
Δ		1		-9				-7		-7		5		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	6 53	16 36	0 43	2 19	19 51	2.5	12 14	2.4
55	6 40	16 48	0 37	2 1	20 20	2.5	11 46	2.4
50	6 30	16 58	0 33	1 48	20 41	2.5	11 25	2.4
45	6 23	17 6	0 30	1 38	20 57	2.5	11 9	2.4
40	6 16	17 13	0 27	1 30	21 10	2.5	10 55	2.4
35	6 10	17 19	0 26	1 24	21 22	2.4	10 44	2.4
30	6 5	17 24	0 24	1 20	21 32	2.4	10 34	2.4
20	5 57	17 33	0 22	1 14	21 49	2.4	10 17	2.4
10	5 49	17 40	0 21	1 11	22 4	2.4	10 2	2.4
0	5 41	17 48	0 21	1 10	22 19	2.4	9 48	2.4
10	5 34	17 56	0 21	1 12	22 33	2.3	9 34	2.4
20	5 26	18 4	0 23	1 16	22 48	2.3	9 19	2.4
30	5 16	18 14	0 25	1 24	23 5	2.4	9 2	2.4
35	5 11	18 19	0 26	1 30	23 15	2.4	8 52	2.4
40	5 5	18 26	0 28	1 38	23 27	2.4	8 40	2.4
45	4 57	18 33	0 31	1 49	23 41	2.4	8 27	2.4
50	4 48	18 42	0 35	2 5	23 57	2.4	8 10	2.4
55	4 37	18 53	0 40	2 31	...	.0	7 49	2.4
60	4 23	19 8	0 47	3 30	...	.0	7 21	2.3

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	308	38.9	54	18	2.2	28	200	27.5	-2	25.9	136	55.1	-21	.2		
2	337	27.8	55	18	7.9	26	230	31.5	-2	26.3	166	59.5	-21	.3		
4	6	16.7	55	18	13.0	23	260	35.4	-2	26.7	197	4.0	-21	.3		
6	35	5.8	56	18	17.7	21	290	39.4	-2	27.1	227	8.4	-21	.4		
8	63	55.0	57	18	21.8	18	320	43.3	-2	27.6	257	12.8	-21	.5		
10	92	44.4	57	18	25.5	16	350	47.3	-2	28.0	287	17.3	-21	.5		
12	121	33.8	58	18	28.6	13	20	51.3	-2	28.4	317	21.7	-21	.6		
14	150	23.4	59	18	31.2	11	50	55.2	-2	28.8	347	26.1	-21	.7		
16	179	13.2	60	18	33.4	8	80	59.2	-2	29.2	17	30.5	-21	.7		
18	208	3.1	60	18	35.0	6	111	3.1	-2	29.6	47	35.0	-21	.8		
20	236	53.1	61	18	36.1	3	141	7.1	-2	30.0	77	39.4	-21	.9		
22	265	43.4	62	18	36.8	1	171	11.1	-2	30.4	107	43.8	-21	1.0		
Δ							20			-2	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	12.4	.4	16.1	T _m	3 34	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	50.6	-10	46.1	29	52.0	148	53.0	-22	.6	102	5.9	-24	33.6
2	213	50.8	-10	47.8	59	57.0	178	51.5	-22	2.0	132	7.0	-24	33.1
4	243	51.0	-10	49.6	90	1.9	208	50.1	-22	3.4	162	8.1	-24	32.6
6	273	51.2	-10	51.4	120	6.8	238	48.7	-22	4.8	192	9.2	-24	32.1
8	303	51.4	-10	53.2	150	11.7	268	47.3	-22	6.2	222	10.2	-24	31.6
10	333	51.6	-10	54.9	180	16.7	298	45.8	-22	7.6	252	11.3	-24	31.1
12	3	51.8	-10	56.7	210	21.6	328	44.4	-22	9.0	282	12.4	-24	30.5
14	33	52.0	-10	58.5	240	26.5	358	43.0	-22	10.3	312	13.5	-24	30.0
16	63	52.2	-11	.2	270	31.5	388	41.5	-22	11.7	342	14.6	-24	29.5
18	93	52.4	-11	2.0	300	36.4	418	40.1	-22	13.1	372	15.7	-24	29.0
20	123	52.6	-11	3.8	330	41.3	448	38.6	-22	14.4	402	16.8	-24	28.5
22	153	52.8	-11	5.5	0	46.2	478	37.2	-22	15.8	426	17.9	-24	27.9
Δ	1		-9				-7		-7		5		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	6 55	16 33	0 43	2 19	20 52	2.9	13 11	1.8
55	6 42	16 46	0 37	2 1	21 20	2.7	12 43	1.9
50	6 32	16 56	0 33	1 48	21 40	2.6	12 23	2.0
45	6 24	17 4	0 30	1 38	21 56	2.6	12 7	2.1
40	6 17	17 11	0 28	1 30	22 9	2.5	11 53	2.1
35	6 11	17 17	0 26	1 25	22 20	2.5	11 42	2.2
30	6 6	17 23	0 24	1 20	22 30	2.4	11 32	2.2
20	5 57	17 32	0 22	1 14	22 47	2.4	11 15	2.2
10	5 49	17 40	0 21	1 11	23 2	2.3	10 60	2.3
0	5 41	17 48	0 21	1 10	23 15	2.3	10 46	2.3
10	5 33	17 56	0 21	1 12	23 29	2.3	10 32	2.4
20	5 25	18 4	0 23	1 16	23 44	2.2	10 17	2.4
30	5 15	18 14	0 25	1 24	...	.0	9 59	2.4
35	5 10	18 20	0 26	1 30	...	.0	9 49	2.5
40	5 3	18 27	0 28	1 38	...	.0	9 38	2.5
45	4 56	18 34	0 31	1 50	...	.0	9 24	2.5
50	4 46	18 44	0 35	2 6	...	.0	9 8	2.6
55	4 35	18 55	0 40	2 33	0 19	2.2	8 46	2.6
60	4 20	19 11	0 48	3 37	0 48	2.1	8 17	2.7
S								

UT	MESEC				JUPITER				SATURN				
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	294	33.8	63	18 36.9	-2	201	15.0	-2	30.8	137	48.3	-21	1.0
2	323	24.4	64	18 36.6	-4	231	19.0	-2	31.2	167	52.7	-21	1.1
4	352	15.2	65	18 35.8	-6	261	22.9	-2	31.6	197	57.1	-21	1.2
6	21	6.2	66	18 34.5	-9	291	26.9	-2	32.0	228	1.6	-21	1.2
8	49	57.4	67	18 32.7	-11	321	30.9	-2	32.5	258	6.0	-21	1.3
10	78	48.8	68	18 30.5	-14	351	34.8	-2	32.9	288	10.4	-21	1.4
12	107	40.5	69	18 27.8	-16	381	38.8	-2	33.3	318	14.8	-21	1.4
14	136	32.3	71	18 24.6	-18	411	42.7	-2	33.7	348	19.3	-21	1.5
16	165	24.4	72	18 21.0	-20	441	46.7	-2	34.1	378	23.7	-21	1.6
18	194	16.8	73	18 16.9	-23	471	50.7	-2	34.5	408	28.1	-21	1.7
20	223	9.4	74	18 12.4	-25	501	54.6	-2	34.9	438	32.5	-21	1.7
22	252	2.2	75	18 7.5	-27	531	58.6	-2	35.3	468	37.0	-21	1.8
Δ						20		-2		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 22.4	.4	16.1	T _m	4 32	2.3	59.2	16.1
12	15 27.1	T _{m☉}	11 h 44.5 min	Starost	20.0 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 5	.1	119	-3.5	♄	10 34	.0	171	-1.2
♂	17 11	.1	72	-.2	♅	14 47	.0	108	.8

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	52.9	-11	7.3	30	51.2	148	35.8	-22	17.2	102	18.9	-24	27.4
2	213	53.1	-11	9.1	60	56.1	178	34.3	-22	18.5	132	20.0	-24	26.9
4	243	53.3	-11	10.8	91	1.0	208	32.9	-22	19.9	162	21.1	-24	26.4
6	273	53.5	-11	12.6	121	6.0	238	31.4	-22	21.2	192	22.2	-24	25.8
8	303	53.7	-11	14.4	151	10.9	268	30.0	-22	22.5	222	23.3	-24	25.3
10	333	53.9	-11	16.1	181	15.8	298	28.5	-22	23.9	252	24.4	-24	24.8
12	3	54.0	-11	17.9	211	20.7	328	27.1	-22	25.2	282	25.5	-24	24.2
14	33	54.2	-11	19.6	241	25.7	358	25.6	-22	26.5	312	26.5	-24	23.7
16	63	54.4	-11	21.4	271	30.6	388	24.2	-22	27.8	342	27.6	-24	23.2
18	93	54.6	-11	23.1	301	35.5	418	22.7	-22	29.2	372	28.7	-24	22.6
20	123	54.8	-11	24.9	331	40.5	448	21.2	-22	30.5	402	29.8	-24	22.1
22	153	54.9	-11	26.6	1	45.4	478	19.8	-22	31.8	426	30.9	-24	21.6
Δ	1		-9				-7		-7		5		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	6 58	16 30	0 43	2 20	22 1	3.0	13 55	1.4
55	6 44	16 44	0 37	2 1	22 26	2.9	13 30	1.6
50	6 34	16 54	0 33	1 48	22 44	2.7	13 11	1.7
45	6 25	17 3	0 30	1 38	22 58	2.6	12 56	1.8
40	6 18	17 10	0 28	1 30	23 10	2.1	12 44	1.8
35	6 12	17 16	0 26	1 25	23 20	2.1	12 34	1.9
30	6 7	17 22	0 24	1 20	23 29	2.1	12 24	2.0
20	5 57	17 31	0 22	1 14	23 44	2.1	12 8	2.0
10	5 49	17 40	0 21	1 11	23 57	2.1	11 55	2.1
0	5 41	17 48	0 21	1 10	...	.0	11 41	2.2
10	5 33	17 56	0 21	1 12	...	.0	11 28	2.3
20	5 24	18 5	0 23	1 16	...	.0	11 14	2.3
30	5 14	18 15	0 25	1 24	0 0	2.1	10 58	2.4
35	5 8	18 21	0 26	1 30	0 10	2.0	10 49	2.5
40	5 2	18 28	0 28	1 39	0 21	2.0	10 38	2.5
45	4 54	18 36	0 31	1 50	0 34	1.9	10 25	2.6
50	4 44	18 45	0 35	2 7	0 50	1.8	10 10	2.7
55	4 33	18 58	0 40	2 35	1 11	1.7	9 50	2.8
60	4 17	19 13	0 48	3 47	1 38	1.6	9 23	3.0
S								

UT	MESEC				JUPITER				SATURN				
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	280	55.3	77	18 2.1	-29	202	2.5	-2	35.7	138	41.4	-21	1.9
2	309	48.6	78	17 56.3	-31	232	6.5	-2	36.1	168	45.8	-21	1.9
4	338	42.2	79	17 50.1	-33	262	10.5	-2	36.5	198	50.2	-21	2.0
6	7	36.1	81	17 43.4	-35	292	14.4	-2	36.9	228	54.7	-21	2.1
8	36	30.2	82	17 36.4	-37	322	18.4	-2	37.3	258	59.1	-21	2.1
10	65	24.6	83	17 28.9	-39	352	22.3	-2	37.7	289	3.5	-21	2.2
12	94	19.3	85	17 21.1	-41	382	26.3	-2	38.2	319	7.9	-21	2.3
14	123	14.3	86	17 12.8	-43	412	30.3	-2	38.6	349	12.3	-21	2.4
16	152	9.5	88	17 4.2	-45	442	34.2	-2	39.0	379	16.8	-21	2.4
18	181	5.0	89	16 55.2	-47	472	38.2	-2	39.4	409	21.2	-21	2.5
20	210	.8	90	16 45.9	-49	502	42.2	-2	39.8	439	25.6	-21	2.6
22	238	56.9	92	16 36.2	-50	532	46.1	-2	40.2	469	30.0	-21	2.6
Δ						20		-2		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 31.8	.4	16.1	T _m	5 28	2.3	58.3	15.9
12	15 36.1	T _{m☉}	11 h 44.4 min					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	183 55.1	-11 28.4	31 50.3	148 18.3	-22 33.1	102 32.0	-24 21.0
2	213 55.3	-11 30.1	61 55.2	178 16.8	-22 34.4	132 33.1	-24 20.5
4	243 55.4	-11 31.9	92 .2	208 15.4	-22 35.7	162 34.1	-24 19.9
6	273 55.6	-11 33.6	122 5.1	238 13.9	-22 37.0	192 35.2	-24 19.4
8	303 55.8	-11 35.4	152 10.0	268 12.4	-22 38.3	222 36.3	-24 18.8
10	333 55.9	-11 37.1	182 14.9	298 11.0	-22 39.6	252 37.4	-24 18.3
12	3 56.1	-11 38.9	212 19.9	328 9.5	-22 40.8	282 38.5	-24 17.7
14	33 56.3	-11 40.6	242 24.8	358 8.0	-22 42.1	312 39.6	-24 17.2
16	63 56.4	-11 42.3	272 29.7	28 6.5	-22 43.4	342 40.6	-24 16.6
18	93 56.6	-11 44.1	302 34.7	58 5.1	-22 44.7	12 41.7	-24 16.0
20	123 56.8	-11 45.8	332 39.6	88 3.6	-22 45.9	42 42.8	-24 15.5
22	153 56.9	-11 47.6	2 44.5	118 2.1	-22 47.2	72 43.9	-24 14.9
Δ	1	-9		-7	-6	5	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 0	16 27	0 43	2 20	23 14	2.1	14 28	1.1
55	6 46	16 42	0 37	2 1	23 34	2.1	14 7	1.3
50	6 35	16 52	0 33	1 48	23 49	2.0	13 52	1.4
45	6 27	17 1	0 30	1 38	...	.0	13 39	1.5
40	6 19	17 9	0 28	1 31	...	.0	13 28	1.6
35	6 13	17 15	0 26	1 25	...	.0	13 19	1.7
30	6 7	17 21	0 24	1 20	...	.0	13 11	1.8
20	5 58	17 31	0 22	1 14	...	.0	12 58	1.9
10	5 49	17 39	0 21	1 11	...	.0	12 46	2.0
0	5 41	17 48	0 21	1 10	0 9	2.1	12 34	2.1
10	5 33	17 56	0 22	1 12	0 22	2.0	12 23	2.2
20	5 24	18 5	0 23	1 16	0 35	2.0	12 10	2.3
30	5 13	18 16	0 25	1 24	0 50	1.9	11 56	2.4
35	5 7	18 22	0 26	1 31	0 59	1.8	11 48	2.5
40	5 0	18 29	0 28	1 39	1 9	1.7	11 39	2.5
45	4 52	18 37	0 31	1 51	1 20	1.6	11 28	2.6
50	4 42	18 47	0 35	2 8	1 34	1.5	11 14	2.7
55	4 30	18 60	0 40	2 37	1 52	1.4	10 58	2.9
60	4 14	19 16	0 48	4 2	2 16	1.2	10 35	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	267 53.2	93	16 26.1	-52	202 50.1	-2 40.6	139 34.4	-21 2.7
2	296 49.8	95	16 15.7	-54	232 54.0	-2 41.0	169 38.9	-21 2.8
4	325 46.7	96	16 5.0	-55	262 58.0	-2 41.4	199 43.3	-21 2.8
6	354 43.9	97	15 53.9	-57	293 2.0	-2 41.8	229 47.7	-21 2.9
8	23 41.4	99	15 42.5	-59	323 5.9	-2 42.2	259 52.1	-21 3.0
10	52 39.2	100	15 30.8	-60	353 9.9	-2 42.6	289 56.5	-21 3.1
12	81 37.2	102	15 18.7	-62	23 13.9	-2 43.0	320 .9	-21 3.1
14	110 35.5	103	15 6.4	-63	53 17.8	-2 43.4	350 5.4	-21 3.2
16	139 34.1	104	14 53.8	-65	83 21.8	-2 43.8	20 9.8	-21 3.3
18	168 33.0	106	14 40.8	-66	113 25.8	-2 44.2	50 14.2	-21 3.3
20	197 32.1	107	14 27.6	-67	143 29.7	-2 44.6	80 18.6	-21 3.4
22	226 31.5	108	14 14.2	-69	173 33.7	-2 45.0	110 23.0	-21 3.5
Δ					20	-2	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 40.4	.3	16.1	T _m	6 22	2.1	57.5	15.7	
12	15 44.4	T _{m☉}	11 h 44.3 min	Starost	22.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 7	.1	116	-3.5	♃	10 27	.0	171	-1.2
♂	17 9	.1	71	-.2	♄	14 40	.0	108	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	°	'	°	'	'	'	'
0	183 57.1	-11 49.3	32 49.4	148 .6	-22 48.4	102 45.0	-24 14.4
2	213 57.2	-11 51.0	62 54.4	177 59.1	-22 49.7	132 46.0	-24 13.8
4	243 57.4	-11 52.8	92 59.3	207 57.6	-22 50.9	162 47.1	-24 13.2
6	273 57.5	-11 54.5	123 4.2	237 56.1	-22 52.2	192 48.2	-24 12.7
8	303 57.7	-11 56.2	153 9.2	267 54.6	-22 53.4	222 49.3	-24 12.1
10	333 57.9	-11 58.0	183 14.1	297 53.2	-22 54.6	252 50.4	-24 11.5
12	3 58.0	-11 59.7	213 19.0	327 51.7	-22 55.9	282 51.5	-24 10.9
14	33 58.2	-12 1.4	243 23.9	357 50.2	-22 57.1	312 52.5	-24 10.4
16	63 58.3	-12 3.1	273 28.9	27 48.7	-22 58.3	342 53.6	-24 9.8
18	93 58.4	-12 4.9	303 33.8	57 47.2	-22 59.5	12 54.7	-24 9.2
20	123 58.6	-12 6.6	333 38.7	87 45.7	-23 .7	42 55.8	-24 8.6
22	153 58.7	-12 8.3	3 43.7	117 44.2	-23 1.9	72 56.9	-24 8.1
Δ	1	-9		-7	-6	5	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 3	16 25	0 44	2 20	...	.0	14 54	.9
55	6 48	16 39	0 37	2 2	...	.0	14 38	1.1
50	6 37	16 51	0 33	1 48	...	.0	14 25	1.2
45	6 28	16 60	0 30	1 38	0 1	2.6	14 16	1.3
40	6 20	17 7	0 28	1 31	0 11	2.5	14 7	1.4
35	6 14	17 14	0 26	1 25	0 19	2.4	14 0	1.5
30	6 8	17 20	0 24	1 20	0 26	2.4	13 54	1.6
20	5 58	17 30	0 22	1 14	0 39	2.2	13 43	1.7
10	5 49	17 39	0 21	1 11	0 50	2.1	13 33	1.9
0	5 41	17 48	0 21	1 10	1 0	2.0	13 24	2.0
10	5 32	17 56	0 22	1 12	1 11	1.9	13 15	2.1
20	5 23	18 6	0 23	1 16	1 22	1.8	13 5	2.2
30	5 12	18 16	0 25	1 25	1 34	1.7	12 54	2.3
35	5 6	18 23	0 26	1 31	1 42	1.6	12 47	2.4
40	4 59	18 30	0 29	1 39	1 50	1.5	12 40	2.5
45	4 51	18 39	0 31	1 51	1 59	1.4	12 31	2.6
50	4 41	18 49	0 35	2 9	2 11	1.3	12 20	2.7
55	4 28	19 2	0 41	2 39	2 25	1.1	12 7	2.9
60	4 11	19 19	0 49	4 2	2 44	.9	11 49	3.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	°	'	'	'	'	'	'	'
0	255 31.2	110	14 .4	-70	203 37.7	-2 45.4	140 27.4	-21 3.6
2	284 31.2	111	13 46.4	-71	233 41.6	-2 45.8	170 31.9	-21 3.6
4	313 31.4	112	13 32.2	-73	263 45.6	-2 46.3	200 36.3	-21 3.7
6	342 31.9	114	13 17.7	-74	293 49.6	-2 46.7	230 40.7	-21 3.8
8	11 32.6	115	13 2.9	-75	323 53.5	-2 47.1	260 45.1	-21 3.8
10	40 33.6	116	12 47.9	-76	353 57.5	-2 47.5	290 49.5	-21 3.9
12	69 34.9	117	12 32.7	-77	24 1.5	-2 47.9	320 53.9	-21 4.0
14	98 36.4	119	12 17.3	-78	54 5.4	-2 48.3	350 58.3	-21 4.0
16	127 38.1	120	12 1.7	-79	84 9.4	-2 48.7	21 2.7	-21 4.1
18	156 40.1	121	11 45.8	-80	114 13.4	-2 49.1	51 7.2	-21 4.2
20	185 42.3	122	11 29.8	-81	144 17.3	-2 49.5	81 11.6	-21 4.3
22	214 44.8	123	11 13.5	-82	174 21.3	-2 49.9	111 16.0	-21 4.3
Δ					20	-2	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 48.3	.3	16.1	T _m	7 12	2.0	56.7	15.4	
12	15 51.9	T _{m☉}	11 h 44.1 min	Starost	23.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♁	14 9	.1	115	-3.6	♃	10 24	.0	171	-1.2
♂	17 8	.1	70	-.2	♄	14 36	.0	108	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	58.9	-12	10.0	33	48.6	147	42.6	-23	3.2	102	57.9	-24	7.5	
2	213	59.0	-12	11.7	63	53.5	177	41.1	-23	4.4	132	59.0	-24	6.9	
4	243	59.2	-12	13.5	93	58.4	207	39.6	-23	5.5	163	.1	-24	6.3	
6	273	59.3	-12	15.2	124	3.4	237	38.1	-23	6.7	193	1.2	-24	5.7	
8	303	59.4	-12	16.9	154	8.3	267	36.6	-23	7.9	223	2.2	-24	5.1	
10	333	59.6	-12	18.6	184	13.2	297	35.1	-23	9.1	253	3.3	-24	4.5	
12	3	59.7	-12	20.3	214	18.2	327	33.6	-23	10.3	283	4.4	-24	4.0	
14	33	59.8	-12	22.0	244	23.1	357	32.1	-23	11.4	313	5.5	-24	3.4	
16	64	.0	-12	23.7	274	28.0	27	30.5	-23	12.6	343	6.6	-24	2.8	
18	94	.1	-12	25.4	304	32.9	57	29.0	-23	13.8	13	7.6	-24	2.2	
20	124	.2	-12	27.1	334	37.9	87	27.5	-23	14.9	43	8.7	-24	1.6	
22	154	.4	-12	28.9	4	42.8	117	26.0	-23	16.1	73	9.8	-24	1.0	
Δ		1		-9				-8		-6		5			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 5	16 22	0 44	2 20	0 29	3.1	15 14	.7
55	6 50	16 37	0 38	2 2	0 44	2.9	15 3	.9
50	6 39	16 49	0 33	1 48	0 55	2.7	14 55	1.1
45	6 29	16 58	0 30	1 38	1 4	2.6	14 48	1.2
40	6 22	17 6	0 28	1 31	1 11	2.5	14 42	1.3
35	6 15	17 13	0 26	1 25	1 17	2.4	14 37	1.4
30	6 9	17 19	0 24	1 20	1 23	2.3	14 32	1.5
20	5 59	17 29	0 22	1 14	1 32	2.2	14 25	1.6
10	5 49	17 39	0 21	1 11	1 41	2.0	14 18	1.8
0	5 41	17 47	0 21	1 10	1 49	1.9	14 11	1.9
10	5 32	17 56	0 22	1 12	1 57	1.8	14 4	2.0
20	5 22	18 6	0 23	1 17	2 5	1.7	13 57	2.1
30	5 11	18 17	0 25	1 25	2 15	1.5	13 49	2.3
35	5 5	18 24	0 27	1 31	2 20	1.5	13 45	2.3
40	4 58	18 31	0 29	1 40	2 26	1.4	13 39	2.4
45	4 49	18 40	0 31	1 52	2 34	1.3	13 33	2.6
50	4 39	18 50	0 35	2 10	2 42	1.1	13 26	2.7
55	4 26	19 4	0 41	2 41	2 53	1.0	13 16	2.9
60	4 8	19 21	0 49	:::	3 7	.8	13 4	3.1
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	243	47.4	125	10	57.1	-83	204	25.3	-2	50.3	141	20.4	-21	4.4	
2	272	50.3	126	10	40.5	-84	234	29.2	-2	50.7	171	24.8	-21	4.5	
4	301	53.5	127	10	23.7	-85	264	33.2	-2	51.1	201	29.2	-21	4.5	
6	330	56.8	128	10	6.8	-86	294	37.2	-2	51.5	231	33.6	-21	4.6	
8	0	.4	129	9	49.6	-86	324	41.1	-2	51.9	261	38.0	-21	4.7	
10	29	4.2	130	9	32.4	-87	354	45.1	-2	52.3	291	42.4	-21	4.7	
12	58	8.1	131	9	15.0	-88	24	49.1	-2	52.7	321	46.8	-21	4.8	
14	87	12.3	132	8	57.4	-89	54	53.0	-2	53.1	351	51.2	-21	4.9	
16	116	16.6	133	8	39.7	-89	84	57.0	-2	53.5	21	55.6	-21	5.0	
18	145	21.2	134	8	21.9	-90	115	1.0	-2	53.9	52	.1	-21	5.0	
20	174	25.9	135	8	3.9	-90	145	5.0	-2	54.3	82	4.5	-21	5.1	
22	203	30.8	135	7	45.8	-91	175	8.9	-2	54.7	112	8.9	-21	5.2	
Δ							20			-2		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 55.5	.3	16.1	T _m	7 60	1.9	56.0	15.3	
12	15 58.7	T _{m☉}	11 h 44.0 min	Starost	24.0 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	°	♃	h min	'	°	°
♂	14 10	.1	114	-3.6	♄	10 21	.0	171	-1.2
	17 8	.1	69	-.2	♅	14 33	.0	108	.8

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	184	.5	-12	30.6	34	47.7	147	24.5	-23	17.2	103	10.9	-24	.4	
2	214	.6	-12	32.3	64	52.7	177	22.9	-23	18.4	133	12.0	-23	59.8	
4	244	.7	-12	34.0	94	57.6	207	21.4	-23	19.5	163	13.0	-23	59.2	
6	274	.9	-12	35.7	125	2.5	237	19.9	-23	20.7	193	14.1	-23	58.6	
8	304	1.0	-12	37.4	155	7.4	267	18.3	-23	21.8	223	15.2	-23	57.9	
10	334	1.1	-12	39.1	185	12.4	297	16.8	-23	22.9	253	16.3	-23	57.3	
12	4	1.2	-12	40.8	215	17.3	327	15.3	-23	24.0	283	17.3	-23	56.7	
14	34	1.3	-12	42.5	245	22.2	357	13.7	-23	25.2	313	18.4	-23	56.1	
16	64	1.5	-12	44.1	275	27.2	27	12.2	-23	26.3	343	19.5	-23	55.5	
18	94	1.6	-12	45.8	305	32.1	57	10.6	-23	27.4	13	20.6	-23	54.9	
20	124	1.7	-12	47.5	335	37.0	87	9.1	-23	28.5	43	21.6	-23	54.3	
22	154	1.8	-12	49.2	5	41.9	117	7.6	-23	29.6	73	22.7	-23	53.6	
Δ		1		-8				-8		-6		5			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 8	16 19	0 44	2 21	1 43	3.0	15 32	.7
55	6 52	16 35	0 38	2 2	1 52	2.8	15 26	.9
50	6 40	16 47	0 33	1 49	1 60	2.7	15 21	1.0
45	6 31	16 57	0 30	1 39	2 5	2.5	15 17	1.1
40	6 23	17 5	0 28	1 31	2 10	2.4	15 14	1.3
35	6 16	17 12	0 26	1 25	2 14	2.3	15 11	1.3
30	6 10	17 18	0 24	1 20	2 18	2.2	15 8	1.4
20	5 59	17 29	0 23	1 14	2 24	2.1	15 4	1.6
10	5 50	17 38	0 21	1 11	2 30	2.0	14 60	1.7
0	5 41	17 47	0 21	1 10	2 35	1.8	14 56	1.8
10	5 31	17 57	0 22	1 12	2 40	1.7	14 52	1.9
20	5 22	18 6	0 23	1 17	2 45	1.6	14 48	2.1
30	5 10	18 18	0 25	1 25	2 52	1.5	14 44	2.2
35	5 4	18 25	0 27	1 32	2 55	1.4	14 41	2.3
40	4 56	18 32	0 29	1 40	2 59	1.3	14 38	2.4
45	4 47	18 41	0 32	1 53	3 4	1.2	14 34	2.5
50	4 37	18 52	0 35	2 11	3 10	1.0	14 30	2.6
55	4 23	19 6	0 41	2 43	3 17	.9	14 25	2.8
60	4 6	19 24	0 50	:::	3 26	.7	14 18	3.0
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	232	35.9	136	7	27.6	-92	205	12.9	-2	55.1	142	13.3	-21	5.2	
2	261	41.2	137	7	9.3	-92	235	16.9	-2	55.5	172	17.7	-21	5.3	
4	290	46.6	138	6	50.9	-93	265	20.8	-2	55.9	202	22.1	-21	5.4	
6	319	52.2	139	6	32.4	-93	295	24.8	-2	56.3	232	26.5	-21	5.5	
8	348	57.9	139	6	13.8	-93	325	28.8	-2	56.7	262	30.9	-21	5.5	
10	18	3.8	140	5	55.2	-94	355	32.8	-2	57.1	292	35.3	-21	5.6	
12	47	9.8	141	5	36.4	-94	25	36.7	-2	57.5	322	39.7	-21	5.7	
14	76	16.0	141	5	17.6	-95	55	40.7	-2	57.9	352	44.1	-21	5.7	
16	105	22.3	142	4	58.7	-95	85	44.7	-2	58.3	22	48.5	-21	5.8	
18	134	28.7	143	4	39.7	-95	115	48.6	-2	58.7	52	52.9	-21	5.9	
20	163	35.3	143	4	20.7	-95	145	52.6	-2	59.1	82	57.3	-21	5.9	
22	192	41.9	144	4	1.6	-96	175	56.6	-2	59.5	113	1.7	-21	6.0	
Δ							20			-2		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 2.0	.2	16.1	T _m	8 46	1.8	55.4	15.1
12	16 4.8	T _{m☉}	11 h 43.9 min	Starost	25.0 d	Faza	☉	
PLANETE								
Pl.	T _m	π	360-α	Vel.				

UT	SUNCE				PROLEĆ. TAČKA S _T	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	1.9	-12	50.9	35	46.9	147	6.0	-23	30.7	103	23.8	-23	53.0
2	214	2.0	-12	52.6	65	51.8	177	4.5	-23	31.8	133	24.9	-23	52.4
4	244	2.1	-12	54.3	95	56.7	207	2.9	-23	32.9	163	25.9	-23	51.8
6	274	2.3	-12	56.0	126	1.6	237	1.4	-23	34.0	193	27.0	-23	51.1
8	304	2.4	-12	57.6	156	6.6	266	59.8	-23	35.0	223	28.1	-23	50.5
10	334	2.5	-12	59.3	186	11.5	296	58.3	-23	36.1	253	29.2	-23	49.9
12	4	2.6	-13	1.0	216	16.4	326	56.7	-23	37.2	283	30.3	-23	49.3
14	34	2.7	-13	2.7	246	21.4	356	55.2	-23	38.2	313	31.3	-23	48.6
16	64	2.8	-13	4.4	276	26.3	26	53.6	-23	39.3	343	32.4	-23	48.0
18	94	2.9	-13	6.0	306	31.2	56	52.1	-23	40.4	13	33.5	-23	47.4
20	124	3.0	-13	7.7	336	36.1	86	50.5	-23	41.4	43	34.6	-23	46.7
22	154	3.1	-13	9.4	6	41.1	116	48.9	-23	42.5	73	35.6	-23	46.1
Δ		1		-8				-8		-5		5		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 10	16 16	0 44	2 21	2 56	2.5	15 48	2.3
55	6 54	16 33	0 38	2 2	3 0	2.4	15 46	2.2
50	6 42	16 45	0 33	1 49	3 4	2.3	15 45	2.1
45	6 32	16 55	0 30	1 39	3 6	2.2	15 45	2.1
40	6 24	17 3	0 28	1 31	3 8	2.2	15 44	2.0
35	6 17	17 11	0 26	1 25	3 10	2.1	15 43	2.0
30	6 10	17 17	0 24	1 21	3 11	2.0	15 43	2.0
20	5 59	17 28	0 23	1 14	3 14	2.0	15 42	1.9
10	5 50	17 38	0 22	1 11	3 17	1.9	15 41	1.8
0	5 40	17 47	0 21	1 11	3 19	1.8	15 40	1.8
10	5 31	17 57	0 22	1 12	3 21	1.7	15 39	1.7
20	5 21	18 7	0 23	1 17	3 24	1.7	15 38	1.7
30	5 9	18 19	0 25	1 25	3 27	1.6	15 37	1.6
35	5 3	18 26	0 27	1 32	3 28	1.5	15 36	1.6
40	4 55	18 33	0 29	1 41	3 30	1.5	15 36	1.6
45	4 46	18 43	0 32	1 53	3 32	1.4	15 35	1.5
50	4 35	18 54	0 36	2 12	3 35	1.3	15 34	1.5
55	4 21	19 8	0 41	2 46	3 38	1.2	15 32	1.4
60	4 3	19 27	0 50	:::	3 42	1.1	15 31	1.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	221	48.7	144	3	42.5	-96	206	.6	-2	59.9	143	6.1	-21	6.1		
2	250	55.6	145	3	23.3	-96	236	4.5	-3	.3	173	10.5	-21	6.2		
4	280	2.6	145	3	4.1	-96	266	8.5	-3	.7	203	14.9	-21	6.2		
6	309	9.7	146	2	44.8	-96	296	12.5	-3	1.1	233	19.3	-21	6.3		
8	338	16.8	146	2	25.6	-96	326	16.5	-3	1.5	263	23.7	-21	6.4		
10	7	24.1	147	2	6.3	-97	356	20.4	-3	1.9	293	28.1	-21	6.4		
12	36	31.4	147	1	47.0	-97	26	24.4	-3	2.3	323	32.5	-21	6.5		
14	65	38.9	147	1	27.7	-97	56	28.4	-3	2.7	353	36.9	-21	6.6		
16	94	46.4	148	1	8.3	-97	86	32.4	-3	3.1	23	41.3	-21	6.7		
18	123	53.9	148	0	49.0	-97	116	36.3	-3	3.5	53	45.7	-21	6.7		
20	153	1.6	148	0	29.7	-97	146	40.3	-3	3.9	83	50.1	-21	6.8		
22	182	9.2	149	0	10.4	-7	176	44.3	-3	4.3	113	54.5	-21	6.9		
Δ							20			-2		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	7.7	.2	16.1	T _m	9 30	1.8	54.9	15.0
12	16	10.2	T _{m☉}	11 h 43.8 min	Starost	26.0 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 12	.1	111	-3.6	♄	10 15	.0	170	-1.2
	17 6	.1	68	-.2	♅	14 25	.0	107	.8

UT	SUNCE				PROLEĆ. TAČKA S _T	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	3.2	-13	11.1	36	46.0	146	47.4	-23	43.5	103	36.7	-23	45.4
2	214	3.3	-13	12.7	66	50.9	176	45.8	-23	44.5	133	37.8	-23	44.8
4	244	3.4	-13	14.4	96	55.9	206	44.2	-23	45.6	163	38.9	-23	44.2
6	274	3.4	-13	16.1	127	.8	236	42.7	-23	46.6	193	39.9	-23	43.5
8	304	3.5	-13	17.7	157	5.7	266	41.1	-23	47.6	223	41.0	-23	42.9
10	334	3.6	-13	19.4	187	10.6	296	39.5	-23	48.6	253	42.1	-23	42.2
12	4	3.7	-13	21.1	217	15.6	326	38.0	-23	49.7	283	43.2	-23	41.6
14	34	3.8	-13	22.7	247	20.5	356	36.4	-23	50.7	313	44.2	-23	40.9
16	64	3.9	-13	24.4	277	25.4	26	34.8	-23	51.7	343	45.3	-23	40.3
18	94	4.0	-13	26.0	307	30.4	56	33.2	-23	52.7	13	46.4	-23	39.6
20	124	4.0	-13	27.7	337	35.3	86	31.7	-23	53.7	43	47.4	-23	39.0
22	154	4.1	-13	29.3	7	40.2	116	30.1	-23	54.7	73	48.5	-23	38.3
Δ		0		-8				-8		-5		5		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 13	16 14	0 44	2 21	3 57	.6	16 43	3.0
55	6 56	16 30	0 38	2 2	3 58	.8	16 39	2.7
50	6 44	16 43	0 34	1 49	3 59	1.0	16 36	2.6
45	6 33	16 54	0 30	1 39	3 59	1.1	16 34	2.5
40	6 25	17 2	0 28	1 31	3 60	1.2	16 32	2.3
35	6 18	17 10	0 26	1 25	4 0	1.3	16 31	2.3
30	6 11	17 16	0 25	1 21	4 0	1.4	16 29	2.2
20	5 60	17 27	0 23	1 14	4 1	1.5	16 27	2.0
10	5 50	17 38	0 22	1 11	4 2	1.7	16 25	1.9
0	5 40	17 47	0 21	1 11	4 2	1.8	16 23	1.8
10	5 31	17 57	0 22	1 12	4 3	1.9	16 21	1.7
20	5 20	18 7	0 23	1 17	4 4	2.0	16 19	1.5
30	5 9	18 19	0 25	1 26	4 4	2.2	16 16	1.4
35	5 2	18 27	0 27	1 32	4 5	2.3	16 15	1.3
40	4 54	18 35	0 29	1 41	4 5	2.4	16 13	1.2
45	4 44	18 44	0 32	1 54	4 6	2.5	16 11	1.1
50	4 33	18 56	0 36	2 13	4 7	2.6	16 9	1.0
55	4 19	19 10	0 42	2 49	4 7	2.8	16 7	.9
60	4 0	19 29	0 51	:::	4 9	3.0	16 3	.7
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	211	17.0	149	0	9.0	96	206	48.3	-3	4.7	143	58.9	-21	6.9		
2	240	24.8	149	0	28.2	96	236	52.2	-3	5.1	174	3.3	-21	7.0		
4	269	32.6	149	0	47.5	96	266	56.2	-3	5.5	204	7.7	-21	7.1		
6	298	40.5	150	1	6.7	96	297	.2	-3	5.9	234	12.1	-21	7.1		
8	327	48.4	150	1	25.9	96	327	4.2	-3	6.3	264	16.5	-21	7.2		
10	356	56.3	150	1	45.1	96	357	8.1	-3	6.7	294	20.8	-21	7.3		
12	26	4.3	150	2	4.2	95	27	12.1	-3	7.1	324	25.2	-21	7.4		
14	55	12.2	150	2	23.3	95	57	16.1	-3	7.5	354	29.6	-21	7.4		
16	84	20.2	150	2	42.3	95	87	20.1	-3	7.9	24	34.0	-21	7.5		
18	113	28.2	150	3	1.3	95	117	24.1	-3	8.3	54	38.4	-21	7.6		
20	142	36.2	150	3	20.2	94	147	28.0	-3	8.6	84	42.8	-21	7.6		
22	171	44.2	150	3	39.1	94	177	32.0	-3	9.0	114	47.2	-21	7.7		
Δ							20			-2		22			0	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	4.2	-13	31.0	37	45.1	146	28.5	-23	55.6	103	49.6	-23	37.6
2	214	4.3	-13	32.7	67	50.1	176	26.9	-23	56.6	133	50.7	-23	37.0
4	244	4.4	-13	34.3	97	55.0	206	25.3	-23	57.6	163	51.7	-23	36.3
6	274	4.4	-13	36.0	127	59.9	236	23.8	-23	58.6	193	52.8	-23	35.7
8	304	4.5	-13	37.6	158	4.9	266	22.2	-23	59.6	223	53.9	-23	35.0
10	334	4.6	-13	39.3	188	9.8	296	20.6	-24	5	253	55.0	-23	34.3
12	4	4.7	-13	40.9	218	14.7	326	19.0	-24	1.5	283	56.0	-23	33.7
14	34	4.7	-13	42.5	248	19.6	356	17.4	-24	2.4	313	57.1	-23	33.0
16	64	4.8	-13	44.2	278	24.6	26	15.8	-24	3.4	343	58.2	-23	32.3
18	94	4.9	-13	45.8	308	29.5	56	14.2	-24	4.3	13	59.3	-23	31.6
20	124	4.9	-13	47.5	338	34.4	86	12.6	-24	5.3	44	3	-23	31.0
22	154	5.0	-13	49.1	8	39.4	116	11.0	-24	6.2	74	1.4	-23	30.3
Δ		0		-8				-8		-5		5		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 15	16 11	0 45	2 22	4 13	.7	17 54	2.9
55	6 58	16 28	0 38	2 3	4 18	.9	17 45	2.7
50	6 45	16 41	0 34	1 49	4 23	1.0	17 39	2.6
45	6 35	16 52	0 30	1 39	4 26	1.2	17 33	2.4
40	6 26	17 1	0 28	1 31	4 29	1.3	17 29	2.3
35	6 18	17 8	0 26	1 25	4 32	1.3	17 25	2.2
30	6 12	17 15	0 25	1 21	4 34	1.4	17 22	2.2
20	6 0	17 27	0 23	1 15	4 38	1.6	17 16	2.0
10	5 50	17 37	0 22	1 11	4 42	1.7	17 11	1.9
0	5 40	17 47	0 21	1 11	4 45	1.8	17 6	1.8
10	5 30	17 57	0 22	1 13	4 49	1.9	17 1	1.7
20	5 20	18 8	0 23	1 17	4 52	2.0	16 56	1.6
30	5 8	18 20	0 25	1 26	4 56	2.2	16 50	1.4
35	5 0	18 27	0 27	1 33	4 59	2.2	16 47	1.4
40	4 52	18 36	0 29	1 42	5 2	2.3	16 43	1.3
45	4 43	18 45	0 32	1 55	5 5	2.4	16 39	1.2
50	4 31	18 57	0 36	2 14	5 9	2.6	16 33	1.1
55	4 17	19 12	0 42	2 51	5 14	2.7	16 27	.9
60	3 57	19 32	0 51	:::	5 20	2.9	16 19	.7

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	200	52.2	150	3	57.8	93	207	36.0	-3	9.4	144	51.6	-21	7.8
2	230	.2	150	4	16.5	93	237	40.0	-3	9.8	174	56.0	-21	7.8
4	259	8.2	150	4	35.2	93	267	44.0	-3	10.2	205	.4	-21	7.9
6	288	16.2	150	4	53.7	92	297	47.9	-3	10.6	235	4.8	-21	8.0
8	317	24.1	150	5	12.1	92	327	51.9	-3	11.0	265	9.2	-21	8.1
10	346	32.1	150	5	30.5	91	357	55.9	-3	11.4	295	13.5	-21	8.1
12	15	40.0	149	5	48.7	91	27	59.9	-3	11.8	325	17.9	-21	8.2
14	44	47.9	149	6	6.9	90	58	3.9	-3	12.2	355	22.3	-21	8.3
16	73	55.7	149	6	24.9	90	88	7.8	-3	12.6	25	26.7	-21	8.3
18	103	3.5	149	6	42.8	89	118	11.8	-3	13.0	55	31.1	-21	8.4
20	132	11.3	149	7	.6	88	148	15.8	-3	13.4	85	35.5	-21	8.5
22	161	19.0	148	7	18.3	88	178	19.8	-3	13.8	115	39.9	-21	8.6
Δ							20			-2		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 16.8	.1	16.1	T _m	10 55	1.8	54.3 14.8
12	16 18.5	T _{m☉}	11 h 43.7 min	Starost	28.0 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 15	.1	109	-3.6	♄	10 8	.0	170	-1.2
♂	17 4	.1	66	-.1	♂	14 18	.0	107	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	5.1	-13	50.7	38	44.3	146	9.4	-24	7.1	104	2.5	-23	29.6
2	214	5.1	-13	52.4	68	49.2	176	7.8	-24	8.1	134	3.6	-23	28.9
4	244	5.2	-13	54.0	98	54.1	206	6.2	-24	9.0	164	4.6	-23	28.2
6	274	5.2	-13	55.6	128	59.1	236	4.6	-24	9.9	194	5.7	-23	27.6
8	304	5.3	-13	57.3	159	4.0	266	3.0	-24	10.8	224	6.8	-23	26.9
10	334	5.4	-13	58.9	189	8.9	296	1.4	-24	11.7	254	7.9	-23	26.2
12	4	5.4	-14	.5	219	13.8	325	59.8	-24	12.6	284	8.9	-23	25.5
14	34	5.5	-14	2.1	249	18.8	355	58.2	-24	13.5	314	10.0	-23	24.8
16	64	5.5	-14	3.8	279	23.7	25	56.6	-24	14.4	344	11.1	-23	24.1
18	94	5.6	-14	5.4	309	28.6	55	55.0	-24	15.3	14	12.1	-23	23.4
20	124	5.6	-14	7.0	339	33.6	85	53.4	-24	16.2	44	13.2	-23	22.7
22	154	5.7	-14	8.6	9	38.5	115	51.8	-24	17.1	74	14.3	-23	22.0
Δ		0		-8				-8		-5		5		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 18	16 8	0 45	2 22	4 29	.8	19 4	2.9
55	7 0	16 26	0 38	2 3	4 39	1.0	18 50	2.7
50	6 47	16 40	0 34	1 49	4 47	1.1	18 40	2.5
45	6 36	16 51	0 30	1 39	4 54	1.2	18 32	2.4
40	6 27	16 60	0 28	1 31	4 59	1.3	18 25	2.3
35	6 19	17 7	0 26	1 25	5 4	1.4	18 19	2.2
30	6 13	17 14	0 25	1 21	5 8	1.5	18 14	2.2
20	6 1	17 26	0 23	1 15	5 16	1.6	18 4	2.0
10	5 50	17 37	0 22	1 12	5 22	1.7	17 57	1.9
0	5 40	17 47	0 21	1 11	5 28	1.8	17 49	1.8
10	5 30	17 57	0 22	1 13	5 34	1.9	17 42	1.7
20	5 19	18 8	0 23	1 17	5 41	2.0	17 34	1.6
30	5 7	18 21	0 25	1 26	5 48	2.2	17 25	1.5
35	4 59	18 28	0 27	1 33	5 53	2.2	17 20	1.4
40	4 51	18 37	0 29	1 42	5 58	2.3	17 14	1.4
45	4 41	18 47	0 32	1 55	6 4	2.4	17 7	1.3
50	4 29	18 59	0 36	2 16	6 11	2.5	16 59	1.2
55	4 14	19 14	0 42	2 55	6 19	2.7	16 49	1.0
60	3 54	19 35	0 52	:::	6 31	2.9	16 36	.8

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	190	26.6	148	7	35.9	87	208	23.8	-3	14.2	145	44.3	-21	8.6
2	219	34.2	148	7	53.3	86	238	27.7	-3	14.6	175	48.7	-21	8.7
4	248	41.8	147	8	10.6	86	268	31.7	-3	15.0	205	53.0	-21	8.8
6	277	49.3	147	8	27.8	85	298	35.7	-3	15.4	235	57.4	-21	8.8
8	306	56.7	147	8	44.8	84	328	39.7	-3	15.8	266	1.8	-21	8.9
10	336	4.1	146	9	1.6	84	358	43.7	-3	16.1	296	6.2	-21	9.0
12	5	11.4	146	9	18.3	83	28	47.7	-3	16.5	326	10.6	-21	9.0
14	34	18.6	146	9	34.9	82	58	51.6	-3	16.9	356	15.0	-21	9.1
16	63	25.8	145	9	51.3	81	88	55.6	-3	17.3	26	19.3	-21	9.2
18	92	32.9	145	10	7.5	80	118	59.6	-3	17.7	56	23.7	-21	9.3
20	121	39.9	145	10	23.5	79	149	3.6	-3	18.1	86	28.1	-21	9.3
22	150	46.8	144	10	39.4	78	179	7.6	-3	18.5	116	32.5	-21	9.4
Δ							20			-2		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 20.3	.1	16.1	T _m	11 39	1.8	54.1 14.7
12	16 21.6	T _{m☉}	11 h 43.6 min	Starost	29.0 d	Faza	●

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UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	5.7	-14	10.2	39	43.4	145	50.2	-24	17.9	104	15.4	-23	21.3
2	214	5.8	-14	11.9	69	48.3	175	48.6	-24	18.8	134	16.4	-23	20.6
4	244	5.8	-14	13.5	99	53.3	205	47.0	-24	19.7	164	17.5	-23	19.9
6	274	5.9	-14	15.1	129	58.2	235	45.3	-24	20.5	194	18.6	-23	19.2
8	304	5.9	-14	16.7	160	3.1	265	43.7	-24	21.4	224	19.7	-23	18.5
10	334	5.9	-14	18.3	190	8.1	295	42.1	-24	22.3	254	20.7	-23	17.8
12	4	6.0	-14	19.9	220	13.0	325	40.5	-24	23.1	284	21.8	-23	17.1
14	34	6.0	-14	21.5	250	17.9	355	38.9	-24	23.9	314	22.9	-23	16.4
16	64	6.1	-14	23.1	280	22.8	25	37.2	-24	24.8	344	24.0	-23	15.7
18	94	6.1	-14	24.7	310	27.8	55	35.6	-24	25.6	14	25.0	-23	15.0
20	124	6.1	-14	26.3	340	32.7	85	34.0	-24	26.4	44	26.1	-23	14.3
22	154	6.2	-14	27.9	10	37.6	115	32.4	-24	27.3	74	27.2	-23	13.6
Δ		0		-8				-8		-4		5		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	7 21	16 6	0 45	2 22	4 47	.9	20 13	2.8
55	7 2	16 24	0 38	2 3	5 2	1.1	19 54	2.6
50	6 49	16 38	0 34	1 49	5 14	1.2	19 41	2.5
45	6 37	16 49	0 31	1 39	5 23	1.3	19 29	2.4
40	6 28	16 58	0 28	1 31	5 31	1.4	19 20	2.3
35	6 20	17 6	0 26	1 26	5 38	1.5	19 12	2.2
30	6 13	17 14	0 25	1 21	5 44	1.6	19 5	2.2
20	6 1	17 26	0 23	1 15	5 54	1.7	18 53	2.1
10	5 50	17 37	0 22	1 12	6 3	1.8	18 43	2.0
0	5 40	17 47	0 21	1 11	6 12	1.9	18 33	1.9
10	5 30	17 57	0 22	1 13	6 20	2.0	18 23	1.8
20	5 19	18 9	0 23	1 18	6 30	2.0	18 13	1.7
30	5 6	18 22	0 25	1 26	6 40	2.2	18 1	1.6
35	4 58	18 29	0 27	1 33	6 47	2.2	17 54	1.6
40	4 50	18 38	0 29	1 43	6 54	2.3	17 47	1.5
45	4 40	18 48	0 32	1 56	7 2	2.4	17 38	1.4
50	4 28	19 1	0 36	2 17	7 12	2.5	17 27	1.3
55	4 12	19 16	0 42	2 58	7 24	2.6	17 13	1.2
60	3 52	19 37	0 52	:::	7 40	2.8	16 56	1.0
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	53.6	144	10	55.1	78	209	11.6	-3	18.9	146	36.9	-21	9.5
2	209	.3	143	11	10.6	77	239	15.6	-3	19.3	176	41.3	-21	9.5
4	238	7.0	143	11	25.9	76	269	19.5	-3	19.7	206	45.6	-21	9.6
6	267	13.6	142	11	41.0	75	299	23.5	-3	20.1	236	50.0	-21	9.7
8	296	20.0	142	11	55.9	74	329	27.5	-3	20.5	266	54.4	-21	9.7
10	325	26.4	141	12	10.6	73	359	31.5	-3	20.9	296	58.8	-21	9.8
12	354	32.7	141	12	25.1	71	29	35.5	-3	21.2	327	3.2	-21	9.9
14	23	38.8	140	12	39.4	70	59	39.5	-3	21.6	357	7.6	-21	10.0
16	52	44.9	140	12	53.5	69	89	43.5	-3	22.0	27	11.9	-21	10.0
18	81	50.9	139	13	7.4	68	119	47.5	-3	22.4	57	16.3	-21	10.1
20	110	56.7	139	13	21.0	67	149	51.4	-3	22.8	87	20.7	-21	10.2
22	140	2.5	138	13	34.4	66	179	55.4	-3	23.2	117	25.1	-21	10.2
Δ							20			-2		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 22.9	.1	16.1	T _m	12 22	1.9	53.9	14.7	
12	16 23.8	T _{m☉}	11 h 43.6 min	Starost	.3 d	Faza	●		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 17	.1	106	-3.6	♄	10 2	.0	169	-1.2
	17 2	.1	65	-.1	♅	14 11	.0	107	.7

1. NOVEMBAR

UTORAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	6.2	-14	29.5	40	42.6	145	30.7	-24	28.1	104	28.3	-23	12.8
2	214	6.2	-14	31.1	70	47.5	175	29.1	-24	28.9	134	29.3	-23	12.1
4	244	6.2	-14	32.7	100	52.4	205	27.5	-24	29.7	164	30.4	-23	11.4
6	274	6.3	-14	34.3	130	57.3	235	25.9	-24	30.5	194	31.5	-23	10.7
8	304	6.3	-14	35.9	161	2.3	265	24.2	-24	31.3	224	32.5	-23	10.0
10	334	6.3	-14	37.5	191	7.2	295	22.6	-24	32.1	254	33.6	-23	9.2
12	4	6.3	-14	39.1	221	12.1	325	21.0	-24	32.9	284	34.7	-23	8.5
14	34	6.4	-14	40.7	251	17.1	355	19.3	-24	33.7	314	35.8	-23	7.8
16	64	6.4	-14	42.3	281	22.0	25	17.7	-24	34.5	344	36.8	-23	7.1
18	94	6.4	-14	43.8	311	26.9	55	16.1	-24	35.2	14	37.9	-23	6.3
20	124	6.4	-14	45.4	341	31.8	85	14.4	-24	36.0	44	39.0	-23	5.6
22	154	6.4	-14	47.0	11	36.8	115	12.8	-24	36.8	74	40.1	-23	4.9
Δ		0		-8				-8		-4		5		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	7 23	16 3	0 45	2 23	5 9	1.1	21 20	2.6
55	7 4	16 22	0 39	2 3	5 28	1.3	20 57	2.5
50	6 50	16 36	0 34	1 50	5 43	1.4	20 40	2.4
45	6 39	16 48	0 31	1 39	5 55	1.5	20 26	2.3
40	6 29	16 57	0 28	1 32	6 5	1.6	20 15	2.2
35	6 21	17 5	0 26	1 26	6 14	1.6	20 5	2.2
30	6 14	17 13	0 25	1 21	6 21	1.7	19 57	2.1
20	6 2	17 25	0 23	1 15	6 34	1.8	19 43	2.1
10	5 51	17 36	0 22	1 12	6 46	1.8	19 30	2.0
0	5 40	17 47	0 21	1 11	6 56	1.9	19 18	1.9
10	5 30	17 58	0 22	1 13	7 7	2.0	19 7	1.9
20	5 18	18 9	0 23	1 18	7 19	2.1	18 54	1.8
30	5 5	18 23	0 25	1 27	7 32	2.1	18 40	1.7
35	4 57	18 30	0 27	1 34	7 40	2.2	18 32	1.7
40	4 49	18 39	0 29	1 43	7 49	2.3	18 22	1.6
45	4 38	18 50	0 32	1 57	7 59	2.3	18 11	1.6
50	4 26	19 2	0 36	2 18	8 12	2.4	17 58	1.5
55	4 10	19 18	0 43	3 2	8 27	2.5	17 41	1.4
60	3 49	19 40	0 53	:::	8 49	2.7	17 19	1.2
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	169	8.2	138	13	47.6	65	209	59.4	-3	23.6	147	29.5	-21	10.3
2	198	13.7	137	14	.6	64	240	3.4	-3	24.0	177	33.8	-21	10.4
4	227	19.1	137	14	13.3	62	270	7.4	-3	24.4	207	38.2	-21	10.4
6	256	24.5	136	14	25.7	61	300	11.4	-3	24.8	237	42.6	-21	10.5
8	285	29.7	135	14	37.9	60	330	15.4	-3	25.1	267	47.0	-21	10.6
10	314	34.8	135	14	49.9	59	0	19.4	-3	25.5	297	51.3	-21	10.7
12	343	39.7	134	15	1.6	57	30	23.4	-3	25.9	327	55.7	-21	10.7
14	12	44.6	134	15	13.1	56	60	27.3	-3	26.3	358	.1	-21	10.8
16	41	49.4	133	15	24.2	55	90	31.3	-3	26.7	28	4.5	-21	10.9
18	70	54.0	133	15	35.2	53	120	35.3	-3	27.1	58	8.8	-21	10.9
20	99	58.6	132	15	45.8	52	150	39.3	-3	27.5	88	13.2	-21	11.0
22	129	3.0	132	15	56.2	50	180	43.3	-3	27.9	118	17.6	-21	11.1
Δ							20			-2		22		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	184	6.4	-14	48.6	41	41.7	145	11.2	-24	37.5	104	41.1	-23	4.1
2	214	6.5	-14	50.2	71	46.6	175	9.5	-24	38.3	134	42.2	-23	3.4
4	244	6.5	-14	51.7	101	51.6	205	7.9	-24	39.0	164	43.3	-23	2.7
6	274	6.5	-14	53.3	131	56.5	235	6.2	-24	39.8	194	44.4	-23	1.9
8	304	6.5	-14	54.9	162	1.4	265	4.6	-24	40.5	224	45.4	-23	1.2
10	334	6.5	-14	56.5	192	6.3	295	2.9	-24	41.3	254	46.5	-23	.4
12	4	6.5	-14	58.0	222	11.3	325	1.3	-24	42.0	284	47.6	-22	59.7
14	34	6.5	-14	59.6	252	16.2	354	59.7	-24	42.7	314	48.7	-22	58.9
16	64	6.5	-15	1.2	282	21.1	24	58.0	-24	43.4	344	49.7	-22	58.2
18	94	6.5	-15	2.7	312	26.1	54	56.4	-24	44.2	14	50.8	-22	57.4
20	124	6.5	-15	4.3	342	31.0	84	54.7	-24	44.9	44	51.9	-22	56.7
22	154	6.5	-15	5.8	12	35.9	114	53.1	-24	45.6	74	53.0	-22	55.9
Δ		0		-8				-8		-4		5		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	7 26	16 1	0 45	2 23	5 35	1.4	22 22	2.4
55	7 6	16 20	0 39	2 4	5 59	1.5	21 56	2.3
50	6 52	16 35	0 34	1 50	6 17	1.6	21 36	2.2
45	6 40	16 46	0 31	1 40	6 31	1.7	21 21	2.2
40	6 31	16 56	0 28	1 32	6 42	1.7	21 8	2.1
35	6 22	17 4	0 26	1 26	6 52	1.8	20 58	2.1
30	6 15	17 12	0 25	1 21	7 1	1.8	20 48	2.1
20	6 2	17 25	0 23	1 15	7 16	1.9	20 32	2.1
10	5 51	17 36	0 22	1 12	7 30	1.9	20 18	2.0
0	5 40	17 47	0 21	1 11	7 42	2.0	20 5	2.0
10	5 29	17 58	0 22	1 13	7 55	2.0	19 52	1.9
20	5 18	18 10	0 23	1 18	8 8	2.1	19 38	1.9
30	5 4	18 23	0 25	1 27	8 24	2.1	19 22	1.9
35	4 56	18 31	0 27	1 34	8 33	2.2	19 12	1.8
40	4 47	18 40	0 29	1 44	8 43	2.2	19 1	1.8
45	4 37	18 51	0 32	1 57	8 55	2.2	18 49	1.8
50	4 24	19 4	0 37	2 20	9 10	2.3	18 34	1.7
55	4 8	19 21	0 43	3 6	9 28	2.4	18 15	1.6
60	3 46	19 43	0 53	:::	9 54	2.5	17 49	1.5

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	158	7.3	131	16	6.3	49	210	47.3	-3	28.3	148	22.0	-21	11.1		
2	187	11.5	130	16	16.1	48	240	51.3	-3	28.6	178	26.3	-21	11.2		
4	216	15.5	130	16	25.6	46	270	55.3	-3	29.0	208	30.7	-21	11.3		
6	245	19.5	129	16	34.8	45	300	59.3	-3	29.4	238	35.1	-21	11.4		
8	274	23.4	129	16	43.8	43	331	3.3	-3	29.8	268	39.5	-21	11.4		
10	303	27.1	128	16	52.4	42	1	7.3	-3	30.2	298	43.8	-21	11.5		
12	332	30.7	128	17	.8	40	31	11.3	-3	30.6	328	48.2	-21	11.6		
14	1	34.2	127	17	8.8	39	61	15.3	-3	31.0	358	52.6	-21	11.6		
16	30	37.6	126	17	16.6	37	91	19.2	-3	31.4	28	57.0	-21	11.7		
18	59	40.9	126	17	24.0	36	121	23.2	-3	31.7	59	1.3	-21	11.8		
20	88	44.1	125	17	31.1	34	151	27.2	-3	32.1	89	5.7	-21	11.8		
22	117	47.2	125	17	37.9	32	181	31.2	-3	32.5	119	10.1	-21	11.9		
Δ							20			-2		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 25.8	.0	16.1	T _m	13 54	2.0	54.0	14.7
12	16 25.9	T _{m☉}	11 h 43.6 min	Starost	2.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
h	h min	'	°		h min	'	°		
♀	14 20	.1	103	-3.7	♃	9 56	.0	169	-1.3
♂	17 1	.1	63	-.1	♄	14 4	.0	107	.7

3. NOVEMBAR

ČETVRTAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	6.5	-15	7.4	42	40.8	144	51.4	-24	46.3	104	54.0	-22	55.2
2	214	6.5	-15	9.0	72	45.8	174	49.8	-24	47.0	134	55.1	-22	54.4
4	244	6.5	-15	10.5	102	50.7	204	48.1	-24	47.7	164	56.2	-22	53.7
6	274	6.5	-15	12.1	132	55.6	234	46.5	-24	48.4	194	57.3	-22	52.9
8	304	6.5	-15	13.6	163	.5	264	44.8	-24	49.0	224	58.3	-22	52.2
10	334	6.5	-15	15.2	193	5.5	294	43.2	-24	49.7	254	59.4	-22	51.4
12	4	6.5	-15	16.7	223	10.4	324	41.5	-24	50.4	285	.5	-22	50.6
14	34	6.4	-15	18.3	253	15.3	354	39.8	-24	51.1	315	1.6	-22	49.9
16	64	6.4	-15	19.8	283	20.3	24	38.2	-24	51.7	345	2.7	-22	49.1
18	94	6.4	-15	21.3	313	25.2	54	36.5	-24	52.4	15	3.7	-22	48.3
20	124	6.4	-15	22.9	343	30.1	84	34.9	-24	53.0	45	4.8	-22	47.6
22	154	6.4	-15	24.4	13	35.0	114	33.2	-24	53.7	75	5.9	-22	46.8
Δ		0		-8				-8		-3		5		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	7 28	15 58	0 46	2 24	6 8	1.7	23 19	2.0
55	7 9	16 18	0 39	2 4	6 35	1.8	22 51	2.0
50	6 54	16 33	0 34	1 50	6 55	1.8	22 30	2.0
45	6 42	16 45	0 31	1 40	7 11	1.9	22 13	2.0
40	6 32	16 55	0 28	1 32	7 24	1.9	21 60	2.0
35	6 23	17 4	0 26	1 26	7 35	1.9	21 48	2.0
30	6 16	17 11	0 25	1 21	7 44	1.9	21 38	2.0
20	6 3	17 24	0 23	1 15	8 1	2.0	21 21	2.0
10	5 51	17 36	0 22	1 12	8 16	2.0	21 6	2.0
0	5 40	17 47	0 21	1 11	8 29	2.0	20 52	2.0
10	5 29	17 58	0 22	1 13	8 43	2.0	20 38	2.0
20	5 17	18 10	0 23	1 18	8 58	2.0	20 23	2.0
30	5 3	18 24	0 25	1 27	9 14	2.1	20 6	2.0
35	4 55	18 32	0 27	1 34	9 24	2.1	19 56	2.0
40	4 46	18 42	0 29	1 44	9 35	2.1	19 45	2.0
45	4 35	18 52	0 33	1 58	9 49	2.1	19 31	2.0
50	4 22	19 6	0 37	2 21	10 5	2.1	19 15	2.0
55	4 6	19 23	0 43	3 10	10 25	2.2	18 54	1.9
60	3 44	19 45	0 54	:::	10 54	2.2	18 26	1.9

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	146	50.2	124	17	44.4	31	211	35.2	-3	32.9	149	14.4	-21	12.0		
2	175	53.0	124	17	50.6	29	241	39.2	-3	33.3	179	18.8	-21	12.1		
4	204	55.8	123	17	56.4	28	271	43.2	-3	33.7	209	23.2	-21	12.1		
6	233	58.4	123	18	1.9	26	301	47.2	-3	34.1	239	27.5	-21	12.2		
8	263	1.0	122	18	7.1	24	331	51.2	-3	34.4	269	31.9	-21	12.3		
10	292	3.5	122	18	12.0	23	1	55.2	-3	34.8	299	36.3	-21	12.3		
12	321	5.8	121	18	16.5	21	31	59.2	-3	35.2	329	40.7	-21	12.4		
14	350	8.1	121	18	20.7	19	62	3.2	-3	35.6	359	45.0	-21	12.5		
16	19	10.3	120	18	24.6	18	92	7.2	-3	36.0	29	49.4	-21	12.5		
18	48	12.4	120	18	28.1	16	122	11.2	-3	36.4	59	53.8	-21	12.6		
20	77	14.4	120	18	31.3	14	152	15.2	-3	36.8	89	58.1	-21	12.7		
22	106	16.3	119	18	34.1	12	182	19.2	-3	37.1	120	2.5	-21	12.8		
Δ							20			-2		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	.0	16				

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	6.4	-15	26.0	43	40.0	144	31.5	-24	54.3	105	7.0	-22	46.0
2	214	6.3	-15	27.5	73	44.9	174	29.9	-24	55.0	135	8.0	-22	45.3
4	244	6.3	-15	29.0	103	49.8	204	28.2	-24	55.6	165	9.1	-22	44.5
6	274	6.3	-15	30.6	133	54.8	234	26.6	-24	56.2	195	10.2	-22	43.7
8	304	6.3	-15	32.1	163	59.7	264	24.9	-24	56.9	225	11.3	-22	42.9
10	334	6.2	-15	33.6	194	4.6	294	23.2	-24	57.5	255	12.3	-22	42.1
12	4	6.2	-15	35.2	224	9.5	324	21.6	-24	58.1	285	13.4	-22	41.4
14	34	6.2	-15	36.7	254	14.5	354	19.9	-24	58.7	315	14.5	-22	40.6
16	64	6.2	-15	38.2	284	19.4	24	18.2	-24	59.3	345	15.6	-22	39.8
18	94	6.1	-15	39.7	314	24.3	54	16.6	-24	59.9	15	16.7	-22	39.0
20	124	6.1	-15	41.2	344	29.3	84	14.9	-25	5	45	17.7	-22	38.2
22	154	6.1	-15	42.8	14	34.2	114	13.2	-25	1.1	75	18.8	-22	37.4
Δ		0		-8				-8		-3		5		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	7 31	15 55	0 46	2 24	6 49	2.1	.. .	.0
55	7 11	16 16	0 39	2 4	7 18	2.1	23 40	1.8
50	6 55	16 31	0 34	1 50	7 39	2.1	23 19	1.8
45	6 43	16 44	0 31	1 40	7 56	2.1	23 2	1.9
40	6 33	16 54	0 28	1 32	8 9	2.1	22 49	1.9
35	6 24	17 3	0 26	1 26	8 21	2.1	22 37	1.9
30	6 16	17 10	0 25	1 21	8 31	2.1	22 27	2.0
20	6 3	17 24	0 23	1 15	8 48	2.1	22 10	2.0
10	5 51	17 36	0 22	1 12	9 3	2.0	21 55	2.0
0	5 40	17 47	0 21	1 11	9 17	2.0	21 41	2.0
10	5 29	17 58	0 22	1 13	9 31	2.0	21 27	2.1
20	5 17	18 11	0 23	1 18	9 47	2.0	21 11	2.1
30	5 3	18 25	0 25	1 27	10 4	2.0	20 54	2.1
35	4 54	18 33	0 27	1 35	10 14	2.0	20 44	2.1
40	4 45	18 43	0 30	1 44	10 26	2.0	20 32	2.2
45	4 34	18 54	0 33	1 59	10 39	2.0	20 19	2.2
50	4 21	19 7	0 37	2 22	10 56	1.9	20 2	2.2
55	4 4	19 25	0 44	3 15	11 17	1.9	19 41	2.3
60	3 41	19 48	0 55	:::	11 47	1.9	19 12	2.3
S								

UT	MESEC				JUPITER				SATURN				
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	135	18.1	119	18 36.6	11	212	23.2	-3	37.5	150	6.9	-21	12.8
2	164	19.8	118	18 38.7	9	242	27.2	-3	37.9	180	11.2	-21	12.9
4	193	21.5	118	18 40.5	7	272	31.2	-3	38.3	210	15.6	-21	13.0
6	222	23.1	117	18 42.0	5	302	35.2	-3	38.7	240	20.0	-21	13.0
8	251	24.6	117	18 43.0	4	332	39.2	-3	39.1	270	24.3	-21	13.1
10	280	26.0	117	18 43.8	2	2	43.2	-3	39.4	300	28.7	-21	13.2
12	309	27.3	116	18 44.1	0	32	47.2	-3	39.8	330	33.1	-21	13.2
14	338	28.6	116	18 44.2	-2	62	51.2	-3	40.2	0	37.4	-21	13.3
16	7	29.8	116	18 43.8	-3	92	55.2	-3	40.6	30	41.8	-21	13.4
18	36	31.0	115	18 43.1	-5	122	59.2	-3	41.0	60	46.2	-21	13.5
20	65	32.1	115	18 42.1	-7	153	3.2	-3	41.4	90	50.5	-21	13.5
22	94	33.1	115	18 40.7	-9	183	7.2	-3	41.7	120	54.9	-21	13.6
Δ						20			-2	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 25.4	-.1	16.2	T _m	15 29	2.0	54.4 14.8		
12	16 24.7	T _{m☉}	11 h 43.6 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	'	°	°
♁	14 23	.1	101	-3.7	♃	9 49	.0	169	-1.3
♂	16 59	.1	61	-.1	♄	13 58	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	6.0	-15	44.3	44	39.1	144	11.6	-25	1.7	105	19.9	-22	36.6
2	214	6.0	-15	45.8	74	44.0	174	9.9	-25	2.3	135	21.0	-22	35.8
4	244	5.9	-15	47.3	104	49.0	204	8.2	-25	2.8	165	22.1	-22	35.1
6	274	5.9	-15	48.8	134	53.9	234	6.5	-25	3.4	195	23.1	-22	34.3
8	304	5.9	-15	50.3	164	58.8	264	4.9	-25	4.0	225	24.2	-22	33.5
10	334	5.8	-15	51.8	195	3.8	294	3.2	-25	4.5	255	25.3	-22	32.7
12	4	5.8	-15	53.3	225	8.7	324	1.5	-25	5.1	285	26.4	-22	31.9
14	34	5.7	-15	54.8	255	13.6	353	59.9	-25	5.6	315	27.5	-22	31.1
16	64	5.7	-15	56.3	285	18.5	23	58.2	-25	6.2	345	28.5	-22	30.3
18	94	5.6	-15	57.8	315	23.5	53	56.5	-25	6.7	15	29.6	-22	29.5
20	124	5.6	-15	59.3	345	28.4	83	54.8	-25	7.3	45	30.7	-22	28.7
22	154	5.5	-16	8	15	33.3	113	53.1	-25	7.8	75	31.8	-22	27.8
Δ		0		-8				-8		-3		5		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	7 33	15 53	0 46	2 25	7 40	2.5	0 8	1.7
55	7 13	16 14	0 39	2 5	8 9	2.4	.. .	.0
50	6 57	16 30	0 34	1 51	8 29	2.3	.. .	.0
45	6 44	16 42	0 31	1 40	8 46	2.3	23 47	1.7
40	6 34	16 53	0 28	1 32	8 59	2.3	23 34	1.8
35	6 25	17 2	0 26	1 26	9 10	2.2	23 24	1.8
30	6 17	17 10	0 25	1 21	9 20	2.2	23 14	1.9
20	6 4	17 23	0 23	1 15	9 37	2.1	22 58	1.9
10	5 52	17 36	0 22	1 12	9 52	2.1	22 43	2.0
0	5 40	17 47	0 22	1 12	10 6	2.1	22 30	2.1
10	5 29	17 59	0 22	1 13	10 20	2.0	22 16	2.1
20	5 16	18 11	0 23	1 18	10 35	2.0	22 2	2.2
30	5 2	18 26	0 26	1 28	10 52	1.9	21 45	2.2
35	4 54	18 34	0 27	1 35	11 2	1.9	21 36	2.3
40	4 44	18 44	0 30	1 45	11 13	1.8	21 24	2.3
45	4 33	18 55	0 33	1 60	11 26	1.8	21 11	2.4
50	4 19	19 9	0 37	2 24	11 43	1.7	20 55	2.5
55	4 2	19 27	0 44	3 21	12 3	1.7	20 35	2.6
60	3 38	19 51	0 55	:::	12 31	1.5	20 7	2.7
S								

UT	MESEC				JUPITER				SATURN				
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	123	34.0	115	18 38.9	-11	213	11.2	-3	42.1	150	59.2	-21	13.7
2	152	34.9	114	18 36.7	-13	243	15.2	-3	42.5	181	3.6	-21	13.7
4	181	35.8	114	18 34.2	-14	273	19.2	-3	42.9	211	8.0	-21	13.8
6	210	36.6	114	18 31.4	-16	303	23.2	-3	43.3	241	12.3	-21	13.9
8	239	37.3	113	18 28.1	-18	333	27.2	-3	43.6	271	16.7	-21	13.9
10	268	38.0	113	18 24.5	-20	3	31.2	-3	44.0	301	21.1	-21	14.0
12	297	38.7	113	18 20.6	-22	33	35.2	-3	44.4	331	25.4	-21	14.1
14	326	39.3	113	18 16.2	-23	63	39.2	-3	44.8	1	29.8	-21	14.1
16	355	39.8	113	18 11.5	-25	93	43.2	-3	45.2	31	34.1	-21	14.2
18	24	40.3	112	18 6.5	-27	123	47.2	-3	45.6	61	38.5	-21	14.3
20	53	40.8	112	18 1.1	-29	153	51.3	-3	45.9	91	42.9	-21	14.4
22	82	41.2	112	17 55.3	-31	183	55.3	-3	46.3	121	47.2	-21	14.4
Δ						20			-2	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 24.1	-.1	16.2	T _m	16 18	2.0	54.8 14.9
12	16 23.0	T _{m☉}	11 h 43.6 min	Starost	5.3 d	Faza</	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	5.5	-16	2.3	45	38.3	143	51.5	-25	8.3	105	32.9	-22	27.0
2	214	5.4	-16	3.8	75	43.2	173	49.8	-25	8.8	135	33.9	-22	26.2
4	244	5.4	-16	5.3	105	48.1	203	48.1	-25	9.3	165	35.0	-22	25.4
6	274	5.3	-16	6.8	135	53.0	233	46.4	-25	9.9	195	36.1	-22	24.6
8	304	5.2	-16	8.3	165	58.0	263	44.8	-25	10.4	225	37.2	-22	23.8
10	334	5.2	-16	9.8	196	2.9	293	43.1	-25	10.9	255	38.3	-22	23.0
12	4	5.1	-16	11.3	226	7.8	323	41.4	-25	11.4	285	39.3	-22	22.2
14	34	5.1	-16	12.7	256	12.7	353	39.7	-25	11.8	315	40.4	-22	21.3
16	64	5.0	-16	14.2	286	17.7	23	38.0	-25	12.3	345	41.5	-22	20.5
18	94	4.9	-16	15.7	316	22.6	53	36.3	-25	12.8	15	42.6	-22	19.7
20	124	4.9	-16	17.2	346	27.5	83	34.7	-25	13.3	45	43.7	-22	18.9
22	154	4.8	-16	18.6	16	32.5	113	33.0	-25	13.8	75	44.8	-22	18.0
Δ		0		-7				-8		-2		5		4

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	111	41.6	112	17	49.1	-33	213	59.3	-3	46.7	151	51.6	-21	14.5
2	140	42.0	112	17	42.6	-34	244	3.3	-3	47.1	181	55.9	-21	14.6
4	169	42.3	111	17	35.7	-36	274	7.3	-3	47.5	212	.3	-21	14.6
6	198	42.6	111	17	28.5	-38	304	11.3	-3	47.8	242	4.7	-21	14.7
8	227	42.9	111	17	20.9	-40	334	15.3	-3	48.2	272	9.0	-21	14.8
10	256	43.1	111	17	12.9	-42	4	19.3	-3	48.6	302	13.4	-21	14.8
12	285	43.3	111	17	4.6	-43	34	23.3	-3	49.0	332	17.7	-21	14.9
14	314	43.5	111	16	55.9	-45	64	27.3	-3	49.3	2	22.1	-21	15.0
16	343	43.7	111	16	46.9	-47	94	31.3	-3	49.7	32	26.4	-21	15.1
18	12	43.8	110	16	37.5	-49	124	35.3	-3	50.1	62	30.8	-21	15.1
20	41	43.9	110	16	27.8	-50	154	39.3	-3	50.5	92	35.2	-21	15.2
22	70	44.0	110	16	17.7	-52	184	43.4	-3	50.9	122	39.5	-21	15.3
Δ							20			-2		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	7 36	15 50	0 46	2 25	8 41	2.9	0 49	1.4
55	7 15	16 12	0 39	2 5	9 7	2.7	0 22	1.5
50	6 59	16 28	0 35	1 51	9 26	2.6	0 3	1.6
45	6 46	16 41	0 31	1 40	9 41	2.5	...	.0
40	6 35	16 52	0 28	1 32	9 53	2.4	...	.0
35	6 26	17 1	0 26	1 26	10 4	2.4	...	.0
30	6 18	17 9	0 25	1 22	10 13	2.3	23 59	1.8
20	6 4	17 23	0 23	1 15	10 29	2.2	23 44	1.9
10	5 52	17 35	0 22	1 12	10 42	2.1	23 31	2.0
0	5 40	17 47	0 22	1 12	10 55	2.1	23 19	2.1
10	5 28	17 59	0 22	1 14	11 8	2.0	23 7	2.2
20	5 16	18 12	0 23	1 19	11 22	1.9	22 54	2.2
30	5 1	18 27	0 26	1 28	11 38	1.8	22 39	2.4
35	4 53	18 35	0 27	1 35	11 47	1.8	22 30	2.4
40	4 43	18 45	0 30	1 46	11 57	1.7	22 20	2.5
45	4 31	18 57	0 33	2 1	12 10	1.6	22 9	2.6
50	4 17	19 11	0 37	2 25	12 24	1.5	21 55	2.7
55	3 60	19 29	0 44	3 28	12 43	1.4	21 36	2.8
60	3 36	19 53	0 56	:::	13 8	1.2	21 12	3.0
S								

SUNCE				MESEC					
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r		
h	min	s	s	h min	min	'	'		
00	16 21.9	-.1	16.2	T _m	17 7	2.1	55.4 15.1		
12	16 20.4	T _{m☉}	11 h 43.7 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	'	°	
♂	14 25	.1	98	-3.7	♄	9 43	.0	168	-1.3
	16 57	.1	60	.0	♅	13 51	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	4.7	-16	20.1	46	37.4	143	31.3	-25	14.2	105	45.8	-22	17.2
2	214	4.6	-16	21.6	76	42.3	173	29.6	-25	14.7	135	46.9	-22	16.4
4	244	4.6	-16	23.0	106	47.2	203	27.9	-25	15.1	165	48.0	-22	15.6
6	274	4.5	-16	24.5	136	52.2	233	26.2	-25	15.6	195	49.1	-22	14.7
8	304	4.4	-16	26.0	166	57.1	263	24.6	-25	16.0	225	50.2	-22	13.9
10	334	4.3	-16	27.4	197	2.0	293	22.9	-25	16.5	255	51.3	-22	13.1
12	4	4.3	-16	28.9	227	7.0	323	21.2	-25	16.9	285	52.3	-22	12.2
14	34	4.2	-16	30.4	257	11.9	353	19.5	-25	17.3	315	53.4	-22	11.4
16	64	4.1	-16	31.8	287	16.8	23	17.8	-25	17.8	345	54.5	-22	10.5
18	94	4.0	-16	33.3	317	21.7	53	16.1	-25	18.2	15	55.6	-22	9.7
20	124	3.9	-16	34.7	347	26.7	83	14.4	-25	18.6	45	56.7	-22	8.9
22	154	3.8	-16	36.2	17	31.6	113	12.8	-25	19.0	75	57.8	-22	8.0
Δ		0		-7				-8		-2		5		4

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	99	44.0	110	16	7.2	-54	214	47.4	-3	51.2	152	43.9	-21	15.3
2	128	44.1	110	15	56.4	-56	244	51.4	-3	51.6	182	48.2	-21	15.4
4	157	44.1	110	15	45.3	-57	274	55.4	-3	52.0	212	52.6	-21	15.5
6	186	44.0	110	15	33.8	-59	304	59.4	-3	52.4	242	56.9	-21	15.5
8	215	44.0	110	15	21.9	-61	335	3.4	-3	52.7	273	1.3	-21	15.6
10	244	43.9	110	15	9.8	-63	5	7.4	-3	53.1	303	5.6	-21	15.7
12	273	43.8	109	14	57.2	-64	35	11.4	-3	53.5	333	10.0	-21	15.7
14	302	43.7	109	14	44.4	-66	65	15.5	-3	53.9	3	14.4	-21	15.8
16	331	43.5	109	14	31.2	-68	95	19.5	-3	54.3	33	18.7	-21	15.9
18	0	43.4	109	14	17.7	-69	125	23.5	-3	54.6	63	23.1	-21	15.9
20	29	43.2	109	14	3.8	-71	155	27.5	-3	55.0	93	27.4	-21	16.0
22	58	42.9	109	13	49.7	-72	185	31.5	-3	55.4	123	31.8	-21	16.1
Δ							20			-2		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	7 39	15 48	0 47	2 26	9 50	3.1	1 22	1.1
55	7 17	16 10	0 40	2 5	10 11	2.9	0 59	1.3
50	7 0	16 27	0 35	1 51	10 28	2.8	0 42	1.5
45	6 47	16 40	0 31	1 40	10 41	2.7	0 28	1.6
40	6 36	16 51	0 28	1 33	10 51	2.6	0 17	1.7
35	6 27	17 0	0 26	1 26	11 0	2.5	0 7	1.7
30	6 19	17 8	0 25	1 22	11 8	2.4	...	.0
20	6 5	17 23	0 23	1 15	11 22	2.3	...	.0
10	5 52	17 35	0 22	1 12	11 34	2.2	...	.0
0	5 40	17 47	0 22	1 12	11 45	2.1	...	.0
10	5 28	17 59	0 22	1 14	11 56	2.0	23 59	2.2
20	5 15	18 12	0 23	1 19	12 8	1.9	23 48	2.3
30	5 0	18 27	0 26	1 28	12 22	1.8	23 36	2.4
35	4 52	18 36	0 27	1 36	12 30	1.7	23 28	2.5
40	4 42	18 46	0 30	1 46	12 39	1.6	23 20	2.6
45	4 30	18 58	0 33	2 1	12 49	1.5	23 10	2.7
50	4 16	19 13	0 38	2 27	13 2	1.4	22 59	2.8
55	3 58	19 31	0 45	3 38	13 17	1.2	22 44	3.0
60	3 33	19 56	0 57	:::	13 38	1.0	22 24	3.2
S								

SUNCE				MESEC			
UT	e = T _p - UT	Δ/24	r	Prolaz	Δ/24	π _♃	r
h	min	s	s	h min	min	'	'
00	16 18.9	-.2	16.2				

UT	SUNCE				PROLEĆ. TAČKA S _T	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	3.8	-16	37.6	47	36.5	143	11.1	-25	19.4	105	58.9	-22	7.2
2	214	3.7	-16	39.1	77	41.5	173	9.4	-25	19.8	135	60.0	-22	6.3
4	244	3.6	-16	40.5	107	46.4	203	7.7	-25	20.2	166	1.0	-22	5.5
6	274	3.5	-16	41.9	137	51.3	233	6.0	-25	20.6	196	2.1	-22	4.6
8	304	3.4	-16	43.4	167	56.2	263	4.3	-25	21.0	226	3.2	-22	3.8
10	334	3.3	-16	44.8	198	1.2	293	2.6	-25	21.4	256	4.3	-22	2.9
12	4	3.2	-16	46.3	228	6.1	323	.9	-25	21.8	286	5.4	-22	2.1
14	34	3.1	-16	47.7	258	11.0	352	59.2	-25	22.1	316	6.5	-22	1.2
16	64	3.0	-16	49.1	288	16.0	22	57.5	-25	22.5	346	7.6	-22	.4
18	94	2.9	-16	50.6	318	20.9	52	55.9	-25	22.8	16	8.7	-21	59.5
20	124	2.8	-16	52.0	348	25.8	82	54.2	-25	23.2	46	9.7	-21	58.6
22	154	2.7	-16	53.4	18	30.7	112	52.5	-25	23.6	76	10.8	-21	57.8
Δ		0		-7				-8		-2		5		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	7 41	15 46	0 47	2 26	11 5	3.3	1 49	1.0
55	7 19	16 8	0 40	2 6	11 22	3.1	1 31	1.2
50	7 2	16 25	0 35	1 51	11 34	2.9	1 17	1.3
45	6 49	16 39	0 31	1 41	11 44	2.8	1 6	1.5
40	6 37	16 50	0 29	1 33	11 52	2.7	0 57	1.6
35	6 28	16 59	0 27	1 27	11 60	2.6	0 49	1.7
30	6 20	17 8	0 25	1 22	12 6	2.5	0 42	1.7
20	6 5	17 22	0 23	1 16	12 17	2.3	0 30	1.9
10	5 52	17 35	0 22	1 12	12 26	2.2	0 19	2.0
0	5 40	17 47	0 22	1 12	12 35	2.1	0 9	2.1
10	5 28	17 60	0 22	1 14	12 44	2.0	...	.0
20	5 15	18 13	0 23	1 19	12 53	1.9	...	.0
30	4 60	18 28	0 26	1 29	13 4	1.7	...	.0
35	4 51	18 37	0 28	1 36	13 10	1.6	...	.0
40	4 41	18 47	0 30	1 47	13 17	1.5	...	.0
45	4 29	18 60	0 33	2 2	13 25	1.4	...	.0
50	4 14	19 14	0 38	2 29	13 35	1.3	...	.0
55	3 56	19 33	0 45	3 53	13 47	1.1	23 56	3.2
60	3 31	19 59	0 57	:::	14 3	.9	23 42	3.4
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	87	42.7	109	13	35.2	-74	215	35.5	-3	55.8	153	36.1	-21	16.2
2	116	42.4	108	13	20.3	-76	245	39.5	-3	56.1	183	40.5	-21	16.2
4	145	42.0	108	13	5.2	-77	275	43.6	-3	56.5	213	44.8	-21	16.3
6	174	41.7	108	12	49.8	-79	305	47.6	-3	56.9	243	49.2	-21	16.4
8	203	41.3	108	12	34.0	-80	335	51.6	-3	57.3	273	53.5	-21	16.4
10	232	40.8	108	12	18.0	-82	5	55.6	-3	57.6	303	57.9	-21	16.5
12	261	40.4	107	12	1.6	-83	35	59.6	-3	58.0	334	2.2	-21	16.6
14	290	39.8	107	11	44.9	-85	66	3.6	-3	58.4	4	6.6	-21	16.6
16	319	39.3	107	11	28.0	-86	96	7.7	-3	58.8	34	10.9	-21	16.7
18	348	38.7	107	11	10.7	-88	126	11.7	-3	59.1	64	15.3	-21	16.8
20	17	38.0	106	10	53.2	-89	156	15.7	-3	59.5	94	19.6	-21	16.8
22	46	37.3	106	10	35.4	-90	186	19.7	-3	59.9	124	24.0	-21	16.9
Δ							20			-2		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 15.0	-.2	16.2	T _m	18 47	2.1	56.9 15.5		
12	16 12.7			T _{m☉}	11 h 43.8 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	'	°	°
♂	14 28	.1	96	-3.7	♄	9 36	.0	168	-1.3
	16 55	.1	58	.0	♅	13 44	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _T	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	2.6	-16	54.8	48	35.7	142	50.8	-25	23.9	106	11.9	-21	56.9
2	214	2.5	-16	56.3	78	40.6	172	49.1	-25	24.2	136	13.0	-21	56.0
4	244	2.4	-16	57.7	108	45.5	202	47.4	-25	24.6	166	14.1	-21	55.2
6	274	2.3	-16	59.1	138	50.5	232	45.7	-25	24.9	196	15.2	-21	54.3
8	304	2.2	-17	.5	168	55.4	262	44.0	-25	25.2	226	16.3	-21	53.4
10	334	2.0	-17	1.9	199	.3	292	42.3	-25	25.5	256	17.4	-21	52.6
12	4	1.9	-17	3.3	229	5.2	322	40.6	-25	25.9	286	18.5	-21	51.7
14	34	1.8	-17	4.8	259	10.2	352	38.9	-25	26.2	316	19.6	-21	50.8
16	64	1.7	-17	6.2	289	15.1	22	37.2	-25	26.5	346	20.7	-21	50.0
18	94	1.6	-17	7.6	319	20.0	52	35.6	-25	26.8	16	21.7	-21	49.1
20	124	1.5	-17	9.0	349	25.0	82	33.9	-25	27.1	46	22.8	-21	48.2
22	154	1.3	-17	10.4	19	29.9	112	32.2	-25	27.4	76	23.9	-21	47.3
Δ		-1		-7				-8		-2		5		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	7 44	15 43	0 47	2 27	12 25	3.5	2 12	.8
55	7 21	16 6	0 40	2 6	12 36	3.3	1 59	1.1
50	7 4	16 24	0 35	1 51	12 44	3.1	1 49	1.2
45	6 50	16 37	0 31	1 41	12 51	2.9	1 41	1.4
40	6 39	16 49	0 29	1 33	12 57	2.8	1 34	1.5
35	6 29	16 58	0 27	1 27	13 1	2.7	1 28	1.6
30	6 20	17 7	0 25	1 22	13 6	2.6	1 23	1.7
20	6 6	17 22	0 23	1 16	13 13	2.4	1 14	1.8
10	5 53	17 35	0 22	1 13	13 19	2.3	1 6	2.0
0	5 40	17 47	0 22	1 12	13 25	2.1	0 59	2.1
10	5 28	17 60	0 22	1 14	13 31	2.0	0 52	2.2
20	5 15	18 13	0 23	1 19	13 38	1.9	0 43	2.4
30	4 59	18 29	0 26	1 29	13 45	1.7	0 34	2.5
35	4 50	18 38	0 28	1 36	13 49	1.6	0 29	2.6
40	4 40	18 49	0 30	1 47	13 54	1.5	0 23	2.7
45	4 28	19 1	0 33	2 3	13 59	1.4	0 16	2.9
50	4 13	19 16	0 38	2 30	14 6	1.2	0 7	3.0
55	3 54	19 35	0 45	:::	14 14	1.0	...	.0
60	3 28	20 1	0 58	:::	14 24	.8	...	.0
S								

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	75	36.5	106	10	17.3	-92	216	23.7	-4	.2	154	28.3	-21	17.0
2	104	35.7	106	9	58.9	-93	246	27.7	-4	.6	184	32.7	-21	17.1
4	133	34.8	105	9	40.3	-94	276	31.8	-4	1.0	214	37.0	-21	17.1
6	162	33.9	105	9	21.4	-96	306	35.8	-4	1.4	244	41.4	-21	17.2
8	191	32.9	105	9	2.3	-97	336	39.8	-4	1.7	274	45.7	-21	17.3
10	220	31.8	104	8	42.9	-98	6	43.8	-4	2.1	304	50.1	-21	17.3
12	249	30.6	104	8	23.2	-99	36	47.9	-4	2.5	334	54.4	-21	17.4
14	278	29.4	103	8	3.3	-101	66	51.9	-4	2.9	4	58.8	-21	17.5
16	307	28.1	103	7	43.2	-102	96	55.9	-4	3.2	35	3.1	-21	17.5
18	336	26.7	103	7	22.9	-103	126	59.9	-4	3.6	65	7.5	-21	17.6
20	5	25.2	102	7	2.3	-104	157	3.9	-4	4.0	95	11.8	-21	17.7
22	34	23.6	102	6	41.5	-105	187	8.0	-4	4.3	125	16.2	-21	17.7
Δ							20			-2		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 10.4	-.2	16.2	T _m	19 38	2.1	57.8 15.7
12	16 7.6			T _{m☉}	11 h 43.9 min	Starost	

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	184	1.2	-17	11.8	49	34.8	142	30.5	-25	27.6	106	25.0	-21	46.4
2	214	1.1	-17	13.2	79	39.7	172	28.8	-25	27.9	136	26.1	-21	45.6
4	244	1.0	-17	14.6	109	44.7	202	27.1	-25	28.2	166	27.2	-21	44.7
6	274	.8	-17	16.0	139	49.6	232	25.4	-25	28.5	196	28.3	-21	43.8
8	304	.7	-17	17.4	169	54.5	262	23.7	-25	28.7	226	29.4	-21	42.9
10	334	.6	-17	18.7	199	59.4	292	22.0	-25	29.0	256	30.5	-21	42.0
12	4	.5	-17	20.1	230	4.4	322	20.3	-25	29.2	286	31.6	-21	41.1
14	34	.3	-17	21.5	260	9.3	352	18.6	-25	29.5	316	32.7	-21	40.2
16	64	.2	-17	22.9	290	14.2	382	16.9	-25	29.7	346	33.8	-21	39.3
18	94	.1	-17	24.3	320	19.2	412	15.2	-25	30.0	376	34.9	-21	38.5
20	123	59.9	-17	25.7	350	24.1	442	13.5	-25	30.2	406	36.0	-21	37.6
22	153	59.8	-17	27.0	380	29.0	472	11.8	-25	30.4	436	37.1	-21	36.7
Δ		-1		-7				-8		-1		5		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	7 46	15 41	0 48	2 27	13 50	3.1	2 32	.9
55	7 23	16 5	0 40	2 6	13 54	2.9	2 25	1.1
50	7 5	16 22	0 35	1 52	13 58	2.8	2 19	1.3
45	6 51	16 36	0 31	1 41	14 1	2.7	2 14	1.4
40	6 40	16 48	0 29	1 33	14 4	2.6	2 10	1.6
35	6 30	16 58	0 27	1 27	14 6	2.5	2 7	1.7
30	6 21	17 6	0 25	1 22	14 8	2.5	2 4	1.7
20	6 6	17 22	0 23	1 16	14 11	2.4	1 59	1.9
10	5 53	17 35	0 22	1 13	14 14	2.3	1 54	2.0
0	5 40	17 47	0 22	1 12	14 17	2.2	1 50	2.2
10	5 28	18 0	0 22	1 14	14 19	2.1	1 45	2.3
20	5 14	18 14	0 23	1 19	14 22	2.0	1 41	2.4
30	4 59	18 30	0 26	1 29	14 26	1.9	1 35	2.6
35	4 49	18 39	0 28	1 37	14 28	1.9	1 32	2.7
40	4 39	18 50	0 30	1 48	14 30	1.8	1 28	2.8
45	4 26	19 2	0 33	2 4	14 32	1.7	1 24	2.9
50	4 11	19 18	0 38	2 32	14 35	1.6	1 19	3.0
55	3 52	19 37	0 46	:::	14 39	1.5	1 13	3.2
60	3 26	20 4	0 59	:::	14 44	1.4	1 5	3.4

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	63	22.0	101	6	20.5	-106	217	12.0	-4	4.7	155	20.5	-21	17.8
2	92	20.2	101	5	59.3	-107	247	16.0	-4	5.1	185	24.8	-21	17.9
4	121	18.3	100	5	37.9	-108	277	20.0	-4	5.5	215	29.2	-21	17.9
6	150	16.4	100	5	16.3	-109	307	24.1	-4	5.8	245	33.5	-21	18.0
8	179	14.3	99	4	54.5	-110	337	28.1	-4	6.2	275	37.9	-21	18.1
10	208	12.1	98	4	32.6	-111	367	32.1	-4	6.6	305	42.2	-21	18.2
12	237	9.7	98	4	10.5	-111	397	36.1	-4	6.9	335	46.6	-21	18.2
14	266	7.3	97	3	48.2	-112	427	40.2	-4	7.3	365	50.9	-21	18.3
16	295	4.7	96	3	25.8	-113	457	44.2	-4	7.7	395	55.3	-21	18.4
18	324	2.0	96	3	3.2	-113	487	48.2	-4	8.0	425	59.6	-21	18.4
20	352	59.2	95	2	40.6	-114	517	52.2	-4	8.4	455	63.9	-21	18.5
22	381	56.2	94	2	17.7	-115	547	56.3	-4	8.8	485	68.2	-21	18.6
Δ							20		-2		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	4.9	- .3	16.2	T _m	20 29	2.2	58.7	16.0
12	16	1.7	T _{m☉}	11 h 44.0 min	Starost	10.3 d	Faza	☉	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 31	.1	93	-3.8	♄	9 30	.0	168	-1.3
♂	16 54	.1	57	.0	♅	13 37	.0	106	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	59.6	-17	28.4	50	33.9	142	10.1	-25	30.7	106	38.2	-21	35.8
2	213	59.5	-17	29.8	80	38.9	172	8.5	-25	30.9	136	39.3	-21	34.9
4	243	59.4	-17	31.2	110	43.8	202	6.8	-25	31.1	166	40.4	-21	34.0
6	273	59.2	-17	32.5	140	48.7	232	5.1	-25	31.3	196	41.5	-21	33.1
8	303	59.1	-17	33.9	170	53.7	262	3.4	-25	31.5	226	42.6	-21	32.2
10	333	58.9	-17	35.3	200	58.6	292	1.7	-25	31.7	256	43.7	-21	31.2
12	3	58.8	-17	36.6	231	3.5	321	60.0	-25	31.9	286	44.8	-21	30.3
14	33	58.6	-17	38.0	261	8.4	351	58.3	-25	32.1	316	45.9	-21	29.4
16	63	58.5	-17	39.3	291	13.4	381	56.6	-25	32.3	346	47.0	-21	28.5
18	93	58.3	-17	40.7	321	18.3	411	54.9	-25	32.4	376	48.1	-21	27.6
20	123	58.2	-17	42.1	351	23.2	441	53.2	-25	32.6	406	49.2	-21	26.7
22	153	58.0	-17	43.4	381	28.2	471	51.5	-25	32.8	436	50.3	-21	25.8
Δ		-1		-7				-8		-1		5		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 49	15 39	0 48	2 28	15 3	.8	2 54	2.7
55	7 25	16 3	0 40	2 7	15 4	1.1	2 52	2.6
50	7 7	16 21	0 35	1 52	15 5	1.3	2 50	2.6
45	6 53	16 35	0 31	1 41	15 5	1.4	2 49	2.5
40	6 41	16 47	0 29	1 33	15 6	1.6	2 48	2.5
35	6 31	16 57	0 27	1 27	15 7	1.7	2 47	2.4
30	6 22	17 6	0 25	1 22	15 7	1.8	2 46	2.4
20	6 7	17 21	0 23	1 16	15 8	2.0	2 44	2.3
10	5 53	17 35	0 22	1 13	15 9	2.1	2 43	2.3
0	5 41	17 48	0 22	1 12	15 9	2.3	2 42	2.2
10	5 28	18 1	0 22	1 14	15 10	2.4	2 40	2.2
20	5 14	18 15	0 23	1 19	15 11	2.6	2 39	2.1
30	4 58	18 31	0 26	1 29	15 12	2.8	2 37	2.1
35	4 49	18 40	0 28	1 37	15 12	2.9	2 36	2.0
40	4 38	18 51	0 30	1 48	15 13	3.0	2 35	2.0
45	4 25	19 4	0 34	2 5	15 14	3.1	2 33	2.0
50	4 10	19 19	0 38	2 34	15 15	3.3	2 32	1.9
55	3 50	19 39	0 46	:::	15 16	3.5	2 30	1.9
60	3 23	20 7	0 60	:::	15 17	3.8	2 27	1.8

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	50	53.0	94	1	54.8	-115	218	.3	-4	9.1	156	12.6	-21	18.6
2	79	49.8	93	1	31.8	-116	248	4.3	-4	9.5	186	17.0	-21	18.7
4	108	46.3	92	1	8.6	-116	278	8.4	-4	9.9	216	21.3	-21	18.8
6	137	42.7	91	0	45.4	-117	308	12.4	-4	10.2	246	25.7	-21	18.8
8	166	39.0	90	0	22.1	-104	338	16.4	-4	10.6	276	30.0	-21	18.9
10	195	35.0	89	0	1.3	117	368	20.4	-4	11.0	306	34.3	-21	19.0
12	224	30.9	89	0	24.7	117	398	24.5	-4	11.4	336	38.7	-21	19.0
14	253	26.6	88	0	48.2	118	428	28.5	-4	11.7	366	43.0	-21	19.1
16	282	22.2	87	1	11.7	118	458	32.5	-4	12.1	396	47.4	-21	19.2
18	311	17.5	86	1	35.3	118	488	36.6	-4	12.5	426	51.7	-21	19.2
20	340	12.7	85	1	58.9	118	518	40.6	-4	12.8	456	56.1	-21	19.3
22	369	7.7	84	2	22.4	118	548	44.6	-4	13.2	486	60.4	-21	19.4
Δ							20		-2		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	58.6	- .3	16.2	T _m	21 22	2.3	59.7	16.3
12	15	55.0							

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 57.9	-17 44.8	51 33.1	141 49.8	-25 32.9	106 51.4	-21 24.9
2	213 57.7	-17 46.1	81 38.0	171 48.1	-25 33.1	136 52.5	-21 24.0
4	243 57.5	-17 47.4	111 42.9	201 46.4	-25 33.3	166 53.6	-21 23.0
6	273 57.4	-17 48.8	141 47.9	231 44.8	-25 33.4	196 54.7	-21 22.1
8	303 57.2	-17 50.1	171 52.8	261 43.1	-25 33.5	226 55.8	-21 21.2
10	333 57.1	-17 51.5	201 57.7	291 41.4	-25 33.7	256 56.9	-21 20.3
12	3 56.9	-17 52.8	232 2.7	321 39.7	-25 33.8	286 58.0	-21 19.3
14	33 56.7	-17 54.1	262 7.6	351 38.0	-25 33.9	316 59.1	-21 18.4
16	63 56.6	-17 55.5	292 12.5	21 36.3	-25 34.1	347 .2	-21 17.5
18	93 56.4	-17 56.8	322 17.4	51 34.6	-25 34.2	17 1.3	-21 16.6
20	123 56.2	-17 58.1	352 22.4	81 32.9	-25 34.3	47 2.4	-21 15.6
22	153 56.0	-17 59.5	22 27.3	111 31.2	-25 34.4	77 3.5	-21 14.7
Δ	-1	-7		-8	-1	6	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 51	15 36	0 48	2 28	15 23	1.0	4 0	3.8
55	7 27	16 1	0 40	2 7	15 30	1.2	3 56	3.5
50	7 8	16 19	0 35	1 52	15 35	1.4	3 52	3.3
45	6 54	16 34	0 32	1 41	15 40	1.6	3 49	3.2
40	6 42	16 46	0 29	1 33	15 44	1.7	3 47	3.0
35	6 32	16 56	0 27	1 27	15 47	1.8	3 45	2.9
30	6 23	17 5	0 25	1 22	15 50	1.9	3 43	2.8
20	6 7	17 21	0 23	1 16	15 55	2.1	3 40	2.6
10	5 54	17 35	0 22	1 13	15 60	2.2	3 38	2.5
0	5 41	17 48	0 22	1 12	16 4	2.4	3 35	2.3
10	5 28	18 1	0 22	1 14	16 8	2.5	3 32	2.2
20	5 14	18 15	0 23	1 20	16 13	2.7	3 30	2.0
30	4 57	18 31	0 26	1 30	16 18	2.8	3 27	1.8
35	4 48	18 41	0 28	1 38	16 21	2.9	3 25	1.7
40	4 37	18 52	0 30	1 49	16 25	3.1	3 23	1.6
45	4 24	19 5	0 34	2 6	16 29	3.2	3 21	1.5
50	4 8	19 21	0 39	2 36	16 34	3.4	3 18	1.3
55	3 48	19 42	0 46	:::	16 40	3.6	3 14	1.1
60	3 21	20 10	1 0	:::	16 48	3.9	3 10	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	38 2.5	83	2 46.0	118	218 48.7	-4 13.5	157 4.7	-21 19.4
2	66 57.1	82	3 9.6	118	248 52.7	-4 13.9	187 9.1	-21 19.5
4	95 51.4	81	3 33.1	117	278 56.7	-4 14.3	217 13.4	-21 19.6
6	124 45.6	80	3 56.6	117	309 .8	-4 14.6	247 17.8	-21 19.6
8	153 39.6	79	4 20.0	117	339 4.8	-4 15.0	277 22.1	-21 19.7
10	182 33.3	78	4 43.4	116	9 8.8	-4 15.4	307 26.4	-21 19.8
12	211 26.9	77	5 6.7	116	39 12.9	-4 15.7	337 30.8	-21 19.9
14	240 20.2	75	5 29.9	116	69 16.9	-4 16.1	7 35.1	-21 19.9
16	269 13.3	74	5 53.0	115	99 20.9	-4 16.5	37 39.4	-21 20.0
18	298 6.2	73	6 16.0	114	129 25.0	-4 16.8	67 43.8	-21 20.1
20	326 58.8	72	6 38.8	114	159 29.0	-4 17.2	97 48.1	-21 20.1
22	355 51.2	71	7 1.6	113	189 33.0	-4 17.6	127 52.5	-21 20.2
Δ					20	-2	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 51.5	- .3	16.2	T _m	22 17	2.4	60.5 16.5		
12	15 47.5	T _{m☉}	11 h 44.2 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	'	°	
♁	14 33	.1	90	-3.8	♃	9 23	.0	167	-1.3
♂	16 52	.1	55	.0	♄	13 30	.0	106	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 55.9	-18 .8	52 32.2	141 29.5	-25 34.5	107 4.6	-21 13.8
2	213 55.7	-18 2.1	82 37.2	171 27.8	-25 34.6	137 5.7	-21 12.8
4	243 55.5	-18 3.4	112 42.1	201 26.2	-25 34.7	167 6.8	-21 11.9
6	273 55.3	-18 4.7	142 47.0	231 24.5	-25 34.8	197 7.9	-21 11.0
8	303 55.2	-18 6.1	172 51.9	261 22.8	-25 34.8	227 9.0	-21 10.0
10	333 55.0	-18 7.4	202 56.9	291 21.1	-25 34.9	257 10.2	-21 9.1
12	3 54.8	-18 8.7	233 1.8	321 19.4	-25 35.0	287 11.3	-21 8.1
14	33 54.6	-18 10.0	263 6.7	351 17.7	-25 35.1	317 12.4	-21 7.2
16	63 54.4	-18 11.3	293 11.6	21 16.0	-25 35.1	347 13.5	-21 6.3
18	93 54.2	-18 12.6	323 16.6	51 14.3	-25 35.2	17 14.6	-21 5.3
20	123 54.0	-18 13.9	353 21.5	81 12.7	-25 35.2	47 15.7	-21 4.4
22	153 53.9	-18 15.2	23 26.4	111 11.0	-25 35.3	77 16.8	-21 3.4
Δ	-1	-7		-8	0	6	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 54	15 34	0 49	2 29	15 46	1.2	5 32	3.8
55	7 29	15 59	0 41	2 7	15 59	1.4	5 21	3.6
50	7 10	16 18	0 35	1 53	16 9	1.6	5 12	3.4
45	6 55	16 33	0 32	1 42	16 17	1.7	5 5	3.2
40	6 43	16 45	0 29	1 33	16 24	1.9	4 60	3.1
35	6 33	16 56	0 27	1 27	16 30	2.0	4 55	3.0
30	6 24	17 5	0 25	1 22	16 36	2.1	4 51	2.9
20	6 8	17 21	0 23	1 16	16 45	2.2	4 43	2.7
10	5 54	17 35	0 22	1 13	16 53	2.3	4 37	2.6
0	5 41	17 48	0 22	1 12	17 1	2.5	4 31	2.4
10	5 28	18 1	0 22	1 15	17 9	2.6	4 25	2.3
20	5 13	18 16	0 24	1 20	17 17	2.7	4 18	2.1
30	4 57	18 32	0 26	1 30	17 27	2.9	4 11	2.0
35	4 47	18 42	0 28	1 38	17 32	3.0	4 7	1.9
40	4 36	18 53	0 30	1 49	17 39	3.1	4 2	1.8
45	4 23	19 7	0 34	2 7	17 46	3.2	3 56	1.6
50	4 7	19 23	0 39	2 38	17 55	3.4	3 50	1.5
55	3 46	19 44	0 47	:::	18 6	3.6	3 42	1.3
60	3 18	20 12	1 1	:::	18 21	3.8	3 31	1.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	24 43.4	70	7 24.2	112	219 37.1	-4 17.9	157 56.8	-21 20.3
2	53 35.4	69	7 46.6	111	249 41.1	-4 18.3	188 1.1	-21 20.3
4	82 27.2	68	8 8.8	110	279 45.2	-4 18.7	218 5.5	-21 20.4
6	111 18.7	66	8 30.9	109	309 49.2	-4 19.0	248 9.8	-21 20.5
8	140 10.0	65	8 52.7	108	339 53.2	-4 19.4	278 14.1	-21 20.5
10	169 1.0	64	9 14.4	107	9 57.3	-4 19.7	308 18.5	-21 20.6
12	197 51.9	63	9 35.8	106	40 1.3	-4 20.1	338 22.8	-21 20.7
14	226 42.5	62	9 56.9	105	70 5.3	-4 20.5	8 27.2	-21 20.7
16	255 32.8	61	10 17.8	103	100 9.4	-4 20.8	38 31.5	-21 20.8
18	284 23.0	60	10 38.5	102	130 13.4	-4 21.2	68 35.8	-21 20.9
20	313 12.9	59	10 58.9	100	160 17.5	-4 21.5	98 40.2	-21 20.9
22	342 2.6	57	11 18.9	99	190 21.5	-4 21.9	128 44.5	-21 21.0
Δ					20	-2	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 43.5	- .4	16.2	T _m	23 15	2.5	61.1 16.7		
12	15 39.1	T _{m☉}	11 h 44.3 min	Starost	13.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	14 35	.1	89	-3.8	♃	9 20	.0	167	-1.3
♂	16 51	.1	55	.0	♄	13 26	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 53.7	-18 16.5	53 31.4	141 9.3	-25 35.3	107 17.9	-21 2.5
2	213 53.5	-18 17.8	83 36.3	171 7.6	-25 35.3	137 19.0	-21 1.5
4	243 53.3	-18 19.1	113 41.2	201 5.9	-25 35.4	167 20.1	-21 .6
6	273 53.1	-18 20.4	143 46.1	231 4.2	-25 35.4	197 21.3	-20 59.6
8	303 52.9	-18 21.7	173 51.1	261 2.5	-25 35.4	227 22.4	-20 58.7
10	333 52.7	-18 23.0	203 56.0	291 .9	-25 35.4	257 23.5	-20 57.7
12	3 52.5	-18 24.2	234 .9	320 59.2	-25 35.4	287 24.6	-20 56.7
14	33 52.3	-18 25.5	264 5.9	350 57.5	-25 35.4	317 25.7	-20 55.8
16	63 52.1	-18 26.8	294 10.8	20 55.8	-25 35.4	347 26.8	-20 54.8
18	93 51.9	-18 28.1	324 15.7	50 54.1	-25 35.4	17 27.9	-20 53.9
20	123 51.7	-18 29.4	354 20.6	80 52.5	-25 35.4	47 29.1	-20 52.9
22	153 51.5	-18 30.6	24 25.6	110 50.8	-25 35.4	77 30.2	-20 51.9
Δ	-1	-6		-8	0	6	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 56	15 32	0 49	2 29	16 13	1.5	7 4	3.7
55	7 31	15 58	0 41	2 8	16 33	1.7	6 47	3.5
50	7 12	16 17	0 35	1 53	16 48	1.9	6 33	3.3
45	6 57	16 32	0 32	1 42	16 59	2.0	6 23	3.2
40	6 44	16 44	0 29	1 34	17 9	2.1	6 14	3.0
35	6 34	16 55	0 27	1 27	17 18	2.2	6 6	3.0
30	6 24	17 4	0 25	1 23	17 25	2.2	5 60	2.9
20	6 8	17 20	0 23	1 16	17 38	2.3	5 48	2.7
10	5 54	17 35	0 22	1 13	17 49	2.4	5 38	2.6
0	5 41	17 48	0 22	1 13	18 0	2.5	5 29	2.5
10	5 27	18 2	0 22	1 15	18 11	2.6	5 19	2.4
20	5 13	18 16	0 24	1 20	18 23	2.7	5 9	2.3
30	4 56	18 33	0 26	1 30	18 36	2.8	4 58	2.1
35	4 46	18 43	0 28	1 38	18 44	2.9	4 52	2.1
40	4 35	18 54	0 31	1 50	18 53	3.0	4 44	2.0
45	4 22	19 8	0 34	2 7	19 3	3.1	4 36	1.9
50	4 6	19 24	0 39	2 40	19 16	3.2	4 25	1.7
55	3 45	19 46	0 47	:::	19 31	3.4	4 13	1.5
60	3 16	20 15	1 2	:::	19 53	3.6	3 56	1.3
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	10 52.1	56	11 38.7	97	220 25.5	-4 22.3	158 48.8	-21 21.1
2	39 41.4	55	11 58.2	96	250 29.6	-4 22.6	188 53.2	-21 21.1
4	68 30.5	54	12 17.3	94	280 33.6	-4 23.0	218 57.5	-21 21.2
6	97 19.3	53	12 36.1	92	310 37.7	-4 23.4	249 1.8	-21 21.3
8	126 8.0	52	12 54.5	90	340 41.7	-4 23.7	279 6.2	-21 21.3
10	154 56.4	51	13 12.6	88	10 45.8	-4 24.1	309 10.5	-21 21.4
12	183 44.7	50	13 30.3	87	40 49.8	-4 24.4	339 14.8	-21 21.5
14	212 32.8	50	13 47.6	85	70 53.9	-4 24.8	9 19.2	-21 21.5
16	241 20.7	49	14 4.5	82	100 57.9	-4 25.1	39 23.5	-21 21.6
18	270 8.4	48	14 21.0	80	131 1.9	-4 25.5	69 27.8	-21 21.7
20	298 56.0	47	14 37.0	78	161 6.0	-4 25.9	99 32.2	-21 21.7
22	327 43.4	46	14 52.7	76	191 10.0	-4 26.2	129 36.5	-21 21.8
Δ					20	-2	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 34.7	-.4	16.2	T _m	1.0	61.5	16.7		
12	15 29.8	T _{m☉} 11 h 44.5 min		Starost 14.3 d Faza ☉					
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 36	.1	88	-3.8	♃	9 17	.0	167	-1.3
	16 50	.1	54	.0	♄	13 23	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 51.3	-18 31.9	54 30.5	140 49.1	-25 35.4	107 31.3	-20 51.0
2	213 51.0	-18 33.2	84 35.4	170 47.4	-25 35.4	137 32.4	-20 50.0
4	243 50.8	-18 34.4	114 40.4	200 45.7	-25 35.3	167 33.5	-20 49.0
6	273 50.6	-18 35.7	144 45.3	230 44.1	-25 35.3	197 34.6	-20 48.0
8	303 50.4	-18 37.0	174 50.2	260 42.4	-25 35.2	227 35.8	-20 47.1
10	333 50.2	-18 38.2	204 55.1	290 40.7	-25 35.2	257 36.9	-20 46.1
12	3 50.0	-18 39.5	235 .1	320 39.0	-25 35.1	287 38.0	-20 45.1
14	33 49.7	-18 40.7	265 5.0	350 37.3	-25 35.1	317 39.1	-20 44.1
16	63 49.5	-18 42.0	295 9.9	20 35.7	-25 35.0	347 40.2	-20 43.2
18	93 49.3	-18 43.2	325 14.9	50 34.0	-25 35.0	17 41.3	-20 42.2
20	123 49.1	-18 44.5	355 19.8	80 32.3	-25 34.9	47 42.5	-20 41.2
22	153 48.8	-18 45.7	25 24.7	110 30.6	-25 34.8	77 43.6	-20 40.2
Δ	-1	-6		-8	0	6	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 59	15 30	0 49	2 30	16 49	1.9	8 33	3.4
55	7 33	15 56	0 41	2 8	17 14	2.1	8 10	3.2
50	7 13	16 15	0 36	1 53	17 32	2.2	7 52	3.1
45	6 58	16 31	0 32	1 42	17 47	2.3	7 38	3.0
40	6 45	16 43	0 29	1 34	17 59	2.3	7 27	2.9
35	6 35	16 54	0 27	1 28	18 10	2.4	7 17	2.8
30	6 25	17 4	0 25	1 23	18 19	2.4	7 9	2.8
20	6 9	17 20	0 23	1 16	18 34	2.5	6 54	2.7
10	5 55	17 35	0 22	1 13	18 48	2.5	6 41	2.6
0	5 41	17 48	0 22	1 13	19 1	2.6	6 29	2.6
10	5 27	18 2	0 22	1 15	19 14	2.6	6 17	2.5
20	5 13	18 17	0 24	1 20	19 28	2.7	6 4	2.4
30	4 56	18 34	0 26	1 30	19 44	2.7	5 50	2.3
35	4 46	18 44	0 28	1 39	19 54	2.8	5 41	2.3
40	4 34	18 56	0 31	1 50	20 4	2.8	5 32	2.2
45	4 21	19 9	0 34	2 8	20 17	2.8	5 20	2.1
50	4 4	19 26	0 39	2 42	20 32	2.9	5 7	2.0
55	3 43	19 48	0 48	:::	20 52	3.0	4 50	1.9
60	3 14	20 18	1 3	:::	21 19	3.1	4 27	1.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	356 30.7	46	15 7.9	74	221 14.1	-4 26.6	159 40.8	-21 21.9
2	25 17.8	45	15 22.6	71	251 18.1	-4 26.9	189 45.2	-21 21.9
4	54 4.8	44	15 36.9	69	281 22.2	-4 27.3	219 49.5	-21 22.0
6	82 51.6	44	15 50.8	67	311 26.2	-4 27.7	249 53.8	-21 22.1
8	111 38.4	43	16 4.1	64	341 30.3	-4 28.0	279 58.1	-21 22.1
10	140 25.0	43	16 17.0	62	11 34.3	-4 28.4	310 2.5	-21 22.2
12	169 11.6	42	16 29.4	59	41 38.4	-4 28.7	340 6.8	-21 22.3
14	197 58.0	42	16 41.2	57	71 42.4	-4 29.1	10 11.1	-21 22.3
16	226 44.4	42	16 52.6	54	101 46.5	-4 29.4	40 15.5	-21 22.4
18	255 30.8	41	17 3.5	52	131 50.5	-4 29.8	70 19.8	-21 22.5
20	284 17.0	41	17 13.8	49	161 54.6	-4 30.2	100 24.1	-21 22.5
22	313 3.3	41	17 23.7	47	191 58.6	-4 30.5	130 28.5	-21 22.6
Δ					20	-2	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 25.0	-.4	16.2	T _m	0 15	2.5	61.4		
12	15 19.7	T _{m☉} 11 h 44.7 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	'	°	
♂	14 38	.1	86	-3.8	♃	9 14	.0	167	-1.3
	16 49	.1	53	.0	♄	13 19	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 48.6	-18 47.0	55 29.6	140 29.0	-25 34.7	107 44.7	-20 39.2
2	213 48.4	-18 48.2	85 34.6	170 27.3	-25 34.6	137 45.8	-20 38.3
4	243 48.2	-18 49.4	115 39.5	200 25.6	-25 34.5	167 46.9	-20 37.3
6	273 47.9	-18 50.7	145 44.4	230 24.0	-25 34.4	197 48.1	-20 36.3
8	303 47.7	-18 51.9	175 49.4	260 22.3	-25 34.3	227 49.2	-20 35.3
10	333 47.5	-18 53.1	205 54.3	290 20.6	-25 34.2	257 50.3	-20 34.3
12	3 47.2	-18 54.4	235 59.2	320 18.9	-25 34.1	287 51.4	-20 33.3
14	33 47.0	-18 55.6	266 4.1	350 17.3	-25 34.0	317 52.6	-20 32.3
16	63 46.8	-18 56.8	296 9.1	20 15.6	-25 33.9	347 53.7	-20 31.3
18	93 46.5	-18 58.0	326 14.0	50 13.9	-25 33.8	17 54.8	-20 30.3
20	123 46.3	-18 59.3	356 18.9	80 12.3	-25 33.6	47 55.9	-20 29.3
22	153 46.0	-19 .5	26 23.9	110 10.6	-25 33.5	77 57.1	-20 28.3
Δ	-1	-6		-8	1	6	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 1	15 28	0 49	2 31	17 36	2.4	9 54	2.8
55	7 35	15 54	0 41	2 9	18 4	2.5	9 26	2.7
50	7 15	16 14	0 36	1 53	18 25	2.5	9 6	2.7
45	6 59	16 30	0 32	1 42	18 41	2.5	8 50	2.7
40	6 47	16 43	0 29	1 34	18 55	2.5	8 37	2.7
35	6 36	16 54	0 27	1 28	19 6	2.5	8 25	2.6
30	6 26	17 3	0 25	1 23	19 16	2.5	8 16	2.6
20	6 10	17 20	0 23	1 16	19 33	2.5	7 59	2.6
10	5 55	17 35	0 22	1 13	19 48	2.5	7 44	2.6
0	5 41	17 48	0 22	1 13	20 3	2.5	7 30	2.5
10	5 27	18 2	0 22	1 15	20 17	2.5	7 17	2.5
20	5 12	18 17	0 24	1 20	20 32	2.5	7 2	2.5
30	4 55	18 35	0 26	1 31	20 50	2.5	6 45	2.5
35	4 45	18 45	0 28	1 39	20 60	2.5	6 35	2.4
40	4 33	18 57	0 31	1 51	21 11	2.5	6 24	2.4
45	4 20	19 11	0 34	2 9	21 25	2.5	6 11	2.4
50	4 3	19 28	0 40	2 44	21 42	2.5	5 55	2.3
55	3 41	19 50	0 48	:::	22 4	2.5	5 35	2.3
60	3 11	20 20	1 4	:::	22 33	2.5	5 7	2.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	341 49.5	41 17 33.0	44	222 2.7	- 4 30.9	160 32.8	-21 22.7	
2	10 35.7	41 17 41.8	41	252 6.7	- 4 31.2	190 37.1	-21 22.7	
4	39 21.9	41 17 50.0	39	282 10.8	- 4 31.6	220 41.4	-21 22.8	
6	68 8.1	41 17 57.7	36	312 14.8	- 4 31.9	250 45.8	-21 22.9	
8	96 54.3	41 18 4.9	33	342 18.9	- 4 32.3	280 50.1	-21 22.9	
10	125 40.6	42 18 11.5	30	12 22.9	- 4 32.6	310 54.4	-21 23.0	
12	154 26.9	42 18 17.6	28	42 27.0	- 4 33.0	340 58.7	-21 23.1	
14	183 13.3	42 18 23.1	25	72 31.0	- 4 33.4	11 3.1	-21 23.1	
16	211 59.7	43 18 28.1	22	102 35.1	- 4 33.7	41 7.4	-21 23.2	
18	240 46.3	43 18 32.6	20	132 39.1	- 4 34.1	71 11.7	-21 23.3	
20	269 32.9	44 18 36.5	17	162 43.2	- 4 34.4	101 16.1	-21 23.3	
22	298 19.6	44 18 39.8	14	192 47.3	- 4 34.8	131 20.4	-21 23.4	
Δ				20	-2	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 14.5	- .5	16.2	T _m	1 16	2.5	61.1 16.6		
12	15 8.8	T _{m☉}	11 h 44.8 min	Starost	16.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	85	-3.8	♀	h min	'	°
♂	14 39	.1	52	.1	♂	9 11	.0	167	-1.3
	16 48	.1	52	.1	♂	13 16	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 45.8	-19 1.7	56 28.8	140 8.9	-25 33.3	107 58.2	-20 27.3
2	213 45.5	-19 2.9	86 33.7	170 7.3	-25 33.2	137 59.3	-20 26.3
4	243 45.3	-19 4.1	116 38.6	200 5.6	-25 33.0	168 .4	-20 25.3
6	273 45.0	-19 5.3	146 43.6	230 4.0	-25 32.9	198 1.6	-20 24.3
8	303 44.8	-19 6.5	176 48.5	260 2.3	-25 32.7	228 2.7	-20 23.3
10	333 44.5	-19 7.7	206 53.4	290 .6	-25 32.5	258 3.8	-20 22.3
12	3 44.3	-19 8.9	236 58.3	319 59.0	-25 32.4	288 5.0	-20 21.3
14	33 44.0	-19 10.1	267 3.3	349 57.3	-25 32.2	318 6.1	-20 20.3
16	63 43.8	-19 11.3	297 8.2	19 55.7	-25 32.0	348 7.2	-20 19.3
18	93 43.5	-19 12.5	327 13.1	49 54.0	-25 31.8	18 8.3	-20 18.3
20	123 43.3	-19 13.7	357 18.1	79 52.3	-25 31.6	48 9.5	-20 17.3
22	153 43.0	-19 14.9	27 23.0	109 50.7	-25 31.4	78 10.6	-20 16.2
Δ	-1	-6		-8	1	6	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 4	15 26	0 50	2 31	18 34	2.9	11 1	2.2
55	7 37	15 53	0 41	2 9	19 3	2.8	10 32	2.2
50	7 17	16 13	0 36	1 54	19 24	2.7	10 11	2.3
45	7 1	16 29	0 32	1 42	19 41	2.6	9 54	2.3
40	6 48	16 42	0 29	1 34	19 54	2.6	9 40	2.3
35	6 37	16 53	0 27	1 28	20 6	2.6	9 29	2.4
30	6 27	17 3	0 25	1 23	20 16	2.5	9 19	2.4
20	6 10	17 20	0 23	1 17	20 34	2.5	9 1	2.4
10	5 55	17 35	0 22	1 13	20 49	2.4	8 46	2.4
0	5 41	17 49	0 22	1 13	21 3	2.4	8 32	2.5
10	5 27	18 3	0 22	1 15	21 17	2.4	8 17	2.5
20	5 12	18 18	0 24	1 21	21 32	2.3	8 2	2.5
30	4 55	18 36	0 26	1 31	21 50	2.3	7 44	2.5
35	4 44	18 46	0 28	1 39	21 60	2.2	7 34	2.5
40	4 33	18 58	0 31	1 51	22 12	2.2	7 22	2.6
45	4 19	19 12	0 34	2 10	22 25	2.1	7 8	2.6
50	4 2	19 29	0 40	2 47	22 42	2.1	6 51	2.6
55	3 40	19 52	0 48	:::	23 3	2.0	6 30	2.6
60	3 9	20 23	1 5	:::	23 32	2.4	5 60	2.7
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	327 6.5	45 18 42.6	11	222 51.3	- 4 35.1	161 24.7	-21 23.5	
2	355 53.5	46 18 44.9	9	252 55.4	- 4 35.5	191 29.0	-21 23.5	
4	24 40.7	47 18 46.6	6	282 59.4	- 4 35.8	221 33.4	-21 23.6	
6	53 28.0	47 18 47.8	3	313 3.5	- 4 36.2	251 37.7	-21 23.7	
8	82 15.4	48 18 48.5	1	343 7.5	- 4 36.5	281 42.0	-21 23.7	
10	111 3.1	49 18 48.6	-2	13 11.6	- 4 36.9	311 46.3	-21 23.8	
12	139 50.9	50 18 48.2	-5	43 15.7	- 4 37.2	341 50.7	-21 23.9	
14	168 39.0	51 18 47.3	-7	73 19.7	- 4 37.6	11 55.0	-21 23.9	
16	197 27.2	52 18 45.9	-10	103 23.8	- 4 37.9	41 59.3	-21 24.0	
18	226 15.7	54 18 43.9	-12	133 27.8	- 4 38.3	72 3.6	-21 24.1	
20	255 4.5	55 18 41.5	-15	163 31.9	- 4 38.6	102 8.0	-21 24.1	
22	283 53.4	56 18 38.5	-17	193 36.0	- 4 39.0	132 12.3	-21 24.2	
Δ				20	-2	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 3.1	- .5	16.2	T _m	2 17	2.5	60.5 16.5		
12	14 57.0	T _{m☉}	11 h 45.0 min	Starost	17.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	84	-3.9	♀	h min	'	°
♂	16 47	.1	51	.1	♂	9 7	.0	166	-1.3
					♂	13 12	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 42.7	-19 16.1	57 27.9	139 49.0	-25 31.2	108 11.7	-20 15.2
2	213 42.5	-19 17.3	87 32.8	169 47.4	-25 31.0	138 12.9	-20 14.2
4	243 42.2	-19 18.5	117 37.8	199 45.7	-25 30.8	168 14.0	-20 13.2
6	273 41.9	-19 19.6	147 42.7	229 44.1	-25 30.6	198 15.1	-20 12.2
8	303 41.7	-19 20.8	177 47.6	259 42.4	-25 30.3	228 16.3	-20 11.2
10	333 41.4	-19 22.0	207 52.6	289 40.8	-25 30.1	258 17.4	-20 10.1
12	3 41.1	-19 23.2	237 57.5	319 39.1	-25 29.9	288 18.5	-20 9.1
14	33 40.9	-19 24.3	268 2.4	349 37.5	-25 29.6	318 19.7	-20 8.1
16	63 40.6	-19 25.5	298 7.3	19 35.8	-25 29.4	348 20.8	-20 7.0
18	93 40.3	-19 26.7	328 12.3	49 34.2	-25 29.1	18 21.9	-20 6.0
20	123 40.0	-19 27.8	358 17.2	79 32.5	-25 28.9	48 23.1	-20 5.0
22	153 39.7	-19 29.0	28 22.1	109 30.9	-25 28.6	78 24.2	-20 4.0
Δ	-1	-6		-8	1	6	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 6	15 24	0 50	2 32	19 43	3.1	11 53	1.6
55	7 39	15 51	0 42	2 9	20 9	2.9	11 26	1.8
50	7 18	16 12	0 36	1 54	20 29	2.8	11 6	1.9
45	7 2	16 28	0 32	1 43	20 44	2.7	10 50	2.0
40	6 49	16 41	0 29	1 34	20 57	2.6	10 37	2.0
35	6 38	16 53	0 27	1 28	21 8	2.6	10 26	2.1
30	6 28	17 2	0 25	1 23	21 17	2.5	10 16	2.1
20	6 11	17 20	0 23	1 17	21 33	2.4	9 59	2.2
10	5 56	17 35	0 22	1 13	21 47	2.3	9 45	2.3
0	5 42	17 49	0 22	1 13	22 0	2.3	9 31	2.3
10	5 27	18 3	0 22	1 15	22 14	2.2	9 17	2.4
20	5 12	18 19	0 24	1 21	22 28	2.1	9 2	2.5
30	4 54	18 37	0 26	1 31	22 44	2.0	8 45	2.5
35	4 44	18 47	0 28	1 40	22 53	1.9	8 35	2.6
40	4 32	18 59	0 31	1 52	23 4	1.9	8 24	2.6
45	4 18	19 13	0 35	2 11	23 16	2.2	8 10	2.7
50	4 0	19 31	0 40	2 49	23 32	2.2	7 54	2.8
55	3 38	19 54	0 49	:::	23 51	2.2	7 33	2.9
60	3 7	20 25	1 6	:::	...	.0	7 4	3.0
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	312 42.6	57 18 35.0	-20	223 40.0	-4 39.3	162 16.6	-21 24.3	
2	341 32.1	59 18 31.1	-22	253 44.1	-4 39.7	192 20.9	-21 24.3	
4	10 21.8	60 18 26.6	-25	283 48.1	-4 40.0	222 25.3	-21 24.4	
6	39 11.9	61 18 21.7	-27	313 52.2	-4 40.4	252 29.6	-21 24.5	
8	68 2.2	63 18 16.4	-29	343 56.3	-4 40.7	282 33.9	-21 24.5	
10	96 52.8	64 18 10.5	-32	14 .3	-4 41.1	312 38.2	-21 24.6	
12	125 43.6	66 18 4.2	-34	44 4.4	-4 41.4	342 42.5	-21 24.7	
14	154 34.8	67 17 57.4	-36	74 8.5	-4 41.8	12 46.9	-21 24.7	
16	183 26.3	69 17 50.3	-38	104 12.5	-4 42.1	42 51.2	-21 24.8	
18	212 18.1	71 17 42.6	-40	134 16.6	-4 42.5	72 55.5	-21 24.8	
20	241 10.2	72 17 34.6	-42	164 20.7	-4 42.8	102 59.8	-21 24.9	
22	270 2.7	74 17 26.1	-44	194 24.7	-4 43.2	133 4.2	-21 25.0	
Δ				20	-2	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 50.9	- .5	16.2	T _m	3 17	2.4	59.6	16.2	
12	14 44.4	T _{m☉}	11 h 45.3 min	Starost	18.3 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min / ' / "	°	°	°	♃	h min / ' / "	°	°	°
♁	14 42	.1	82	-3.9	♃	9 4	.0	166	-1.3
♂	16 47	.1	51	.1	♄	13 9	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 39.5	-19 30.2	58 27.1	139 29.3	-25 28.4	108 25.3	-20 2.9
2	213 39.2	-19 31.3	88 32.0	169 27.6	-25 28.1	138 26.5	-20 1.9
4	243 38.9	-19 32.5	118 36.9	199 26.0	-25 27.8	168 27.6	-20 .9
6	273 38.6	-19 33.6	148 41.8	229 24.3	-25 27.5	198 28.8	-19 59.8
8	303 38.3	-19 34.8	178 46.8	259 22.7	-25 27.3	228 29.9	-19 58.8
10	333 38.0	-19 35.9	208 51.7	289 21.1	-25 27.0	258 31.0	-19 57.7
12	3 37.8	-19 37.0	238 56.6	319 19.4	-25 26.7	288 32.2	-19 56.7
14	33 37.5	-19 38.2	269 1.6	349 17.8	-25 26.4	318 33.3	-19 55.7
16	63 37.2	-19 39.3	299 6.5	19 16.1	-25 26.1	348 34.5	-19 54.6
18	93 36.9	-19 40.5	329 11.4	49 14.5	-25 25.7	18 35.6	-19 53.6
20	123 36.6	-19 41.6	359 16.3	79 12.9	-25 25.4	48 36.7	-19 52.5
22	153 36.3	-19 42.7	29 21.3	109 11.2	-25 25.1	78 37.9	-19 51.5
Δ	-1	-6		-8	1	6	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 9	15 22	0 50	2 32	20 58	3.2	12 31	1.2
55	7 40	15 50	0 42	2 10	21 20	3.0	12 8	1.4
50	7 20	16 11	0 36	1 54	21 36	2.8	11 51	1.5
45	7 3	16 27	0 32	1 43	21 49	2.7	11 37	1.7
40	6 50	16 41	0 29	1 34	22 0	2.6	11 26	1.8
35	6 39	16 52	0 27	1 28	22 9	2.5	11 16	1.8
30	6 29	17 2	0 26	1 23	22 17	2.4	11 7	1.9
20	6 11	17 19	0 23	1 17	22 31	2.3	10 52	2.0
10	5 56	17 35	0 22	1 14	22 43	2.2	10 39	2.1
0	5 42	17 49	0 22	1 13	22 55	2.1	10 27	2.2
10	5 27	18 4	0 22	1 15	23 6	2.0	10 14	2.3
20	5 12	18 19	0 24	1 21	23 18	2.1	10 1	2.4
30	4 54	18 37	0 26	1 31	23 32	2.1	9 46	2.5
35	4 43	18 48	0 28	1 40	23 40	2.1	9 37	2.5
40	4 31	19 0	0 31	1 52	23 49	2.1	9 27	2.6
45	4 17	19 15	0 35	2 12	...	.0	9 15	2.7
50	3 59	19 33	0 40	2 52	...	.0	9 0	2.8
55	3 36	19 56	0 49	:::	...	.0	8 42	3.0
60	3 5	20 28	1 7	:::	0 17	1.4	8 17	3.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	298 55.4	75 17 17.2	-46	224 28.8	-4 43.5	163 8.5	-21 25.0	
2	327 48.5	77 17 8.0	-48	254 32.9	-4 43.9	193 12.8	-21 25.1	
4	356 42.0	79 16 58.3	-50	284 36.9	-4 44.2	223 17.1	-21 25.2	
6	25 35.7	80 16 48.2	-52	314 41.0	-4 44.6	253 21.4	-21 25.2	
8	54 29.8	82 16 37.8	-54	344 45.1	-4 44.9	283 25.8	-21 25.3	
10	83 24.2	84 16 27.0	-56	14 49.1	-4 45.3	313 30.1	-21 25.4	
12	112 19.0	86 16 15.9	-58	44 53.2	-4 45.6	343 34.4	-21 25.4	
14	141 14.1	87 16 4.3	-59	74 57.3	-4 46.0	13 38.7	-21 25.5	
16	170 9.5	89 15 52.5	-61	105 1.3	-4 46.3	43 43.0	-21 25.6	
18	199 5.3	91 15 40.3	-63	135 5.4	-4 46.6	73 47.4	-21 25.6	
20	228 1.4	92 15 27.8	-64	165 9.5	-4 47.0	103 51.7	-21 25.7	
22	256 57.9	94 15 15.0	-66	195 13.6	-4 47.3	133 56.0	-21 25.8	
Δ				20	-2	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 37.9	- .6	16.2	T _m	4 14	2.2	58.7	16.0	
12	14 30.9	T _{m☉}	11 h 45.5 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 / ' / "	°	°	°
♁	14 43	.1	81	-3.9	♃	9 1	.0	166	-1.3
♂	16 46	.1	50	.1	♄	13 6	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	36.0	-19	43.9	59	26.2	139	9.6	-25	24.8	108	39.0	-19	50.4	
2	213	35.7	-19	45.0	89	31.1	169	8.0	-25	24.5	138	40.2	-19	49.4	
4	243	35.4	-19	46.1	119	36.1	199	6.4	-25	24.1	168	41.3	-19	48.3	
6	273	35.1	-19	47.2	149	41.0	229	4.7	-25	23.8	198	42.5	-19	47.3	
8	303	34.8	-19	48.3	179	45.9	259	3.1	-25	23.4	228	43.6	-19	46.2	
10	333	34.5	-19	49.5	209	50.8	289	1.5	-25	23.1	258	44.7	-19	45.2	
12	3	34.2	-19	50.6	239	55.8	318	59.9	-25	22.7	288	45.9	-19	44.1	
14	33	33.9	-19	51.7	270	7	348	58.2	-25	22.4	318	47.0	-19	43.1	
16	63	33.6	-19	52.8	300	5.6	18	56.6	-25	22.0	348	48.2	-19	42.0	
18	93	33.3	-19	53.9	330	10.5	48	55.0	-25	21.6	18	49.3	-19	40.9	
20	123	32.9	-19	55.0	0	15.5	78	53.4	-25	21.2	48	50.5	-19	39.9	
22	153	32.6	-19	56.1	30	20.4	108	51.8	-25	20.9	78	51.6	-19	38.8	
Δ		-2		-6				-8		2			6		5

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 11	15 20	0 51	2 33	22 14	3.2	13 0	.9
55	7 42	15 49	0 42	2 10	22 31	2.9	12 42	1.1
50	7 21	16 10	0 36	1 54	22 44	2.8	12 28	1.3
45	7 5	16 26	0 32	1 43	22 54	2.6	12 17	1.4
40	6 51	16 40	0 29	1 35	23 2	2.5	12 8	1.5
35	6 40	16 52	0 27	1 28	23 9	2.0	11 60	1.6
30	6 29	17 2	0 26	1 23	23 16	2.0	11 52	1.7
20	6 12	17 19	0 23	1 17	23 27	2.0	11 40	1.8
10	5 57	17 35	0 22	1 14	23 36	2.0	11 29	1.9
0	5 42	17 49	0 22	1 13	23 45	2.0	11 19	2.0
10	5 28	18 4	0 22	1 15	23 54	2.0	11 9	2.2
20	5 12	18 20	0 24	1 21	...	...	10 58	2.3
30	4 54	18 38	0 26	1 32	...	...	10 45	2.4
35	4 43	18 49	0 28	1 40	...	...	10 38	2.5
40	4 31	19 1	0 31	1 53	...	...	10 30	2.6
45	4 16	19 16	0 35	2 13	0 0	1.5	10 20	2.7
50	3 58	19 34	0 40	2 54	0 12	1.4	10 8	2.8
55	3 35	19 58	0 50	...	0 28	1.3	9 53	3.0
60	3 3	20 31	1 8	...	0 50	1.0	9 33	3.2
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	285	54.7	96	15	1.9	-67	225	17.6	-4	47.7	164	.3	-21	25.8	
2	314	51.8	97	14	48.5	-69	255	21.7	-4	48.0	194	4.6	-21	25.9	
4	343	49.2	99	14	34.8	-70	285	25.8	-4	48.4	224	9.0	-21	26.0	
6	12	47.0	101	14	20.8	-71	315	29.8	-4	48.7	254	13.3	-21	26.0	
8	41	45.1	102	14	6.5	-73	345	33.9	-4	49.1	284	17.6	-21	26.1	
10	70	43.6	104	13	52.0	-74	15	38.0	-4	49.4	314	21.9	-21	26.2	
12	99	42.3	105	13	37.2	-75	45	42.1	-4	49.7	344	26.2	-21	26.2	
14	128	41.4	107	13	22.1	-76	75	46.1	-4	50.1	14	30.5	-21	26.3	
16	157	40.8	109	13	6.9	-78	105	50.2	-4	50.4	44	34.9	-21	26.3	
18	186	40.5	110	12	51.3	-79	135	54.3	-4	50.8	74	39.2	-21	26.4	
20	215	40.5	112	12	35.6	-80	165	58.4	-4	51.1	104	43.5	-21	26.5	
22	244	40.8	113	12	19.6	-81	196	2.5	-4	51.5	134	47.8	-21	26.5	
Δ								20		-2			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	24.0	-.6	16.2	T _m	5 7	2.1	57.7	15.7
12	14	16.6	T _{m☉}	11 h 45.7 min	Starost	20.3 d	Faza	☉	
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 44	.1	80	-3.9	♄	8 58	.0	166	-1.3
♂	16 45	.1	49	.1	♄	13 2	.0	105	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS									
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂								
h	°	'	°	'	°	'	°	'							
0	183	32.3	-19	57.2	60	25.3	138	50.1	-25	20.5	108	52.8	-19	37.8	
2	213	32.0	-19	58.3	90	30.3	168	48.5	-25	20.1	138	53.9	-19	36.7	
4	243	31.7	-19	59.4	120	35.2	198	46.9	-25	19.7	168	55.1	-19	35.6	
6	273	31.4	-20	5	150	40.1	228	45.3	-25	19.3	198	56.2	-19	34.6	
8	303	31.0	-20	1.6	180	45.0	258	43.7	-25	18.9	228	57.4	-19	33.5	
10	333	30.7	-20	2.7	210	50.0	288	42.1	-25	18.5	258	58.5	-19	32.4	
12	3	30.4	-20	3.7	240	54.9	318	40.5	-25	18.1	288	59.7	-19	31.3	
14	33	30.1	-20	4.8	270	59.8	348	38.9	-25	17.6	319	.8	-19	30.3	
16	63	29.8	-20	5.9	301	4.8	18	37.3	-25	17.2	349	2.0	-19	29.2	
18	93	29.4	-20	7.0	331	9.7	48	35.7	-25	16.8	19	3.1	-19	28.1	
20	123	29.1	-20	8.0	1	14.6	78	34.1	-25	16.3	49	4.3	-19	27.0	
22	153	28.8	-20	9.1	31	19.5	108	32.5	-25	15.9	79	5.4	-19	26.0	
Δ		-2		-5				-8		2			6		5

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 14	15 18	0 51	2 34	23 30	1.9	13 23	.8
55	7 44	15 47	0 42	2 10	23 41	1.9	13 10	1.0
50	7 23	16 9	0 36	1 55	23 50	1.9	12 59	1.1
45	7 6	16 26	0 32	1 43	23 57	1.9	12 51	1.3
40	6 52	16 39	0 29	1 35	...	...	12 44	1.4
35	6 41	16 51	0 27	1 28	23 57	2.3	12 38	1.5
30	6 30	17 1	0 26	1 23	...	...	12 33	1.5
20	6 13	17 19	0 23	1 17	...	...	12 24	1.7
10	5 57	17 35	0 22	1 14	...	...	12 16	1.8
0	5 42	17 50	0 22	1 13	...	...	12 8	1.9
10	5 28	18 4	0 23	1 16	...	...	12 1	2.0
20	5 12	18 21	0 24	1 21	0 4	1.7	11 53	2.2
30	4 53	18 39	0 26	1 32	0 15	1.6	11 43	2.3
35	4 42	18 50	0 28	1 41	0 21	1.5	11 38	2.4
40	4 30	19 3	0 31	1 54	0 28	1.4	11 31	2.5
45	4 15	19 17	0 35	2 14	0 36	1.3	11 24	2.6
50	3 57	19 36	0 41	2 57	0 46	1.2	11 15	2.7
55	3 33	19 60	0 50	...	0 58	1.0	11 4	2.9
60	3 0	20 33	1 9	...	1 15	.8	10 50	3.1
S								

UT	MESEC				JUPITER		SATURN								
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄							
h	°	'	°	'	°	'	°	'							
0	273	41.4	115	12	3.5	-82	226	6.5	-4	51.8	164	52.1	-21	26.6	
2	302	42.3	116	11	47.1	-83	256	10.6	-4	52.1	194	56.4	-21	26.7	
4	331	43.5	117	11	30.5	-84	286	14.7	-4	52.5	225	.8	-21	26.7	
6	0	45.0	119	11	13.8	-85	316	18.8	-4	52.8	255	5.1	-21	26.8	
8	29	46.8	120	10	56.9	-86	346	22.8	-4	53.2	285	9.4	-21	26.9	
10	58	48.8	122	10	39.8	-86	16	26.9	-4	53.5	315	13.7	-21	26.9	
12	87	51.1	123	10	22.5	-87	46	31.0	-4	53.8	345	18.0	-21	27.0	
14	116	53.7	124	10	5.1	-88	76	35.1	-4	54.2	15	22.3	-21	27.1	
16	145	56.5	125	9	47.5	-89	106	39.2	-4	54.5	45	26.7	-21	27.1	
18	174	59.6	127	9	29.7	-89	136	43.3	-4	54.9	75	31.0	-21	27.2	
20	204	2.9	128	9	11.9	-90	166	47.3	-4	55.2	105	35.3	-21	27.3	
22	233	6.5	129	8	53.9	-91	196	51.4	-4	55.5	135	39.6	-21	27.3	
Δ								20		-2			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	9.3	-.6	16.2	T _m	5 57	2.0	56.8	15.5
12	14	1.5	T _{m☉}	11 h 46.0 min	Starost	21.3 d	Faza	☉	
PLANETE									
Pl									

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 28.4 -20 10.2		61 24.5	138 30.9 -25 15.5	109 6.6 -19 24.9		
2	213 28.1 -20 11.2		91 29.4	168 29.3 -25 15.0	139 7.7 -19 23.8		
4	243 27.8 -20 12.3		121 34.3	198 27.7 -25 14.6	169 8.9 -19 22.7		
6	273 27.4 -20 13.4		151 39.3	228 26.1 -25 14.1	199 10.0 -19 21.6		
8	303 27.1 -20 14.4		181 44.2	258 24.5 -25 13.6	229 11.2 -19 20.5		
10	333 26.8 -20 15.5		211 49.1	288 22.9 -25 13.2	259 12.4 -19 19.5		
12	3 26.4 -20 16.5		241 54.0	318 21.3 -25 12.7	289 13.5 -19 18.4		
14	33 26.1 -20 17.6		271 59.0	348 19.7 -25 12.2	319 14.7 -19 17.3		
16	63 25.7 -20 18.6		302 3.9	18 18.1 -25 11.7	349 15.8 -19 16.2		
18	93 25.4 -20 19.7		332 8.8	48 16.5 -25 11.2	19 17.0 -19 15.1		
20	123 25.0 -20 20.7		2 13.8	78 14.9 -25 10.7	49 18.2 -19 14.0		
22	153 24.7 -20 21.8		32 18.7	108 13.3 -25 10.2	79 19.3 -19 12.9		
Δ	-2 -5			-8 2	6 5		

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 16	15 16	0 51	2 34	...	.0	13 41	.7
55	7 46	15 46	0 42	2 11	...	.0	13 33	.9
50	7 24	16 8	0 36	1 55	...	.0	13 27	1.0
45	7 7	16 25	0 32	1 43	...	.0	13 22	1.2
40	6 53	16 39	0 29	1 35	0 3	2.5	13 17	1.3
35	6 42	16 51	0 27	1 28	...	.0	13 14	1.4
30	6 31	17 1	0 26	1 24	0 12	2.3	13 10	1.5
20	6 13	17 19	0 23	1 17	0 20	2.1	13 5	1.6
10	5 57	17 35	0 22	1 14	0 27	2.0	12 59	1.7
0	5 43	17 50	0 22	1 13	0 33	1.9	12 55	1.8
10	5 28	18 5	0 23	1 16	0 39	1.8	12 50	2.0
20	5 12	18 21	0 24	1 21	0 46	1.6	12 45	2.1
30	4 53	18 40	0 27	1 32	0 53	1.5	12 39	2.2
35	4 42	18 51	0 29	1 41	0 58	1.4	12 35	2.3
40	4 29	19 4	0 31	1 54	1 3	1.3	12 31	2.4
45	4 14	19 19	0 35	2 15	1 8	1.2	12 27	2.5
50	3 56	19 37	0 41	3 0	1 15	1.1	12 21	2.7
55	3 32	20 2	0 50	:::	1 23	.9	12 14	2.8
60	2 58	20 36	1 11	:::	1 34	.7	12 6	3.1

UT	MESEC			JUPITER		SATURN	
	S _♃	Δ	δ _♃	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	262 10.3 130	8 35.7 -91		226 55.5 -4 55.9	165 43.9 -21 27.4		
2	291 14.4 131	8 17.5 -92		256 59.6 -4 56.2	195 48.2 -21 27.4		
4	320 18.7 132	7 59.1 -92		287 3.7 -4 56.6	225 52.6 -21 27.5		
6	349 23.1 134	7 40.6 -93		317 7.8 -4 56.9	255 56.9 -21 27.6		
8	18 27.8 135	7 22.1 -93		347 11.8 -4 57.2	286 1.2 -21 27.6		
10	47 32.8 136	7 3.4 -94		17 15.9 -4 57.6	316 5.5 -21 27.7		
12	76 37.9 137	6 44.6 -94		47 20.0 -4 57.9	346 9.8 -21 27.8		
14	105 43.2 137	6 25.8 -95		77 24.1 -4 58.2	16 14.1 -21 27.8		
16	134 48.7 138	6 6.8 -95		107 28.2 -4 58.6	46 18.4 -21 27.9		
18	163 54.3 139	5 47.8 -95		137 32.3 -4 58.9	76 22.7 -21 28.0		
20	193 2.140 5	5 28.8 -96		167 36.4 -4 59.3	106 27.1 -21 28.0		
22	222 6.2 141	5 9.6 -96		197 40.5 -4 59.6	136 31.4 -21 28.1		
Δ				20 -2	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 53.7	-.7	16.2	T _m	6 44	1.8	56.0 15.2
12	13 45.6	T _{m☉} 11 h 46.2 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	'	°	
♂	14 47	.1	77	-3.9	♂	8 51	.0	166	-1.3
♂	16 43	.1	48	.1	♂	12 55	.0	104	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 24.4 -20 22.8		62 23.6	138 11.8 -25 9.7	109 20.5 -19 11.8		
2	213 24.0 -20 23.8		92 28.5	168 10.2 -25 9.2	139 21.6 -19 10.7		
4	243 23.6 -20 24.9		122 33.5	198 8.6 -25 8.7	169 22.8 -19 9.6		
6	273 23.3 -20 25.9		152 38.4	228 7.0 -25 8.2	199 24.0 -19 8.5		
8	303 22.9 -20 26.9		182 43.3	258 5.4 -25 7.6	229 25.1 -19 7.4		
10	333 22.6 -20 27.9		212 48.3	288 3.9 -25 7.1	259 26.3 -19 6.3		
12	3 22.2 -20 29.0		242 53.2	318 2.3 -25 6.6	289 27.4 -19 5.2		
14	33 21.9 -20 30.0		272 58.1	348 .7 -25 6.0	319 28.6 -19 4.1		
16	63 21.5 -20 31.0		303 3.0	17 59.1 -25 5.5	349 29.8 -19 3.0		
18	93 21.2 -20 32.0		333 8.0	47 57.6 -25 4.9	19 30.9 -19 1.9		
20	123 20.8 -20 33.0		3 12.9	77 56.0 -25 4.4	49 32.1 -19 .8		
22	153 20.4 -20 34.0		33 17.8	107 54.4 -25 3.8	79 33.3 -18 59.7		
Δ	-2 -5			-8 3	6 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 18	15 14	0 52	2 35	0 45	3.0	13 57	1.4
55	7 48	15 45	0 42	2 11	0 51	2.8	13 54	1.5
50	7 26	16 7	0 37	1 55	0 55	2.6	13 52	1.5
45	7 9	16 24	0 32	1 44	0 59	2.5	13 50	1.6
40	6 54	16 38	0 30	1 35	1 2	2.4	13 48	1.6
35	6 42	16 50	0 27	1 29	1 5	2.3	13 46	1.6
30	6 32	17 1	0 26	1 24	1 7	2.2	13 45	1.7
20	6 14	17 19	0 23	1 17	1 11	2.1	13 43	1.7
10	5 58	17 35	0 22	1 14	1 15	1.9	13 41	1.8
0	5 43	17 50	0 22	1 14	1 18	1.8	13 39	1.8
10	5 28	18 5	0 23	1 16	1 21	1.7	13 37	1.8
20	5 11	18 22	0 24	1 22	1 25	1.6	13 35	1.9
30	4 53	18 41	0 27	1 33	1 29	1.4	13 33	1.9
35	4 41	18 52	0 29	1 42	1 31	1.3	13 31	2.0
40	4 29	19 5	0 31	1 55	1 34	1.2	13 30	2.0
45	4 14	19 20	0 35	2 16	1 37	1.1	13 28	2.0
50	3 55	19 39	0 41	3 3	1 41	1.0	13 26	2.1
55	3 31	20 4	0 51	:::	1 45	.9	13 23	2.1
60	2 56	20 38	1 12	:::	1 51	.7	13 19	2.2

UT	MESEC			JUPITER		SATURN	
	S _♃	Δ	δ _♃	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	251 12.4 142	4 50.5 -96		227 44.5 -4 59.9	166 35.7 -21 28.1		
2	280 18.7 142	4 31.2 -96		257 48.6 -5 .3	196 40.0 -21 28.2		
4	309 25.2 143	4 11.9 -97		287 52.7 -5 .6	226 44.3 -21 28.3		
6	338 31.8 144	3 52.6 -97		317 56.8 -5 .9	256 48.6 -21 28.3		
8	7 38.6 145	3 33.2 -97		348 .9 -5 1.3	286 52.9 -21 28.4		
10	36 45.5 145	3 13.8 -97		18 5.0 -5 1.6	316 57.2 -21 28.5		
12	65 52.5 146	2 54.4 -97		48 9.1 -5 1.9	347 1.6 -21 28.5		
14	94 59.7 146	2 35.0 -97		78 13.2 -5 2.3	17 5.9 -21 28.6		
16	124 6.9 147	2 15.5 -97		108 17.3 -5 2.6	47 10.2 -21 28.7		
18	153 14.3 147	1 56.1 -97		138 21.4 -5 2.9	77 14.5 -21 28.7		
20	182 21.7 148	1 36.6 -97		168 25.5 -5 3.3	107 18.8 -21 28.8		
22	211 29.3 148	1 17.1 -97		198 29.6 -5 3.6	137 23.1 -21 28.8		
Δ				20 -2	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 37.4	-.7	16.2	T _m	7 28	1.8	55.3 15.1
12	13 28.8	T _{m☉} 11 h 46.5 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	'	°	
♂	14 48	.1	76	-3.9	♂	8 48	.0	165	-1.3
♂	16 42	.1	47	.1	♂	12 52	.0	104	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	20.1	-20	35.0	63	22.8	137	52.9	-25	3.3	109	34.4	-18	58.6	
2	213	19.7	-20	36.0	93	27.7	167	51.3	-25	2.7	139	35.6	-18	57.5	
4	243	19.3	-20	37.0	123	32.6	197	49.7	-25	2.1	169	36.8	-18	56.4	
6	273	19.0	-20	38.0	153	37.5	227	48.2	-25	1.5	199	37.9	-18	55.2	
8	303	18.6	-20	39.0	183	42.5	257	46.6	-25	1.0	229	39.1	-18	54.1	
10	333	18.2	-20	40.0	213	47.4	287	45.1	-25	.4	259	40.3	-18	53.0	
12	3	17.9	-20	41.0	243	52.3	317	43.5	-24	59.8	289	41.4	-18	51.9	
14	33	17.5	-20	42.0	273	57.2	347	42.0	-24	59.2	319	42.6	-18	50.8	
16	63	17.1	-20	43.0	304	2.2	17	40.4	-24	58.6	349	43.8	-18	49.7	
18	93	16.7	-20	44.0	334	7.1	47	38.9	-24	58.0	19	44.9	-18	48.5	
20	123	16.3	-20	44.9	4	12.0	77	37.3	-24	57.4	49	46.1	-18	47.4	
22	153	16.0	-20	45.9	34	17.0	107	35.8	-24	56.7	79	47.3	-18	46.3	
Δ		-2		-5				-8		3			6		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 21	15 13	0 52	2 36	1 58	1.0	14 32	3.0
55	7 50	15 43	0 43	2 12	1 58	1.1	14 30	2.8
50	7 27	16 6	0 37	1 55	1 59	1.2	14 29	2.6
45	7 10	16 23	0 33	1 44	1 59	1.3	14 28	2.5
40	6 56	16 38	0 30	1 35	1 59	1.4	14 27	2.3
35	6 43	16 50	0 27	1 29	1 60	1.5	14 26	2.3
30	6 33	17 1	0 26	1 24	2 0	1.5	14 25	2.2
20	6 14	17 19	0 24	1 17	2 1	1.6	14 24	2.0
10	5 58	17 35	0 22	1 14	2 1	1.7	14 23	1.9
0	5 43	17 50	0 22	1 14	2 1	1.8	14 22	1.8
10	5 28	18 6	0 23	1 16	2 2	1.9	14 21	1.7
20	5 11	18 22	0 24	1 22	2 2	1.9	14 20	1.5
30	4 52	18 42	0 27	1 33	2 3	2.0	14 19	1.4
35	4 41	18 53	0 29	1 42	2 3	2.1	14 18	1.3
40	4 28	19 6	0 31	1 55	2 4	2.2	14 17	1.2
45	4 13	19 21	0 35	2 17	2 4	2.2	14 16	1.1
50	3 54	19 40	0 41	3 7	2 5	2.3	14 15	1.0
55	3 29	20 5	0 51	:::	2 6	2.4	14 14	.8
60	2 55	20 41	1 13	:::	2 7	2.6	14 12	.6

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	240	37.0	149	0	57.6	-97	228	33.7	-5	3.9	167	27.4	-21	28.9	
2	269	44.7	149	0	38.2	-97	258	37.7	-5	4.3	197	31.7	-21	29.0	
4	298	52.5	149	0	18.7	-90	288	41.8	-5	4.6	227	36.1	-21	29.0	
6	328	.4	150	0	.7	97	318	45.9	-5	4.9	257	40.4	-21	29.1	
8	357	8.3	150	0	20.2	97	348	50.0	-5	5.3	287	44.7	-21	29.2	
10	26	16.3	150	0	39.6	97	18	54.1	-5	5.6	317	49.0	-21	29.2	
12	55	24.4	151	0	58.9	97	48	58.2	-5	5.9	347	53.3	-21	29.3	
14	84	32.5	151	1	18.2	96	79	2.3	-5	6.3	17	57.6	-21	29.3	
16	113	40.6	151	1	37.5	96	109	6.4	-5	6.6	48	1.9	-21	29.4	
18	142	48.8	151	1	56.8	96	139	10.5	-5	6.9	78	6.2	-21	29.5	
20	171	57.0	151	2	16.0	96	169	14.6	-5	7.3	108	10.5	-21	29.5	
22	201	5.3	151	2	35.1	95	199	18.7	-5	7.6	138	14.8	-21	29.6	
Δ								20		-2			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	20.3	-.7	16.2	T _m	8 12	1.7	54.8	14.9
12	13	11.3	T _{m☉}	11 h 46.8 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	'	°	
♂	14 49	.1	74	-4.0	♄	8 45	.0	165	-1.3
♂	16 41	.1	46	.1	♂	12 48	.0	104	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	183	15.6	-20	46.9	64	21.9	137	34.2	-24	56.1	109	48.5	-18	45.2	
2	213	15.2	-20	47.9	94	26.8	167	32.7	-24	55.5	139	49.6	-18	44.0	
4	243	14.8	-20	48.8	124	31.7	197	31.1	-24	54.9	169	50.8	-18	42.9	
6	273	14.4	-20	49.8	154	36.7	227	29.6	-24	54.2	199	52.0	-18	41.8	
8	303	14.1	-20	50.7	184	41.6	257	28.1	-24	53.6	229	53.1	-18	40.6	
10	333	13.7	-20	51.7	214	46.5	287	26.5	-24	52.9	259	54.3	-18	39.5	
12	3	13.3	-20	52.7	244	51.5	317	25.0	-24	52.3	289	55.5	-18	38.4	
14	33	12.9	-20	53.6	274	56.4	347	23.5	-24	51.6	319	56.7	-18	37.2	
16	63	12.5	-20	54.6	305	1.3	17	21.9	-24	51.0	349	57.8	-18	36.1	
18	93	12.1	-20	55.5	335	6.2	47	20.4	-24	50.3	19	59.0	-18	35.0	
20	123	11.7	-20	56.5	5	11.2	77	18.9	-24	49.6	50	.2	-18	33.8	
22	153	11.3	-20	57.4	35	16.1	107	17.3	-24	48.9	80	1.4	-18	32.7	
Δ		-2		-5				-8		3			6		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 23	15 11	0 52	2 36	2 21	.6	15 43	2.9
55	7 51	15 42	0 43	2 12	2 25	.8	15 36	2.7
50	7 29	16 5	0 37	1 56	2 28	1.0	15 31	2.6
45	7 11	16 23	0 33	1 44	2 31	1.1	15 27	2.4
40	6 57	16 37	0 30	1 35	2 33	1.2	15 23	2.3
35	6 44	16 50	0 27	1 29	2 35	1.3	15 20	2.2
30	6 34	17 0	0 26	1 24	2 36	1.4	15 17	2.2
20	6 15	17 19	0 24	1 17	2 39	1.5	15 13	2.0
10	5 59	17 35	0 22	1 14	2 42	1.7	15 9	1.9
0	5 43	17 51	0 22	1 14	2 44	1.8	15 5	1.8
10	5 28	18 6	0 23	1 16	2 47	1.9	15 1	1.7
20	5 11	18 23	0 24	1 22	2 49	2.0	14 57	1.6
30	4 52	18 42	0 27	1 33	2 52	2.2	14 52	1.4
35	4 41	18 54	0 29	1 42	2 54	2.2	14 50	1.3
40	4 28	19 7	0 32	1 56	2 56	2.3	14 46	1.3
45	4 12	19 23	0 36	2 18	2 58	2.4	14 43	1.1
50	3 53	19 42	0 41	3 10	3 1	2.6	14 39	1.0
55	3 28	20 7	0 52	:::	3 5	2.7	14 34	.9
60	2 53	20 43	1 14	:::	3 9	3.0	14 27	.7

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ	δ _♃	Δ	S _♃		δ _♃	S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	230	13.5	151	2	54.2	95	229	22.8	-5	7.9	168	19.2	-21	29.7	
2	259	21.8	151	3	13.2	95	259	26.9	-5	8.2	198	23.5	-21	29.7	
4	288	30.1	151	3	32.2	94	289	31.0	-5	8.6	228	27.8	-21	29.8	
6	317	38.4	151	3	51.1	94	319	35.1	-5	8.9	258	32.1	-21	29.9	
8	346	46.7	151	4	9.9	94	349	39.2	-5	9.2	288	36.4	-21	29.9	
10	15	54.9	151	4	28.6	93	19	43.4	-5	9.6	318	40.7	-21	30.0	
12	45	3.2	151	4	47.3	93	49	47.5	-5	9.9	348	45.0	-21	30.0	
14	74	11.5	151	5	5.8	92	79	51.6	-5	10.2	18	49.3	-21	30.1	
16	103	19.7	151	5	24.3	92	109	55.7	-5	10.5	48	53.6	-21	30.2	
18	132	27.9	151	5	42.7	91	139	59.8	-5	10.9	78	57.9	-21	30.2	
20	161	36.1	151	6	1.0	91	170	3.9	-5	11.2	109	2.2	-21	30.3	
22	190	44.2	150	6	19.1	90	200	8.0	-5	11.5	139	6.5	-21	30.3	
Δ								21		-2			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	2.3	-.8	16.2	T _m	8 54	1.8	54.4	14.8
12	12	5							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	10.9	-20	58.4	65	21.0	137	15.8	-24	48.3	110	2.6	-18	31.6
2	213	10.5	-20	59.3	95	26.0	167	14.3	-24	47.6	140	3.7	-18	30.4
4	243	10.1	-21	.2	125	30.9	197	12.8	-24	46.9	170	4.9	-18	29.3
6	273	9.7	-21	1.2	155	35.8	227	11.3	-24	46.2	200	6.1	-18	28.1
8	303	9.3	-21	2.1	185	40.7	257	9.7	-24	45.5	230	7.3	-18	27.0
10	333	8.9	-21	3.0	215	45.7	287	8.2	-24	44.8	260	8.5	-18	25.8
12	3	8.5	-21	3.9	245	50.6	317	6.7	-24	44.1	290	9.6	-18	24.7
14	33	8.1	-21	4.9	275	55.5	347	5.2	-24	43.4	320	10.8	-18	23.5
16	63	7.7	-21	5.8	306	.5	377	.7	-24	42.6	350	12.0	-18	22.4
18	93	7.3	-21	6.7	336	5.4	407	2.2	-24	41.9	20	13.2	-18	21.2
20	123	6.9	-21	7.6	366	10.3	437	3.7	-24	41.2	50	14.4	-18	20.1
22	153	6.5	-21	8.5	396	15.2	467	5.2	-24	40.4	80	15.5	-18	18.9
Δ		-2		-5				-8		4		6		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 25	15 9	0 53	2 37	2 37	.7	16 53	2.9
55	7 53	15 41	0 43	2 12	2 45	.9	16 41	2.7
50	7 30	16 4	0 37	1 56	2 52	1.1	16 32	2.5
45	7 12	16 22	0 33	1 44	2 58	1.2	16 25	2.4
40	6 58	16 37	0 30	1 36	3 2	1.3	16 19	2.3
35	6 45	16 49	0 28	1 29	3 6	1.4	16 14	2.2
30	6 34	17 0	0 26	1 24	3 10	1.4	16 9	2.2
20	6 16	17 19	0 24	1 17	3 16	1.6	16 1	2.0
10	5 59	17 36	0 22	1 14	3 22	1.7	15 54	1.9
0	5 44	17 51	0 22	1 14	3 27	1.8	15 48	1.8
10	5 28	18 7	0 23	1 16	3 32	1.9	15 41	1.7
20	5 11	18 24	0 24	1 22	3 38	2.0	15 34	1.6
30	4 52	18 43	0 27	1 33	3 44	2.2	15 26	1.5
35	4 40	18 55	0 29	1 43	3 48	2.2	15 22	1.4
40	4 27	19 8	0 32	1 56	3 52	2.3	15 17	1.3
45	4 12	19 24	0 36	2 19	3 57	2.4	15 11	1.2
50	3 52	19 44	0 42	3 14	4 3	2.6	15 3	1.1
55	3 27	20 9	0 52	:::	4 10	2.7	14 55	1.0
60	2 51	20 45	1 16	:::	4 20	2.9	14 43	.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	219	52.3	150	6	37.2	90	230	12.1	-5	11.9	169	10.8	-21	30.4		
2	249	.4	150	6	55.1	89	260	16.2	-5	12.2	199	15.2	-21	30.5		
4	278	8.4	150	7	13.0	89	290	20.3	-5	12.5	229	19.5	-21	30.5		
6	307	16.3	149	7	30.7	88	320	24.4	-5	12.8	259	23.8	-21	30.6		
8	336	24.2	149	7	48.2	87	350	28.5	-5	13.2	289	28.1	-21	30.7		
10	5	32.0	149	8	5.7	87	20	32.6	-5	13.5	319	32.4	-21	30.7		
12	34	39.8	148	8	23.0	86	50	36.8	-5	13.8	349	36.7	-21	30.8		
14	63	47.5	148	8	40.2	85	80	40.9	-5	14.1	19	41.0	-21	30.8		
16	92	55.1	148	8	57.2	84	110	45.0	-5	14.5	49	45.3	-21	30.9		
18	122	2.7	147	9	14.1	84	140	49.1	-5	14.8	79	49.6	-21	31.0		
20	151	10.1	147	9	30.8	83	170	53.2	-5	15.1	109	53.9	-21	31.0		
22	180	17.5	146	9	47.4	82	200	57.3	-5	15.4	139	58.2	-21	31.1		
Δ							21			-2		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 43.7	- .8	16.2	T _m	9 37	1.8	54.1	14.7
12	12 33.9	T _{m☉}	11 h 47.4 min	Starost	26.3 d	Faza	●	

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	14 52	.1	72	-4.0	♄	8 38	.0	165	-1.3
♂	16 39	.1	45	.2	♅	12 41	.0	104	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	6.1	-21	9.4	66	20.2	136	57.7	-24	39.7	110	16.7	-18	17.8
2	213	5.6	-21	10.3	96	25.1	166	56.2	-24	39.0	140	17.9	-18	16.6
4	243	5.2	-21	11.2	126	30.0	196	54.7	-24	38.2	170	19.1	-18	15.5
6	273	4.8	-21	12.1	156	35.0	226	53.2	-24	37.5	200	20.3	-18	14.3
8	303	4.4	-21	13.0	186	39.9	256	51.7	-24	36.7	230	21.5	-18	13.2
10	333	4.0	-21	13.9	216	44.8	286	50.2	-24	35.9	260	22.7	-18	12.0
12	3	3.6	-21	14.8	246	49.7	316	48.7	-24	35.2	290	23.8	-18	10.8
14	33	3.1	-21	15.7	276	54.7	346	47.2	-24	34.4	320	25.0	-18	9.7
16	63	2.7	-21	16.6	306	59.6	376	45.7	-24	33.6	350	26.2	-18	8.5
18	93	2.3	-21	17.5	337	4.5	406	44.2	-24	32.8	20	27.4	-18	7.3
20	123	1.9	-21	18.4	7	9.5	436	42.8	-24	32.1	50	28.6	-18	6.2
22	153	1.4	-21	19.2	37	14.4	466	41.3	-24	31.3	80	29.8	-18	5.0
Δ		-2		-4				-7		4		6		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 27	15 8	0 53	2 37	2 54	.8	18 3	2.8
55	7 55	15 40	0 43	2 13	3 7	1.0	17 46	2.6
50	7 32	16 3	0 37	1 56	3 18	1.2	17 33	2.5
45	7 14	16 22	0 33	1 44	3 26	1.3	17 23	2.4
40	6 59	16 36	0 30	1 36	3 33	1.4	17 15	2.3
35	6 46	16 49	0 28	1 29	3 39	1.5	17 7	2.2
30	6 35	17 0	0 26	1 24	3 45	1.5	17 1	2.2
20	6 16	17 19	0 24	1 18	3 54	1.6	16 50	2.1
10	5 60	17 36	0 22	1 14	4 2	1.7	16 40	2.0
0	5 44	17 51	0 22	1 14	4 10	1.8	16 31	1.9
10	5 28	18 7	0 23	1 16	4 18	1.9	16 22	1.8
20	5 11	18 24	0 24	1 22	4 26	2.0	16 13	1.7
30	4 52	18 44	0 27	1 34	4 36	2.2	16 2	1.6
35	4 40	18 56	0 29	1 43	4 41	2.2	15 55	1.5
40	4 27	19 9	0 32	1 57	4 48	2.3	15 48	1.4
45	4 11	19 25	0 36	2 20	4 55	2.4	15 40	1.3
50	3 51	19 45	0 42	3 19	5 4	2.5	15 30	1.2
55	3 26	20 11	0 52	:::	5 15	2.7	15 18	1.1
60	2 49	20 48	1 17	:::	5 30	2.9	15 2	.9

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	209	24.8	146	10	3.8	81	231	1.4	-5	15.8	170	2.5	-21	31.2		
2	238	32.0	146	10	20.0	80	261	5.5	-5	16.1	200	6.8	-21	31.2		
4	267	39.1	145	10	36.1	79	291	9.7	-5	16.4	230	11.1	-21	31.3		
6	296	46.2	145	10	52.0	79	321	13.8	-5	16.7	260	15.4	-21	31.3		
8	325	53.1	144	11	7.7	78	351	17.9	-5	17.0	290	19.7	-21	31.4		
10	354	59.9	144	11	23.2	77	21	22.0	-5	17.4	320	24.1	-21	31.5		
12	24	6.6	143	11	38.5	76	51	26.1	-5	17.7	350	28.4	-21	31.5		
14	53	13.2	142	11	53.7	75	81	30.2	-5	18.0	20	32.7	-21	31.6		
16	82	19.7	142	12	8.6	74	111	34.4	-5	18.3	50	37.0	-21	31.6		
18	111	26.1	141	12	23.4	73	141	38.5	-5	18.7	80	41.3	-21	31.7		
20	140	32.3	141	12	37.9	72	171	42.6	-5	19.0	110	45.6	-21	31.8		
22	169	38.5	140	12	52.2	71	201	46.7	-5	19.3	140	49.9	-21	31.8		
Δ							21			-2		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 24.2	- .8	16.2	T _m	10 21</		

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	183	1.0	-21	20.1	67	19.3	136	39.8	-24	30.5	110	31.0	-18	3.8
2	213	.6	-21	21.0	97	24.2	166	38.3	-24	29.7	140	32.2	-18	2.7
4	243	.2	-21	21.8	127	29.2	196	36.9	-24	28.9	170	33.4	-18	1.5
6	272	59.7	-21	22.7	157	34.1	226	35.4	-24	28.1	200	34.6	-18	.3
8	302	59.3	-21	23.6	187	39.0	256	33.9	-24	27.2	230	35.7	-17	59.1
10	332	58.9	-21	24.4	217	43.9	286	32.5	-24	26.4	260	36.9	-17	58.0
12	2	58.4	-21	25.3	247	48.9	316	31.0	-24	25.6	290	38.1	-17	56.8
14	32	58.0	-21	26.2	277	53.8	346	29.5	-24	24.8	320	39.3	-17	55.6
16	62	57.6	-21	27.0	307	58.7	16	28.1	-24	23.9	350	40.5	-17	54.4
18	92	57.1	-21	27.9	338	3.7	46	26.6	-24	23.1	20	41.7	-17	53.3
20	122	56.7	-21	28.7	8	8.6	76	25.1	-24	22.3	50	42.9	-17	52.1
22	152	56.2	-21	29.5	38	13.5	106	23.7	-24	21.4	80	44.1	-17	50.9
Δ		-2		-4				-7		4		6		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 29	15 6	0 53	2 38	3 14	1.0	19 11	2.7
55	7 57	15 39	0 43	2 13	3 32	1.2	18 49	2.5
50	7 33	16 3	0 37	1 56	3 46	1.3	18 33	2.4
45	7 15	16 21	0 33	1 45	3 57	1.4	18 20	2.3
40	6 60	16 36	0 30	1 36	4 6	1.5	18 10	2.3
35	6 47	16 49	0 28	1 29	4 14	1.6	18 1	2.2
30	6 36	16 60	0 26	1 24	4 21	1.6	17 53	2.2
20	6 17	17 19	0 24	1 18	4 33	1.7	17 39	2.1
10	6 0	17 36	0 23	1 14	4 44	1.8	17 27	2.0
0	5 44	17 52	0 22	1 14	4 54	1.9	17 16	1.9
10	5 29	18 8	0 23	1 16	5 4	2.0	17 5	1.9
20	5 11	18 25	0 24	1 22	5 15	2.1	16 53	1.8
30	4 52	18 45	0 27	1 34	5 28	2.2	16 40	1.7
35	4 40	18 57	0 29	1 43	5 35	2.2	16 32	1.6
40	4 26	19 10	0 32	1 57	5 43	2.3	16 23	1.6
45	4 10	19 26	0 36	2 21	5 53	2.4	16 12	1.5
50	3 51	19 46	0 42	3 24	6 5	2.5	15 60	1.4
55	3 25	20 13	0 53	:::	6 19	2.6	15 44	1.3
60	2 48	20 50	1 18	:::	6 39	2.8	15 23	1.1

UT	MESEC				JUPITER				SATURN				
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	198	44.5	140	13 6.3	69	231	50.8	-5	19.6	170	54.2	-21	31.9
2	227	50.4	139	13 20.2	68	261	55.0	-5	19.9	200	58.5	-21	32.0
4	256	56.2	138	13 33.9	67	291	59.1	-5	20.3	231	2.8	-21	32.0
6	286	1.9	138	13 47.4	66	322	3.2	-5	20.6	261	7.1	-21	32.1
8	315	7.4	137	14 .6	65	352	7.3	-5	20.9	291	11.4	-21	32.1
10	344	12.9	136	14 13.5	64	22	11.5	-5	21.2	321	15.7	-21	32.2
12	13	18.1	136	14 26.3	62	52	15.6	-5	21.5	351	20.0	-21	32.3
14	42	23.3	135	14 38.8	61	82	19.7	-5	21.8	21	24.3	-21	32.3
16	71	28.3	135	14 51.0	60	112	23.8	-5	22.2	51	28.6	-21	32.4
18	100	33.2	134	15 3.0	59	142	28.0	-5	22.5	81	32.9	-21	32.4
20	129	38.0	133	15 14.7	57	172	32.1	-5	22.8	111	37.2	-21	32.5
22	158	42.7	133	15 26.2	56	202	36.2	-5	23.1	141	41.5	-21	32.6
Δ							21		-2		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 4.1	- .9	16.2	T _m	11 5	1.9	53.9 14.7
12	11 53.6	T _{m☉}	11 h 48.1 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	'	°	°	h min	'
♀	14 54	.1	69	-4.0	♃	8 31	.0	165	-1.3
♂	16 37	.1	43	.2	♄	12 35	.0	104	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	182	55.8	-21	30.4	68	18.4	136	22.2	-24	20.6	110	45.3	-17	49.7
2	212	55.4	-21	31.2	98	23.4	166	20.8	-24	19.7	140	46.5	-17	48.5
4	242	54.9	-21	32.1	128	28.3	196	19.3	-24	18.8	170	47.7	-17	47.3
6	272	54.5	-21	32.9	158	33.2	226	17.9	-24	18.0	200	48.9	-17	46.2
8	302	54.0	-21	33.7	188	38.2	256	16.5	-24	17.1	230	50.1	-17	45.0
10	332	53.6	-21	34.5	218	43.1	286	15.0	-24	16.2	260	51.3	-17	43.8
12	2	53.1	-21	35.4	248	48.0	316	13.6	-24	15.3	290	52.5	-17	42.6
14	32	52.7	-21	36.2	278	52.9	346	12.1	-24	14.5	320	53.7	-17	41.4
16	62	52.2	-21	37.0	308	57.9	16	10.7	-24	13.6	350	54.9	-17	40.2
18	92	51.8	-21	37.8	339	2.8	46	9.3	-24	12.7	20	56.1	-17	39.0
20	122	51.3	-21	38.6	9	7.7	76	7.8	-24	11.8	50	57.3	-17	37.8
22	152	50.9	-21	39.4	39	12.7	106	6.4	-24	10.9	80	58.5	-17	36.6
Δ		-2		-4				-7		4		6		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 32	15 5	0 54	2 39	3 38	1.3	20 16	2.5
55	7 58	15 38	0 43	2 13	4 0	1.4	19 50	2.4
50	7 34	16 2	0 37	1 57	4 17	1.5	19 31	2.3
45	7 16	16 21	0 33	1 45	4 31	1.6	19 16	2.2
40	7 1	16 36	0 30	1 36	4 42	1.7	19 4	2.2
35	6 48	16 49	0 28	1 29	4 52	1.7	18 54	2.2
30	6 37	16 60	0 26	1 24	5 0	1.8	18 45	2.1
20	6 18	17 19	0 24	1 18	5 15	1.8	18 29	2.1
10	6 1	17 36	0 23	1 14	5 28	1.9	18 15	2.0
0	5 45	17 52	0 22	1 14	5 40	2.0	18 2	2.0
10	5 29	18 8	0 23	1 17	5 52	2.0	17 49	1.9
20	5 11	18 26	0 24	1 22	6 5	2.1	17 36	1.9
30	4 51	18 46	0 27	1 34	6 20	2.1	17 20	1.8
35	4 40	18 58	0 29	1 44	6 28	2.2	17 11	1.8
40	4 26	19 11	0 32	1 58	6 38	2.2	17 1	1.7
45	4 10	19 28	0 36	2 22	6 50	2.3	16 48	1.7
50	3 50	19 48	0 42	3 30	7 4	2.4	16 34	1.6
55	3 24	20 14	0 53	:::	7 22	2.5	16 15	1.5
60	2 46	20 52	1 20	:::	7 46	2.6	15 50	1.4

UT	MESEC				JUPITER				SATURN				
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄		
h	°	'	°	'	°	'	°	'	°	'	°	'	
0	187	47.2	132	15 37.4	55	232	40.3	-5	23.4	171	45.8	-21	32.6
2	216	51.6	131	15 48.3	53	262	44.5	-5	23.8	201	50.1	-21	32.7
4	245	55.8	131	15 58.9	52	292	48.6	-5	24.1	231	54.4	-21	32.7
6	274	59.9	130	16 9.3	50	322	52.7	-5	24.4	261	58.7	-21	32.8
8	304	3.9	129	16 19.4	49	352	56.8	-5	24.7	292	3.0	-21	32.9
10	333	7.8	129	16 29.2	48	23	1.0	-5	25.0	322	7.3	-21	32.9
12	2	11.5	128	16 38.7	46	53	5.1	-5	25.3	352	11.6	-21	33.0
14	31	15.2	127	16 48.0	45	83	9.2	-5	25.6	22	15.9	-21	33.0
16	60	18.7	127	16 56.9	43	113	13.4	-5	26.0	52	20.2	-21	33.1
18	89	22.0	126	17 5.5	42	143	17.5	-5	26.3	82	24.5	-21	33.2
20	118	25.3	126	17 13.8	40	173	21.6	-5	26.6	112	28.9	-21	33.2
22	147	28.4	125	17 21.8	39	203	25.8	-5	26.9	142	33.2	-21	33.3
Δ							21		-2		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 43.2	- .9	16.2	T _m	11 51	2.0	54.0 14.7
12	11 32.4	T _{m☉}	11 h 48.5 min	Starost	29.3 d	Faza ●	

PLANETE							
Pl.	T						

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 50.4 -21 40.3		69 17.6	136 5.0 -24 10.0	110 59.7 -17 35.4		
2	212 49.9 -21 41.1		99 22.5	166 3.6 -24 9.1	141 .9 -17 34.2		
4	242 49.5 -21 41.9		129 27.4	196 2.1 -24 8.1	171 2.1 -17 33.0		
6	272 49.0 -21 42.7		159 32.4	226 .7 -24 7.2	201 3.3 -17 31.8		
8	302 48.6 -21 43.4		189 37.3	255 59.3 -24 6.3	231 4.5 -17 30.6		
10	332 48.1 -21 44.2		219 42.2	285 57.9 -24 5.4	261 5.7 -17 29.4		
12	2 47.6 -21 45.0		249 47.2	315 56.5 -24 4.4	291 6.9 -17 28.2		
14	32 47.2 -21 45.8		279 52.1	345 55.1 -24 3.5	321 8.1 -17 27.0		
16	62 46.7 -21 46.6		309 57.0	15 53.7 -24 2.5	351 9.4 -17 25.8		
18	92 46.3 -21 47.4		340 1.9	45 52.2 -24 1.6	21 10.6 -17 24.6		
20	122 45.8 -21 48.2		10 6.9	75 50.8 -24 .6	51 11.8 -17 23.4		
22	152 45.3 -21 48.9		40 11.8	105 49.4 -23 59.7	81 13.0 -17 22.2		
Δ	-2	-4		-7	5	6	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 34	15 4	0 54	2 39	4 8	1.6	21 16	2.2
55	7 60	15 37	0 44	2 14	4 34	1.7	20 47	2.1
50	7 36	16 1	0 37	1 57	4 54	1.8	20 27	2.1
45	7 17	16 20	0 33	1 45	5 9	1.8	20 10	2.1
40	7 2	16 35	0 30	1 36	5 22	1.8	19 57	2.1
35	6 49	16 48	0 28	1 29	5 33	1.9	19 45	2.1
30	6 38	16 60	0 26	1 24	5 42	1.9	19 36	2.1
20	6 18	17 19	0 24	1 18	5 59	1.9	19 18	2.1
10	6 1	17 36	0 23	1 15	6 13	2.0	19 4	2.0
0	5 45	17 53	0 22	1 14	6 27	2.0	18 50	2.0
10	5 29	18 9	0 23	1 17	6 40	2.0	18 36	2.0
20	5 12	18 26	0 24	1 23	6 54	2.1	18 21	2.0
30	4 51	18 47	0 27	1 34	7 11	2.1	18 4	2.0
35	4 39	18 59	0 29	1 44	7 21	2.1	17 54	1.9
40	4 26	19 12	0 32	1 58	7 32	2.1	17 43	1.9
45	4 9	19 29	0 36	2 22	7 45	2.2	17 29	1.9
50	3 49	19 49	0 42	3 37	8 1	2.2	17 13	1.9
55	3 23	20 16	0 54	:::	8 21	2.3	16 52	1.8
60	2 44	20 55	1 21	:::	8 49	2.3	16 24	1.8
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	176 31.4 124	17 29.5	37	233 29.9 - 5 27.2	172 37.5 -21 33.3			
2	205 34.3 124	17 36.9	35	263 34.0 - 5 27.5	202 41.8 -21 33.4			
4	234 37.0 123	17 44.0	34	293 38.2 - 5 27.8	232 46.1 -21 33.5			
6	263 39.7 123	17 50.8	32	323 42.3 - 5 28.2	262 50.4 -21 33.5			
8	292 42.2 122	17 57.2	30	353 46.4 - 5 28.5	292 54.7 -21 33.6			
10	321 44.6 122	18 3.3	29	23 50.6 - 5 28.8	322 59.0 -21 33.6			
12	350 46.9 121	18 9.0	27	53 54.7 - 5 29.1	353 3.3 -21 33.7			
14	19 49.1 121	18 14.5	26	83 58.9 - 5 29.4	23 7.6 -21 33.8			
16	48 51.3 120	18 19.6	24	114 3.0 - 5 29.7	53 11.9 -21 33.8			
18	77 53.3 120	18 24.3	22	144 7.1 - 5 30.0	83 16.2 -21 33.9			
20	106 55.2 119	18 28.8	20	174 11.3 - 5 30.3	113 20.5 -21 33.9			
22	135 57.0 119	18 32.8	19	204 15.4 - 5 30.7	143 24.8 -21 34.0			
Δ				21	-2	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 21.6	- .9	16.2	T _m	12 38	2.0	54.1 14.8		
12	11 10.5	T _{m☉}	11 h 48.8 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 56	.1	67	-4.0	♄	8 25	.0	164	-1.4
	16 35	.1	42	.2	♅	12 28	.0	103	.7

1. DECEMBAR

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 44.9 -21 49.7		70 16.7	135 48.0 -23 58.7	111 14.2 -17 21.0		
2	212 44.4 -21 50.5		100 21.7	165 46.6 -23 57.8	141 15.4 -17 19.8		
4	242 43.9 -21 51.2		130 26.6	195 45.3 -23 56.8	171 16.6 -17 18.6		
6	272 43.4 -21 52.0		160 31.5	225 43.9 -23 55.8	201 17.8 -17 17.3		
8	302 43.0 -21 52.8		190 36.4	255 42.5 -23 54.8	231 19.0 -17 16.1		
10	332 42.5 -21 53.5		220 41.4	285 41.1 -23 53.8	261 20.3 -17 14.9		
12	2 42.0 -21 54.3		250 46.3	315 39.7 -23 52.8	291 21.5 -17 13.7		
14	32 41.5 -21 55.0		280 51.2	345 38.3 -23 51.9	321 22.7 -17 12.5		
16	62 41.1 -21 55.8		310 56.1	15 36.9 -23 50.9	351 23.9 -17 11.3		
18	92 40.6 -21 56.5		341 1.1	45 35.6 -23 49.9	21 25.1 -17 10.0		
20	122 40.1 -21 57.3		11 6.0	75 34.2 -23 48.8	51 26.3 -17 8.8		
22	152 39.6 -21 58.0		41 10.9	105 32.8 -23 47.8	81 27.5 -17 7.6		
Δ	-2	-4		-7	5	6	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 36	15 2	0 54	2 40	4 46	2.0	22 8	1.8
55	8 2	15 36	0 44	2 14	5 15	2.0	21 39	1.9
50	7 37	16 1	0 37	1 57	5 36	2.0	21 17	1.9
45	7 18	16 20	0 33	1 45	5 53	2.0	21 1	1.9
40	7 3	16 35	0 30	1 36	6 6	2.0	20 47	2.0
35	6 50	16 48	0 28	1 30	6 18	2.0	20 35	2.0
30	6 38	16 60	0 26	1 25	6 28	2.0	20 25	2.0
20	6 19	17 19	0 24	1 18	6 45	2.0	20 8	2.0
10	6 2	17 37	0 23	1 15	7 0	2.0	19 52	2.0
0	5 46	17 53	0 22	1 14	7 15	2.0	19 38	2.0
10	5 29	18 9	0 23	1 17	7 29	2.0	19 24	2.1
20	5 12	18 27	0 24	1 23	7 44	2.0	19 8	2.1
30	4 51	18 47	0 27	1 34	8 2	2.0	18 51	2.1
35	4 39	18 59	0 29	1 44	8 12	2.0	18 41	2.1
40	4 25	19 13	0 32	1 59	8 23	2.0	18 29	2.1
45	4 9	19 30	0 36	2 23	8 37	2.0	18 15	2.1
50	3 48	19 51	0 43	3 51	8 54	2.0	17 58	2.1
55	3 22	20 18	0 54	:::	9 15	2.0	17 37	2.2
60	2 43	20 57	1 23	:::	9 45	2.0	17 7	2.2
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	164 58.7 118	18 36.6	17	234 19.6 - 5 31.0	173 29.1 -21 34.1			
2	194 .3 118	18 40.0	15	264 23.7 - 5 31.3	203 33.4 -21 34.1			
4	223 1.9 117	18 43.0	13	294 27.8 - 5 31.6	233 37.7 -21 34.2			
6	252 3.4 117	18 45.7	12	324 32.0 - 5 31.9	263 42.0 -21 34.2			
8	281 4.7 117	18 48.0	10	354 36.1 - 5 32.2	293 46.3 -21 34.3			
10	310 6.0 116	18 50.0	8	24 40.3 - 5 32.5	323 50.6 -21 34.4			
12	339 7.3 116	18 51.6	6	54 44.4 - 5 32.8	353 54.9 -21 34.4			
14	8 8.4 115	18 52.9	5	84 48.6 - 5 33.1	23 59.2 -21 34.5			
16	37 9.5 115	18 53.8	3	114 52.7 - 5 33.4	54 3.5 -21 34.5			
18	66 10.6 115	18 54.3	1	144 56.9 - 5 33.7	84 7.8 -21 34.6			
20	95 11.6 115	18 54.5	-1	175 1.0 - 5 34.0	114 12.1 -21 34.7			
22	124 12.5 114	18 54.3	-3	205 5.2 - 5 34.4	144 16.4 -21 34.7			
Δ				21	-2	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	10 59.4	-1.0	16.2	T _m	13 26	2.0	54.4 14.8		
12	10 48.0	T _{m☉}	11 h 49.2 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 57	.1	66	-4.1	♄	8 22	.0	164	-1.4
	16 34	.1	41	.2	♅	12 24	.0	103	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 39.1 -21 58.7		71 15.9	135 31.4 -23 46.8	111 28.8 -17 6.4		
2	212 38.7 -21 59.5		101 20.8	165 30.1 -23 45.8	141 30.0 -17 5.2		
4	242 38.2 -22 .2		131 25.7	195 28.7 -23 44.8	171 31.2 -17 3.9		
6	272 37.7 -22 .9		161 30.6	225 27.4 -23 43.7	201 32.4 -17 2.7		
8	302 37.2 -22 1.7		191 35.6	255 26.0 -23 42.7	231 33.6 -17 1.5		
10	332 36.7 -22 2.4		221 40.5	285 24.6 -23 41.7	261 34.8 -17 .2		
12	2 36.2 -22 3.1		251 45.4	315 23.3 -23 40.6	291 36.1 -16 59.0		
14	32 35.7 -22 3.8		281 50.4	345 21.9 -23 39.6	321 37.3 -16 57.8		
16	62 35.2 -22 4.5		311 55.3	15 20.6 -23 38.5	351 38.5 -16 56.5		
18	92 34.7 -22 5.2		342 .2	45 19.2 -23 37.5	21 39.7 -16 55.3		
20	122 34.3 -22 6.0		12 5.1	75 17.9 -23 36.4	51 41.0 -16 54.1		
22	152 33.8 -22 6.7		42 10.1	105 16.5 -23 35.3	81 42.2 -16 52.8		
Δ	-2	-4		-7	5	6	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 38	15 1	0 55	2 40	5 34	2.4	22 52	1.5
55	8 3	15 36	0 44	2 14	6 3	2.3	22 24	1.6
50	7 38	16 0	0 38	1 57	6 25	2.3	22 3	1.7
45	7 19	16 19	0 33	1 45	6 41	2.2	21 47	1.8
40	7 4	16 35	0 30	1 36	6 55	2.2	21 34	1.8
35	6 51	16 48	0 28	1 30	7 6	2.2	21 23	1.9
30	6 39	16 60	0 26	1 25	7 17	2.2	21 13	1.9
20	6 19	17 20	0 24	1 18	7 34	2.1	20 56	2.0
10	6 2	17 37	0 23	1 15	7 49	2.1	20 41	2.0
0	5 46	17 53	0 22	1 14	8 3	2.1	20 27	2.1
10	5 29	18 10	0 23	1 17	8 18	2.0	20 13	2.1
20	5 12	18 28	0 24	1 23	8 33	2.0	19 58	2.1
30	4 51	18 48	0 27	1 35	8 50	1.9	19 41	2.2
35	4 39	19 0	0 29	1 44	9 1	1.9	19 31	2.2
40	4 25	19 14	0 32	1 59	9 12	1.9	19 20	2.3
45	4 9	19 31	0 36	2 24	9 26	1.9	19 6	2.3
50	3 48	19 52	0 43	:::	9 43	1.8	18 50	2.4
55	3 21	20 19	0 54	:::	10 4	1.7	18 28	2.5
60	2 42	20 59	1 24	:::	10 33	1.6	17 60	2.6
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	153 13.4 114	18 53.7	-5	235 9.3 - 5 34.7	174 20.7 -21 34.8			
2	182 14.2 114	18 52.8	-6	265 13.5 - 5 35.0	204 25.0 -21 34.8			
4	211 15.0 114	18 51.5	-8	295 17.6 - 5 35.3	234 29.3 -21 34.9			
6	240 15.7 113	18 49.9	-10	325 21.7 - 5 35.6	264 33.6 -21 35.0			
8	269 16.4 113	18 47.9	-12	355 25.9 - 5 35.9	294 37.9 -21 35.0			
10	298 17.0 113	18 45.5	-14	25 30.1 - 5 36.2	324 42.2 -21 35.1			
12	327 17.7 113	18 42.8	-16	55 34.2 - 5 36.5	354 46.5 -21 35.1			
14	356 18.3 113	18 39.6	-17	85 38.4 - 5 36.8	24 50.8 -21 35.2			
16	25 18.8 113	18 36.2	-19	115 42.5 - 5 37.1	54 55.1 -21 35.2			
18	54 19.4 113	18 32.3	-21	145 46.7 - 5 37.4	84 59.4 -21 35.3			
20	83 19.9 113	18 28.1	-23	175 50.8 - 5 37.7	115 3.7 -21 35.4			
22	112 20.5 113	18 23.5	-25	205 55.0 - 5 38.0	145 7.9 -21 35.4			
Δ				21	-2	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	10 36.5	-1.0	16.2	T _m	14 15	2.1	54.7 14.9		
12	10 24.8			T _{m☉}	11 h 49.6 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	'	°	
♁	14 59	.1	64	-4.1	♃	8 18	.0	164	-1.4
♂	16 33	.1	40	.2	♄	12 21	.0	103	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 33.3 -22 7.4		72 15.0	135 15.2 -23 34.3	111 43.4 -16 51.6		
2	212 32.8 -22 8.1		102 19.9	165 13.9 -23 33.2	141 44.6 -16 50.4		
4	242 32.3 -22 8.8		132 24.9	195 12.5 -23 32.1	171 45.9 -16 49.1		
6	272 31.8 -22 9.4		162 29.8	225 11.2 -23 31.0	201 47.1 -16 47.9		
8	302 31.3 -22 10.1		192 34.7	255 9.9 -23 29.9	231 48.3 -16 46.7		
10	332 30.8 -22 10.8		222 39.6	285 8.5 -23 28.9	261 49.5 -16 45.4		
12	2 30.3 -22 11.5		252 44.6	315 7.2 -23 27.8	291 50.8 -16 44.2		
14	32 29.8 -22 12.2		282 49.5	345 5.9 -23 26.7	321 52.0 -16 42.9		
16	62 29.3 -22 12.9		312 54.4	15 4.6 -23 25.6	351 53.2 -16 41.7		
18	92 28.8 -22 13.5		342 59.4	45 3.3 -23 24.4	21 54.4 -16 40.4		
20	122 28.3 -22 14.2		13 4.3	75 1.9 -23 23.3	51 55.7 -16 39.2		
22	152 27.8 -22 14.9		43 9.2	105 .6 -23 22.2	81 56.9 -16 37.9		
Δ	-3	-3		-7	5	6	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 40	14 60	0 55	2 41	6 32	2.7	23 27	1.2
55	8 5	15 35	0 44	2 15	6 59	2.6	23 2	1.4
50	7 40	15 60	0 38	1 58	7 19	2.5	22 44	1.5
45	7 21	16 19	0 33	1 45	7 35	2.4	22 30	1.6
40	7 5	16 35	0 30	1 37	7 48	2.3	22 18	1.7
35	6 52	16 48	0 28	1 30	7 59	2.3	22 7	1.7
30	6 40	16 60	0 26	1 25	8 8	2.3	21 58	1.8
20	6 20	17 20	0 24	1 18	8 25	2.2	21 43	1.9
10	6 3	17 37	0 23	1 15	8 39	2.1	21 29	2.0
0	5 46	17 54	0 22	1 14	8 53	2.1	21 16	2.0
10	5 30	18 10	0 23	1 17	9 6	2.0	21 4	2.1
20	5 12	18 28	0 24	1 23	9 21	1.9	20 50	2.2
30	4 51	18 49	0 27	1 35	9 37	1.8	20 34	2.3
35	4 39	19 1	0 29	1 45	9 47	1.8	20 25	2.3
40	4 25	19 15	0 32	1 59	9 57	1.7	20 14	2.4
45	4 8	19 32	0 36	2 25	10 10	1.7	20 2	2.5
50	3 47	19 53	0 43	:::	10 26	1.6	19 47	2.6
55	3 20	20 21	0 55	:::	10 46	1.5	19 27	2.7
60	2 40	21 1	1 26	:::	11 12	1.3	19 1	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	141 21.0 112	18 18.6	-27	235 59.1 - 5 38.3	175 12.2 -21 35.5			
2	170 21.5 112	18 13.3	-28	266 3.3 - 5 38.6	205 16.5 -21 35.5			
4	199 21.9 112	18 7.6	-30	296 7.4 - 5 38.9	235 20.8 -21 35.6			
6	228 22.4 112	18 1.6	-32	326 11.6 - 5 39.2	265 25.1 -21 35.7			
8	257 22.9 112	17 55.2	-34	356 15.8 - 5 39.5	295 29.4 -21 35.7			
10	286 23.4 112	17 48.4	-36	26 19.9 - 5 39.8	325 33.7 -21 35.8			
12	315 23.9 112	17 41.3	-37	56 24.1 - 5 40.1	355 38.0 -21 35.8			
14	344 24.4 112	17 33.8	-39	86 28.2 - 5 40.4	25 42.3 -21 35.9			
16	13 24.9 113	17 26.0	-41	116 32.4 - 5 40.7	55 46.6 -21 35.9			
18	42 25.4 113	17 17.8	-43	146 36.6 - 5 41.0	85 50.9 -21 36.0			
20	71 25.9 113	17 9.3	-44	176 40.7 - 5 41.3	115 55.2 -21 36.1			
22	100 26.4 113	17 .4	-46	206 44.9 - 5 41.6	145 59.5 -21 36.1			
Δ				21	-2	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	10 13.1	-1.0	16.3	T _m	15 5	2.0	55.1 15.0		
12	10 1.0			T _{m☉}	11 h 50.0 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	'	°	
♁	14 60	.1	63	-4.1	♃	8 15	.0	164	-1.4
♂	16 32	.1	39	.2	♄	12 17	.0	103	.6

4. DECEMBAR

2016.

NEDELJA

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 27.3	-22 15.5	73 14.1	134 59.3	-23 21.1	111 58.1	-16 36.7
2	212 26.7	-22 16.2	103 19.1	164 58.0	-23 20.0	141 59.4	-16 35.4
4	242 26.2	-22 16.9	133 24.0	194 56.7	-23 18.8	172 .6	-16 34.2
6	272 25.7	-22 17.5	163 28.9	224 55.4	-23 17.7	202 1.8	-16 32.9
8	302 25.2	-22 18.2	193 33.9	254 54.1	-23 16.6	232 3.1	-16 31.7
10	332 24.7	-22 18.8	223 38.8	284 52.8	-23 15.4	262 4.3	-16 30.4
12	2 24.2	-22 19.5	253 43.7	314 51.5	-23 14.3	292 5.5	-16 29.2
14	32 23.7	-22 20.1	283 48.6	344 50.2	-23 13.1	322 6.8	-16 27.9
16	62 23.2	-22 20.8	313 53.6	14 48.9	-23 12.0	352 8.0	-16 26.7
18	92 22.7	-22 21.4	343 58.5	44 47.7	-23 10.8	22 9.2	-16 25.4
20	122 22.1	-22 22.0	14 3.4	74 46.4	-23 9.6	52 10.5	-16 24.1
22	152 21.6	-22 22.7	44 8.4	104 45.1	-23 8.5	82 11.7	-16 22.9
Δ	-3	-3		-6	6	6	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 41	14 59	0 55	2 41	7 37	3.0	23 55	1.0
55	8 6	15 34	0 44	2 15	8 1	2.8	23 35	1.2
50	7 41	15 60	0 38	1 58	8 19	2.7	23 20	1.3
45	7 22	16 19	0 33	1 46	8 33	2.6	23 8	1.5
40	7 6	16 35	0 30	1 37	8 44	2.5	22 58	1.6
35	6 52	16 48	0 28	1 30	8 54	2.4	22 49	1.6
30	6 41	16 60	0 26	1 25	9 2	2.3	22 41	1.7
20	6 21	17 20	0 24	1 18	9 17	2.2	22 28	1.8
10	6 3	17 38	0 23	1 15	9 30	2.1	22 16	1.9
0	5 47	17 54	0 22	1 14	9 42	2.0	22 5	2.0
10	5 30	18 11	0 23	1 17	9 54	2.0	21 54	2.1
20	5 12	18 29	0 24	1 23	10 7	1.9	21 43	2.2
30	4 51	18 50	0 27	1 35	10 21	1.8	21 29	2.4
35	4 39	19 2	0 29	1 45	10 30	1.7	21 21	2.4
40	4 25	19 16	0 32	1 60	10 39	1.6	21 12	2.5
45	4 8	19 33	0 37	2 26	10 51	1.5	21 1	2.6
50	3 47	19 54	0 43	:::	11 4	1.4	20 49	2.7
55	3 19	20 22	0 55	:::	11 21	1.3	20 32	2.9
60	2 39	21 3	1 27	:::	11 44	1.1	20 11	3.1

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	129 27.0	113	16 51.1	-48	236 49.0	-5 41.9	176 3.8	-21 36.2
2	158 27.5	113	16 41.5	-50	266 53.2	-5 42.2	206 8.1	-21 36.2
4	187 28.1	113	16 31.6	-51	296 57.4	-5 42.5	236 12.4	-21 36.3
6	216 28.7	113	16 21.4	-53	327 1.5	-5 42.8	266 16.7	-21 36.3
8	245 29.3	113	16 10.7	-55	357 5.7	-5 43.1	296 21.0	-21 36.4
10	274 30.0	113	15 59.8	-56	27 9.9	-5 43.4	326 25.3	-21 36.5
12	303 30.6	113	15 48.5	-58	57 14.0	-5 43.7	356 29.6	-21 36.5
14	332 31.3	113	15 36.9	-60	87 18.2	-5 44.0	26 33.9	-21 36.6
16	1 32.0	114	15 25.0	-61	117 22.4	-5 44.3	56 38.2	-21 36.6
18	30 32.7	114	15 12.7	-63	147 26.5	-5 44.6	86 42.5	-21 36.7
20	59 33.5	114	15 .1	-65	177 30.7	-5 44.9	116 46.8	-21 36.8
22	88 34.2	114	14 47.2	-66	207 34.9	-5 45.2	146 51.1	-21 36.8
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	9 49.0	-1.0	16.3	T _m	15 54	2.0	55.5 15.1
12	9 36.7	T _{m☉}	11 h 50.4 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	'	°		
♀	15 1	.1	62	-4.1	♃	8 12	.0	164	-1.4
♂	16 31	.1	39	.2	♄	12 14	.0	103	.6

5. DECEMBAR

PONEDELJAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	182 21.1	-22 23.3	74 13.3	134 43.8	-23 7.3	112 12.9	-16 21.6
2	212 20.6	-22 23.9	104 18.2	164 42.5	-23 6.1	142 14.2	-16 20.4
4	242 20.1	-22 24.6	134 23.1	194 41.3	-23 4.9	172 15.4	-16 19.1
6	272 19.5	-22 25.2	164 28.1	224 40.0	-23 3.7	202 16.7	-16 17.8
8	302 19.0	-22 25.8	194 33.0	254 38.7	-23 2.5	232 17.9	-16 16.6
10	332 18.5	-22 26.4	224 37.9	284 37.5	-23 1.3	262 19.1	-16 15.3
12	2 18.0	-22 27.0	254 42.8	314 36.2	-23 .1	292 20.4	-16 14.0
14	32 17.4	-22 27.6	284 47.8	344 35.0	-22 58.9	322 21.6	-16 12.8
16	62 16.9	-22 28.2	314 52.7	14 33.7	-22 57.7	352 22.9	-16 11.5
18	92 16.4	-22 28.8	344 57.6	44 32.5	-22 56.5	22 24.1	-16 10.2
20	122 15.9	-22 29.4	15 2.6	74 31.2	-22 55.3	52 25.4	-16 8.9
22	152 15.3	-22 30.0	45 7.5	104 30.0	-22 54.1	82 26.6	-16 7.7
Δ	-3	-3		-6	6	6	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 43	14 58	0 55	2 42	8 50	3.2	.. .	.0
55	8 8	15 34	0 44	2 15	9 8	3.0	.. .	.0
50	7 42	15 59	0 38	1 58	9 23	2.8	23 52	1.2
45	7 23	16 19	0 33	1 46	9 34	2.7	23 43	1.4
40	7 7	16 35	0 30	1 37	9 43	2.6	23 35	1.5
35	6 53	16 48	0 28	1 30	9 51	2.5	23 28	1.6
30	6 42	16 60	0 26	1 25	9 58	2.4	23 22	1.6
20	6 21	17 20	0 24	1 18	10 10	2.3	23 12	1.8
10	6 4	17 38	0 23	1 15	10 21	2.1	23 3	1.9
0	5 47	17 55	0 22	1 15	10 31	2.0	22 54	2.0
10	5 30	18 11	0 23	1 17	10 41	1.9	22 46	2.2
20	5 12	18 29	0 24	1 23	10 51	1.8	22 36	2.3
30	4 51	18 51	0 27	1 35	11 3	1.7	22 26	2.4
35	4 39	19 3	0 29	1 45	11 10	1.6	22 20	2.5
40	4 25	19 17	0 32	2 0	11 18	1.5	22 12	2.6
45	4 8	19 34	0 37	2 27	11 27	1.4	22 4	2.7
50	3 46	19 56	0 43	:::	11 38	1.3	21 54	2.9
55	3 18	20 24	0 55	:::	11 52	1.1	21 42	3.0
60	2 38	21 5	1 29	:::	12 10	.9	21 25	3.3

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	117 35.0	114	14 34.0	-68	237 39.0	-5 45.5	176 55.4	-21 36.9
2	146 35.8	114	14 20.4	-69	267 43.2	-5 45.8	206 59.7	-21 36.9
4	175 36.6	114	14 6.6	-71	297 47.4	-5 46.1	237 4.0	-21 37.0
6	204 37.5	114	13 52.4	-72	327 51.6	-5 46.4	267 8.3	-21 37.0
8	233 38.3	114	13 38.0	-74	357 55.7	-5 46.7	297 12.6	-21 37.1
10	262 39.2	114	13 23.2	-75	27 59.9	-5 47.0	327 16.9	-21 37.2
12	291 40.1	115	13 8.2	-77	58 4.1	-5 47.3	357 21.2	-21 37.2
14	320 41.0	115	12 52.8	-78	88 8.3	-5 47.6	27 25.5	-21 37.3
16	349 41.9	115	12 37.2	-80	118 12.4	-5 47.9	57 29.8	-21 37.3
18	18 42.8	115	12 21.3	-81	148 16.6	-5 48.2	87 34.1	-21 37.4
20	47 43.8	115	12 5.1	-82	178 20.8	-5 48.5	117 38.4	-21 37.4
22	76 44.7	115	11 48.6	-84	208 25.0	-5 48.7	147 42.7	-21 37.5
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	9 24.4	-1.0	16.3	T _m	16 43	2.0	56.1 15.3
12	9 11.8	T _{m☉}	11 h 50.8 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	'	°		
♀	15 2	.1	61	-4.1	♃	8 8	.0	163	-1.4
♂	16 30	.1	38	.3	♄	12 11	.0	103	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	182	14.8	-22	30.6	75	12.4	134	28.7	-22	52.9	112	27.8	-16	6.4	
2	212	14.3	-22	31.2	105	17.3	164	27.5	-22	51.6	142	29.1	-16	5.1	
4	242	13.8	-22	31.8	135	22.3	194	26.2	-22	50.4	172	30.3	-16	3.8	
6	272	13.2	-22	32.4	165	27.2	224	25.0	-22	49.2	202	31.6	-16	2.6	
8	302	12.7	-22	33.0	195	32.1	254	23.8	-22	47.9	232	32.8	-16	1.3	
10	332	12.2	-22	33.5	225	37.1	284	22.5	-22	46.7	262	34.1	-16	0	
12	2	11.6	-22	34.1	255	42.0	314	21.3	-22	45.4	292	35.3	-15	58.7	
14	32	11.1	-22	34.7	285	46.9	344	20.1	-22	44.2	322	36.6	-15	57.4	
16	62	10.6	-22	35.3	315	51.8	14	18.9	-22	42.9	352	37.8	-15	56.2	
18	92	10.0	-22	35.8	345	56.8	44	17.7	-22	41.6	22	39.1	-15	54.9	
20	122	9.5	-22	36.4	16	1.7	74	16.4	-22	40.4	52	40.3	-15	53.6	
22	152	8.9	-22	36.9	46	6.6	104	15.2	-22	39.1	82	41.6	-15	52.3	
Δ		-3		-3				-6		6			6		6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	105	45.6	115	11	31.9	-85	238	29.1	-5	49.0	177	46.9	-21	37.5		
2	134	46.6	115	11	14.9	-86	268	33.3	-5	49.3	207	51.2	-21	37.6		
4	163	47.5	115	10	57.6	-88	298	37.5	-5	49.6	237	55.5	-21	37.7		
6	192	48.4	115	10	40.1	-89	328	41.7	-5	49.9	267	59.8	-21	37.7		
8	221	49.4	115	10	22.3	-90	358	45.9	-5	50.2	298	4.1	-21	37.8		
10	250	50.3	114	10	4.3	-91	28	50.0	-5	50.5	328	8.4	-21	37.8		
12	279	51.1	114	9	46.0	-93	58	54.2	-5	50.8	358	12.7	-21	37.9		
14	308	52.0	114	9	27.5	-94	88	58.4	-5	51.1	28	17.0	-21	37.9		
16	337	52.9	114	9	8.8	-95	119	2.6	-5	51.4	58	21.3	-21	38.0		
18	6	53.7	114	8	49.8	-96	149	6.8	-5	51.7	88	25.6	-21	38.1		
20	35	54.5	114	8	30.6	-97	179	11.0	-5	51.9	118	29.9	-21	38.1		
22	64	55.2	114	8	11.2	-98	209	15.2	-5	52.2	148	34.2	-21	38.2		
Δ								21		-1			21		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 45	14 57	0 56	2 42	10 6	3.3	0 19	.8
55	8 9	15 33	0 45	2 16	10 20	3.1	0 4	1.1
50	7 43	15 59	0 38	1 58	10 30	2.9	...	.0
45	7 24	16 19	0 33	1 46	10 38	2.8	...	.0
40	7 8	16 35	0 30	1 37	10 45	2.7	...	.0
35	6 54	16 48	0 28	1 30	10 51	2.6	...	.0
30	6 42	16 60	0 26	1 25	10 56	2.5	...	.0
20	6 22	17 20	0 24	1 18	11 5	2.3	23 55	1.8
10	6 4	17 38	0 23	1 15	11 12	2.2	23 49	1.9
0	5 48	17 55	0 22	1 15	11 20	2.0	23 43	2.1
10	5 31	18 12	0 23	1 17	11 27	1.9	23 37	2.2
20	5 12	18 30	0 24	1 23	11 35	1.8	23 31	2.3
30	4 51	18 51	0 27	1 35	11 44	1.6	23 24	2.5
35	4 39	19 4	0 29	1 45	11 49	1.5	23 20	2.6
40	4 25	19 18	0 32	2 1	11 54	1.4	23 15	2.7
45	4 7	19 35	0 37	2 27	12 1	1.3	23 10	2.8
50	3 46	19 57	0 44	:::	12 9	1.2	23 3	3.0
55	3 18	20 25	0 56	:::	12 19	1.0	22 55	3.2
60	2 37	21 7	1 31	:::	12 31	.8	22 44	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	8 59.3	-1.1	16.3	T _m	17 31	2.1	56.8	15.5	
12	8 46.4	T _{m☉}	11 h 51.2 min	Starost	6.5 d	Faza	☉		
PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°	59	♃	h min	'	°	163
♂	15 3	.1	37	-4.1	♄	8 5	.0	103	-1.4
	16 29	.1	37	.3	♅	12 7	.0	103	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	182	8.4	-22	37.5	76	11.6	134	14.0	-22	37.8	112	42.8	-15	51.0	
2	212	7.9	-22	38.1	106	16.5	164	12.8	-22	36.6	142	44.1	-15	49.7	
4	242	7.3	-22	38.6	136	21.4	194	11.6	-22	35.3	172	45.3	-15	48.4	
6	272	6.8	-22	39.2	166	26.3	224	10.4	-22	34.0	202	46.6	-15	47.2	
8	302	6.2	-22	39.7	196	31.3	254	9.2	-22	32.7	232	47.8	-15	45.9	
10	332	5.7	-22	40.2	226	36.2	284	8.0	-22	31.4	262	49.1	-15	44.6	
12	2	5.2	-22	40.8	256	41.1	314	6.8	-22	30.1	292	50.4	-15	43.3	
14	32	4.6	-22	41.3	286	46.1	344	5.6	-22	28.8	322	51.6	-15	42.0	
16	62	4.1	-22	41.8	316	51.0	14	4.4	-22	27.5	352	52.9	-15	40.7	
18	92	3.5	-22	42.4	346	55.9	44	3.3	-22	26.2	22	54.1	-15	39.4	
20	122	3.0	-22	42.9	17	.8	74	2.1	-22	24.9	52	55.4	-15	38.1	
22	152	2.4	-22	43.4	47	5.8	104	.9	-22	23.5	82	56.6	-15	36.8	
Δ		-3		-3				-6		7			6		6

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	93	55.9	113	7	51.6	-99	239	19.3	-5	52.5	178	38.5	-21	38.2		
2	122	56.6	113	7	31.7	-100	269	23.5	-5	52.8	208	42.8	-21	38.3		
4	151	57.2	113	7	11.7	-101	299	27.7	-5	53.1	238	47.1	-21	38.3		
6	180	57.8	113	6	51.5	-102	329	31.9	-5	53.4	268	51.4	-21	38.4		
8	209	58.3	112	6	31.0	-103	359	36.1	-5	53.7	298	55.7	-21	38.4		
10	238	58.8	112	6	10.4	-104	29	40.3	-5	54.0	328	60.0	-21	38.5		
12	267	59.2	112	5	49.7	-105	59	44.5	-5	54.2	359	4.3	-21	38.6		
14	296	59.5	111	5	28.7	-106	89	48.7	-5	54.5	29	8.6	-21	38.6		
16	325	59.7	111	5	7.6	-106	119	52.9	-5	54.8	59	12.9	-21	38.7		
18	354	59.9	110	4	46.3	-107	149	57.0	-5	55.1	89	17.2	-21	38.7		
20	24	.0	110	4	24.9	-108	180	1.2	-5	55.4	119	21.5	-21	38.8		
22	52	59.9	109	4	3.3	-109	210	5.4	-5	55.7	149	25.8	-21	38.8		
Δ								21		-1			21		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 47	14 56	0 56	2 43	11 27	3.5	0 39	.8
55	8 10	15 33	0 45	2 16	11 34	3.2	0 29	1.0
50	7 45	15 59	0 38	1 58	11 40	3.0	0 22	1.2
45	7 25	16 18	0 33	1 46	11 45	2.9	0 16	1.3
40	7 9	16 35	0 30	1 37	11 49	2.7	0 10	1.4
35	6 55	16 48	0 28	1 30	11 52	2.6	0 6	1.5
30	6 43	17 0	0 26	1 25	11 55	2.5	0 2	1.6
20	6 23	17 21	0 24	1 18	12 0	2.4	...	.0
10	6 5	17 39	0 23	1 15	12 5	2.2	...	.0
0	5 48	17 55	0 22	1 15	12 9	2.1	...	.0
10	5 31	18 12	0 23	1 17	12 13	1.9	...	.0
20	5 13	18 31	0 24	1 23	12 18	1.8	...	.0
30	4 51	18 52	0 27	1 36	12 23	1.6	...	.0
35	4 39	19 5	0 29	1 46	12 26	1.5	...	.0
40	4 24	19 19	0 32	2 1	12 29	1.4	...	.0
45	4 7	19 36	0 37	2 28	12 33	1.3	...	.0
50	3 46	19 58	0 44	:::	12 38	1.2	...	.0
55	3 17	20 27	0 56	:::	12 43	1.0	...	.0
60	2 36	21 9	1 32	:::	12 50	.7	...	.0
S								

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	182	1.9	-22	43.9	77	10.7	133	59.7	-22	22.2	112	57.9	-15	35.5	
2	212	1.3	-22	44.5	107	15.6	163	58.6	-22	20.9	142	59.2	-15	34.2	
4	242	.8	-22	45.0	137	20.6	193	57.4	-22	19.6	173	.4	-15	32.9	
6	272	.2	-22	45.5	167	25.5	223	56.2	-22	18.2	203	1.7	-15	31.6	
8	301	59.7	-22	46.0	197	30.4	253	55.1	-22	16.9	233	2.9	-15	30.3	
10	331	59.1	-22	46.5	227	35.3	283	53.9	-22	15.5	263	4.2	-15	29.0	
12	1	58.6	-22	47.0	257	40.3	313	52.7	-22	14.2	293	5.5	-15	27.7	
14	31	58.0	-22	47.5	287	45.2	343	51.6	-22	12.8	323	6.7	-15	26.4	
16	61	57.5	-22	48.0	317	50.1	373	50.4	-22	11.5	353	8.0	-15	25.1	
18	91	56.9	-22	48.5	347	55.0	403	49.3	-22	10.1	23	9.3	-15	23.8	
20	121	56.4	-22	49.0	18	.0	73	48.1	-22	8.8	53	10.5	-15	22.5	
22	151	55.8	-22	49.5	48	4.9	103	47.0	-22	7.4	83	11.8	-15	21.2	
Δ		-3		-2				-6		7			6		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	12 50	1.5	0 58	1.4
55	8 12	15 32	0 45	2 16	12 51	1.6	0 54	1.5
50	7 46	15 58	0 38	1 59	12 53	1.7	0 50	1.6
45	7 26	16 18	0 34	1 46	12 54	1.8	0 47	1.7
40	7 9	16 35	0 30	1 37	12 54	1.8	0 45	1.7
35	6 56	16 48	0 28	1 30	12 55	1.9	0 43	1.8
30	6 44	17 0	0 26	1 25	12 56	1.9	0 41	1.8
20	6 23	17 21	0 24	1 18	12 57	2.0	0 38	1.9
10	6 5	17 39	0 23	1 15	12 58	2.1	0 35	2.0
0	5 48	17 56	0 22	1 15	12 59	2.1	0 33	2.1
10	5 31	18 13	0 23	1 17	12 60	2.2	0 30	2.2
20	5 13	18 31	0 24	1 24	13 1	2.3	0 27	2.3
30	4 52	18 53	0 27	1 36	13 2	2.4	0 24	2.4
35	4 39	19 5	0 29	1 46	13 3	2.4	0 22	2.4
40	4 24	19 20	0 33	2 1	13 3	2.5	0 20	2.5
45	4 7	19 37	0 37	2 29	13 4	2.5	0 17	2.6
50	3 45	19 59	0 44	:::	13 5	2.6	0 14	2.7
55	3 17	20 28	0 56	:::	13 7	2.7	0 10	2.8
60	2 35	21 10	1 34	:::	13 8	2.8	0 6	2.9
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	81	59.8	109	3	41.6	-109	240	9.6	-5	56.0	179	30.0	-21	38.9		
2	110	59.6	108	3	19.8	-110	270	13.8	-5	56.2	209	34.3	-21	38.9		
4	139	59.3	108	2	57.8	-110	300	18.0	-5	56.5	239	38.6	-21	39.0		
6	168	58.8	107	2	35.7	-111	330	22.2	-5	56.8	269	42.9	-21	39.1		
8	197	58.3	107	2	13.5	-111	0	26.4	-5	57.1	299	47.2	-21	39.1		
10	226	57.6	106	1	51.2	-112	30	30.6	-5	57.4	329	51.5	-21	39.2		
12	255	56.7	105	1	28.8	-112	60	34.8	-5	57.7	359	55.8	-21	39.2		
14	284	55.8	104	1	6.3	-113	90	39.0	-5	57.9	30	.1	-21	39.3		
16	313	54.7	104	0	43.8	-113	120	43.2	-5	58.2	60	4.4	-21	39.3		
18	342	53.4	103	0	21.1	-98	150	47.4	-5	58.5	90	8.7	-21	39.4		
20	11	52.0	102	0	1.5	114	180	51.6	-5	58.8	120	13.0	-21	39.4		
22	40	50.5	101	0	24.3	114	210	55.8	-5	59.1	150	17.3	-21	39.5		
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	8 7 5	-1.1	16.3	T _m	19 11	2.2	58.3	15.9	
12	7 54.2	T _{m☉}	11 h 52.1 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	'	°	°
♁	15 5	.1	57	-4.2	♃	7 58	.0	163	-1.4
♂	16 27	.1	36	.3	♄	12 0	.0	102	.6

9. DECEMBAR

PETAK

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	181	55.2	-22	49.9	78	9.8	133	45.9	-22	6.0	113	13.1	-15	19.9	
2	211	54.7	-22	50.4	108	14.8	163	44.7	-22	4.6	143	14.3	-15	18.6	
4	241	54.1	-22	50.9	138	19.7	193	43.6	-22	3.3	173	15.6	-15	17.2	
6	271	53.6	-22	51.4	168	24.6	223	42.5	-22	1.9	203	16.9	-15	15.9	
8	301	53.0	-22	51.8	198	29.5	253	41.3	-22	.5	233	18.1	-15	14.6	
10	331	52.4	-22	52.3	228	34.5	283	40.2	-21	59.1	263	19.4	-15	13.3	
12	1	51.9	-22	52.8	258	39.4	313	39.1	-21	57.7	293	20.7	-15	12.0	
14	31	51.3	-22	53.2	288	44.3	343	38.0	-21	56.3	323	21.9	-15	10.7	
16	61	50.8	-22	53.7	318	49.3	373	36.9	-21	54.9	353	23.2	-15	9.4	
18	91	50.2	-22	54.1	348	54.2	403	35.8	-21	53.5	23	24.5	-15	8.0	
20	121	49.6	-22	54.6	18	59.1	73	34.7	-21	52.1	53	25.8	-15	6.7	
22	151	49.1	-22	55.0	49	4.0	103	33.5	-21	50.7	83	27.0	-15	5.4	
Δ		-3		-2				-6		7			6		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 50	14 55	0 56	2 44	13 27	.8	1 30	3.6
55	8 13	15 32	0 45	2 16	13 31	1.1	1 29	3.4
50	7 47	15 58	0 38	1 59	13 34	1.3	1 28	3.2
45	7 27	16 18	0 34	1 46	13 36	1.4	1 27	3.0
40	7 10	16 35	0 30	1 37	13 39	1.6	1 27	2.9
35	6 57	16 48	0 28	1 30	13 40	1.7	1 26	2.8
30	6 44	17 0	0 26	1 25	13 42	1.8	1 25	2.7
20	6 24	17 21	0 24	1 18	13 45	1.9	1 25	2.5
10	6 6	17 39	0 23	1 15	13 48	2.1	1 24	2.3
0	5 49	17 56	0 22	1 15	13 50	2.2	1 23	2.2
10	5 32	18 13	0 23	1 17	13 53	2.4	1 22	2.0
20	5 13	18 32	0 24	1 24	13 55	2.5	1 21	1.9
30	4 52	18 53	0 27	1 36	13 59	2.7	1 20	1.7
35	4 39	19 6	0 30	1 46	14 0	2.8	1 20	1.6
40	4 25	19 21	0 33	2 2	14 2	2.9	1 19	1.5
45	4 7	19 38	0 37	2 30	14 5	3.1	1 19	1.4
50	3 45	20 0	0 44	:::	14 8	3.2	1 18	1.2
55	3 16	20 29	0 57	:::	14 11	3.4	1 17	1.0
60	2 34	21 12	1 35	:::	14 16	3.7	1 15	.8
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	69	48.7	100	0	47.1	114	241	.0	-5	59.4	180	21.6	-21	39.6		
2	98	46.8	100	1	9.9	114	271	4.2	-5	59.6	210	25.9	-21	39.6		
4	127	44.7	99	1	32.8	114	301	8.4	-5	59.9	240	30.2	-21	39.7		
6	156	42.5	98	1	55.7	114	331	12.6	-6	.2	270	34.5	-21	39.7		
8	185	40.0	97	2	18.6	114	1	16.8	-6	.5	300	38.8	-21	39.8		
10	214	37.4	96	2	41.5	114	31	21.0	-6	.8	330	43.1	-21	39.8		
12	243	34.5	95	3	4.3	114	61	25.2	-6	1.0	0	47.4	-21	39.9		
14	272	31.5	94	3	27.2	114	91	29.4	-6	1.3	30	51.7	-21	39.9		
16	301	28.2	93	3	50.0	114	121	33.7	-6	1.6	60	56.0	-21	40.0		
18	330	24.8	92	4	12.8	114	151	37.9	-6	1.9	91	.2	-21	40.0		
20	359	21.1	90	4	35.6	113	181	42.1	-6	2.1	121	4.5	-21	40.1		
22	28	17.2	89	4	58.3	113	211	46.3	-6	2.4	151	8.8	-21	40.1		
Δ								21		-1			21		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	181 48.5 -22 55.5		79 9.0	133 32.4 -21 49.3	113 28.3 -15 4.1		
2	211 47.9 -22 55.9		109 13.9	163 31.3 -21 47.8	143 29.6 -15 2.8		
4	241 47.4 -22 56.4		139 18.8	193 30.3 -21 46.4	173 30.9 -15 1.4		
6	271 46.8 -22 56.8		169 23.8	223 29.2 -21 45.0	203 32.1 -15 .1		
8	301 46.2 -22 57.2		199 28.7	253 28.1 -21 43.5	233 33.4 -14 58.8		
10	331 45.7 -22 57.6		229 33.6	283 27.0 -21 42.1	263 34.7 -14 57.5		
12	1 45.1 -22 58.1		259 38.5	313 25.9 -21 40.7	293 36.0 -14 56.1		
14	31 44.5 -22 58.5		289 43.5	343 24.8 -21 39.2	323 37.2 -14 54.8		
16	61 43.9 -22 58.9		319 48.4	13 23.7 -21 37.8	353 38.5 -14 53.5		
18	91 43.4 -22 59.3		349 53.3	43 22.7 -21 36.3	23 39.8 -14 52.2		
20	121 42.8 -22 59.7		19 58.3	73 21.6 -21 34.9	53 41.1 -14 50.8		
22	151 42.2 -23 .2		50 3.2	103 20.5 -21 33.4	83 42.4 -14 49.5		
Δ	-3	-2		-5	7	6	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 54	0 57	2 44	13 47	1.0	2 58	3.7
55	8 14	15 32	0 45	2 17	13 57	1.2	2 50	3.5
50	7 48	15 58	0 38	1 59	14 4	1.4	2 44	3.3
45	7 28	16 18	0 34	1 46	14 11	1.6	2 40	3.1
40	7 11	16 35	0 30	1 37	14 16	1.7	2 36	3.0
35	6 57	16 49	0 28	1 30	14 20	1.8	2 32	2.8
30	6 45	17 1	0 26	1 25	14 25	1.9	2 29	2.7
20	6 24	17 21	0 24	1 18	14 32	2.1	2 24	2.6
10	6 6	17 40	0 23	1 15	14 38	2.2	2 20	2.4
0	5 49	17 57	0 22	1 15	14 44	2.3	2 15	2.3
10	5 32	18 14	0 23	1 17	14 50	2.5	2 11	2.1
20	5 14	18 33	0 24	1 24	14 56	2.6	2 7	2.0
30	4 52	18 54	0 27	1 36	15 4	2.8	2 1	1.8
35	4 39	19 7	0 30	1 46	15 8	2.9	1 59	1.7
40	4 25	19 22	0 33	2 2	15 13	3.0	1 55	1.6
45	4 7	19 39	0 37	2 30	15 18	3.1	1 51	1.5
50	3 45	20 1	0 44	:::	15 25	3.3	1 47	1.3
55	3 16	20 30	0 57	:::	15 34	3.5	1 41	1.1
60	2 33	21 13	1 37	:::	15 45	3.8	1 34	.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	57 13.0 88	5 20.9 113			241 50.5 -6 2.7	181 13.1 -21 40.2		
2	86 8.6 87	5 43.5 112			271 54.7 -6 3.0	211 17.4 -21 40.3		
4	115 4.0 86	6 5.9 112			301 58.9 -6 3.3	241 21.7 -21 40.3		
6	143 59.2 84	6 28.3 111			332 3.1 -6 3.5	271 26.0 -21 40.4		
8	172 54.1 83	6 50.5 111			2 7.3 -6 3.8	301 30.3 -21 40.4		
10	201 48.7 82	7 12.6 110			32 11.6 -6 4.1	331 34.6 -21 40.5		
12	230 43.1 81	7 34.6 109			62 15.8 -6 4.4	1 38.9 -21 40.5		
14	259 37.2 79	7 56.4 108			92 20.0 -6 4.6	31 43.2 -21 40.6		
16	288 31.1 78	8 18.1 107			122 24.2 -6 4.9	61 47.5 -21 40.6		
18	317 24.7 77	8 39.6 107			152 28.4 -6 5.2	91 51.8 -21 40.7		
20	346 18.1 75	9 .9 106			182 32.6 -6 5.5	121 56.1 -21 40.7		
22	15 11.2 74	9 22.1 105			212 36.9 -6 5.7	152 .4 -21 40.8		
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	7 14.0	-1.1 16.3	T _m	20 57	2.4	59.9	16.3		
12	7 .3	T _{m☉} 11 h 53.0 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 / ' / "	.	°	
♁	15 6	.1	54	-4.2	♃	7 52	.0	163	-1.4
♂	16 25	.1	34	.3	♄	11 53	.0	102	.6

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 41.7 -23 .6		80 8.1	133 19.5 -21 31.9	113 43.6 -14 48.2		
2	211 41.1 -23 1.0		110 13.0	163 18.4 -21 30.5	143 44.9 -14 46.8		
4	241 40.5 -23 1.4		140 18.0	193 17.3 -21 29.0	173 46.2 -14 45.5		
6	271 39.9 -23 1.8		170 22.9	223 16.3 -21 27.5	203 47.5 -14 44.2		
8	301 39.4 -23 2.2		200 27.8	253 15.2 -21 26.0	233 48.8 -14 42.8		
10	331 38.8 -23 2.5		230 32.8	283 14.2 -21 24.5	263 50.1 -14 41.5		
12	1 38.2 -23 2.9		260 37.7	313 13.1 -21 23.1	293 51.4 -14 40.2		
14	31 37.6 -23 3.3		290 42.6	343 12.1 -21 21.6	323 52.6 -14 38.8		
16	61 37.0 -23 3.7		320 47.5	13 11.1 -21 20.1	353 53.9 -14 37.5		
18	91 36.5 -23 4.1		350 52.5	43 10.0 -21 18.6	23 55.2 -14 36.1		
20	121 35.9 -23 4.5		20 57.4	73 9.0 -21 17.1	53 56.5 -14 34.8		
22	151 35.3 -23 4.8		51 2.3	103 8.0 -21 15.6	83 57.8 -14 33.5		
Δ	-3	-2		-5	7	6	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 44	14 10	1.3	4 27	3.7
55	8 15	15 32	0 45	2 17	14 26	1.5	4 13	3.5
50	7 49	15 58	0 38	1 59	14 39	1.7	4 2	3.3
45	7 28	16 18	0 34	1 46	14 49	1.8	3 54	3.1
40	7 12	16 35	0 30	1 37	14 57	1.9	3 47	3.0
35	6 58	16 49	0 28	1 30	15 4	2.0	3 41	2.9
30	6 46	17 1	0 26	1 25	15 10	2.1	3 35	2.8
20	6 25	17 22	0 24	1 19	15 21	2.2	3 26	2.7
10	6 7	17 40	0 23	1 15	15 31	2.4	3 18	2.5
0	5 50	17 57	0 22	1 15	15 40	2.5	3 10	2.4
10	5 32	18 14	0 23	1 17	15 49	2.6	3 3	2.3
20	5 14	18 33	0 24	1 24	15 59	2.7	2 55	2.1
30	4 52	18 55	0 27	1 36	16 11	2.8	2 45	2.0
35	4 39	19 8	0 30	1 46	16 17	2.9	2 40	1.9
40	4 25	19 22	0 33	2 2	16 25	3.0	2 34	1.8
45	4 7	19 40	0 37	2 31	16 33	3.1	2 27	1.7
50	3 45	20 2	0 44	:::	16 44	3.3	2 19	1.5
55	3 16	20 32	0 57	:::	16 58	3.4	2 9	1.3
60	2 33	21 15	1 38	:::	17 15	3.7	1 55	1.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	44 4.0 73	9 43.0 104			242 41.1 -6 6.0	182 4.7 -21 40.8		
2	72 56.5 71	10 3.7 102			272 45.3 -6 6.3	212 9.0 -21 40.9		
4	101 48.8 70	10 24.2 101			302 49.5 -6 6.5	242 13.3 -21 40.9		
6	130 40.8 69	10 44.4 100			332 53.7 -6 6.8	272 17.6 -21 41.0		
8	159 32.6 67	11 4.4 99			2 58.0 -6 7.1	302 21.9 -21 41.1		
10	188 24.0 66	11 24.2 97			33 2.2 -6 7.4	332 26.2 -21 41.1		
12	217 15.2 65	11 43.6 96			63 6.4 -6 7.6	2 30.4 -21 41.2		
14	246 6.2 63	12 2.8 94			93 10.6 -6 7.9	32 34.7 -21 41.2		
16	274 56.8 62	12 21.6 93			123 14.8 -6 8.2	62 39.0 -21 41.3		
18	303 47.2 61	12 40.2 91			153 19.1 -6 8.4	92 43.3 -21 41.3		
20	332 37.3 59	12 58.4 89			183 23.3 -6 8.7	122 47.6 -21 41.4		
22	1 27.2 58	13 16.3 88			213 27.5 -6 9.0	152 51.9 -21 41.4		
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	6 46.6	-1.2 16.3	T _m	21 54	2.5	60.6	16.5		
12	6 32.8	T _{m☉} 11 h 53.5 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 / ' / "	.	°	
♁	15 7	.1	53	-4.2	♃	7 48	.0	163	-1.4
♂	16 24	.1	34	.3	♄	11 50	.0	102	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	181	34.7	-23	5.2	81	7.3	133	6.9	-21	14.1	113	59.1	-14	32.1	
2	211	34.1	-23	5.6	111	12.2	163	5.9	-21	12.5	144	.4	-14	30.8	
4	241	33.6	-23	5.9	141	17.1	193	4.9	-21	11.0	174	1.7	-14	29.4	
6	271	33.0	-23	6.3	171	22.0	223	3.9	-21	9.5	204	2.9	-14	28.1	
8	301	32.4	-23	6.6	201	27.0	253	2.9	-21	8.0	234	4.2	-14	26.7	
10	331	31.8	-23	7.0	231	31.9	283	1.9	-21	6.5	264	5.5	-14	25.4	
12	1	31.2	-23	7.3	261	36.8	313	.8	-21	4.9	294	6.8	-14	24.0	
14	31	30.6	-23	7.7	291	41.7	342	59.8	-21	3.4	324	8.1	-14	22.7	
16	61	30.1	-23	8.0	321	46.7	12	58.8	-21	1.8	354	9.4	-14	21.3	
18	91	29.5	-23	8.4	351	51.6	42	57.8	-21	.3	24	10.7	-14	20.0	
20	121	28.9	-23	8.7	21	56.5	72	56.9	-20	58.8	54	12.0	-14	18.6	
22	151	28.3	-23	9.0	52	1.5	102	55.9	-20	57.2	84	13.3	-14	17.3	
Δ		-3		-2				-5		8			6		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 54	14 54	0 57	2 45	14 40	1.6	5 57	3.6
55	8 16	15 31	0 45	2 17	15 2	1.8	5 37	3.4
50	7 50	15 58	0 38	1 59	15 19	2.0	5 21	3.2
45	7 29	16 18	0 34	1 47	15 32	2.1	5 9	3.1
40	7 13	16 35	0 30	1 37	15 43	2.2	4 59	3.0
35	6 59	16 49	0 28	1 31	15 52	2.2	4 50	2.9
30	6 47	17 1	0 26	1 25	16 1	2.3	4 43	2.8
20	6 26	17 22	0 24	1 19	16 15	2.4	4 30	2.7
10	6 7	17 40	0 23	1 15	16 27	2.5	4 19	2.6
0	5 50	17 58	0 22	1 15	16 39	2.6	4 8	2.5
10	5 33	18 15	0 23	1 18	16 51	2.6	3 57	2.4
20	5 14	18 34	0 25	1 24	17 4	2.7	3 46	2.3
30	4 52	18 56	0 27	1 36	17 19	2.8	3 33	2.2
35	4 40	19 8	0 30	1 47	17 27	2.9	3 26	2.1
40	4 25	19 23	0 33	2 2	17 37	2.9	3 17	2.0
45	4 7	19 41	0 37	2 31	17 49	3.0	3 7	1.9
50	3 45	20 3	0 44	:::	18 3	3.1	2 56	1.8
55	3 16	20 33	0 57	:::	18 20	3.2	2 41	1.6
60	2 32	21 16	1 40	:::	18 44	3.4	2 22	1.4
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	30	16.8	57	13	33.8	86	243	31.8	-6	9.3	182	56.2	-21	41.5	
2	59	6.2	56	13	51.0	84	273	36.0	-6	9.5	213	.5	-21	41.5	
4	87	55.3	54	14	7.8	82	303	40.2	-6	9.8	243	4.8	-21	41.6	
6	116	44.1	53	14	24.2	80	333	44.4	-6	10.1	273	9.1	-21	41.6	
8	145	32.7	52	14	40.3	78	3	48.7	-6	10.3	303	13.4	-21	41.7	
10	174	21.1	51	14	55.9	76	33	52.9	-6	10.6	333	17.7	-21	41.7	
12	203	9.3	50	15	11.1	74	63	57.1	-6	10.9	3	22.0	-21	41.8	
14	231	57.2	49	15	25.9	72	94	1.4	-6	11.1	33	26.3	-21	41.8	
16	260	44.9	48	15	40.2	70	124	5.6	-6	11.4	63	30.6	-21	41.9	
18	289	32.5	47	15	54.1	67	154	9.8	-6	11.7	93	34.9	-21	42.0	
20	318	19.8	46	16	7.6	65	184	14.1	-6	11.9	123	39.2	-21	42.0	
22	347	6.9	45	16	20.6	63	214	18.3	-6	12.2	153	43.5	-21	42.1	
Δ								21		-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	6 18.9	-1.2	16.3	T _m	22 54	2.5	61.0	16.6	
12	6 4.9	T _{m☉}	11 h 53.9 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	'	°	°
♂	15 8	.1	52	-4.2	♃	7 45	.0	162	-1.4
♂	16 23	.1	33	.3	♄	11 47	.0	102	.6

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	181	27.7	-23	9.4	82	6.4	132	54.9	-20	55.7	114	14.6	-14	15.9	
2	211	27.1	-23	9.7	112	11.3	162	53.9	-20	54.1	144	15.9	-14	14.6	
4	241	26.5	-23	10.0	142	16.2	192	52.9	-20	52.5	174	17.2	-14	13.2	
6	271	25.9	-23	10.3	172	21.2	222	51.9	-20	51.0	204	18.5	-14	11.9	
8	301	25.3	-23	10.7	202	26.1	252	51.0	-20	49.4	234	19.8	-14	10.5	
10	331	24.8	-23	11.0	232	31.0	282	50.0	-20	47.8	264	21.1	-14	9.2	
12	1	24.2	-23	11.3	262	36.0	312	49.0	-20	46.3	294	22.4	-14	7.8	
14	31	23.6	-23	11.6	292	40.9	342	48.0	-20	44.7	324	23.7	-14	6.4	
16	61	23.0	-23	11.9	322	45.8	12	47.1	-20	43.1	354	25.0	-14	5.1	
18	91	22.4	-23	12.2	352	50.7	42	46.1	-20	41.5	24	26.3	-14	3.7	
20	121	21.8	-23	12.5	22	55.7	72	45.2	-20	39.9	54	27.6	-14	2.4	
22	151	21.2	-23	12.8	53	.6	102	44.2	-20	38.3	84	28.9	-14	1.0	
Δ		-3		-2				-5		8			7		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	15 20	2.2	7 23	3.2
55	8 17	15 31	0 45	2 17	15 47	2.3	6 57	3.0
50	7 51	15 58	0 38	1 59	16 6	2.3	6 38	3.0
45	7 30	16 19	0 34	1 47	16 22	2.4	6 23	2.9
40	7 13	16 35	0 30	1 37	16 35	2.4	6 11	2.8
35	6 59	16 49	0 28	1 31	16 46	2.4	6 0	2.8
30	6 47	17 1	0 26	1 25	16 56	2.5	5 51	2.8
20	6 26	17 22	0 24	1 19	17 12	2.5	5 35	2.7
10	6 8	17 41	0 23	1 15	17 27	2.5	5 21	2.6
0	5 51	17 58	0 23	1 15	17 41	2.6	5 8	2.6
10	5 33	18 16	0 23	1 18	17 54	2.6	4 55	2.5
20	5 14	18 34	0 25	1 24	18 9	2.6	4 42	2.5
30	4 53	18 56	0 27	1 36	18 26	2.7	4 26	2.4
35	4 40	19 9	0 30	1 47	18 36	2.7	4 17	2.3
40	4 25	19 24	0 33	2 3	18 47	2.7	4 6	2.3
45	4 7	19 42	0 37	2 32	19 1	2.7	3 54	2.2
50	3 45	20 4	0 44	:::	19 17	2.8	3 39	2.2
55	3 15	20 34	0 58	:::	19 38	2.8	3 20	2.0
60	2 32	21 18	1 41	:::	20 6	2.9	2 55	1.9
S								

UT	MESEC				JUPITER				SATURN						
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄				
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	15	53.9	44	16	33.1	60	244	22.5	-6	12.5	183	47.8	-21	42.1	
2	44	40.7	43	16	45.1	58	274	26.8	-6	12.7	213	52.0	-21	42.2	
4	73	27.3	42	16	56.7	55	304	31.0	-6	13.0	243	56.3	-21	42.2	
6	102	13.8	42	17	7.7	53	334	35.2	-6	13.3	274	.6	-21	42.3	
8	131	.1	41	17	18.3	50	4	39.5	-6	13.5	304	4.9	-21	42.3	
10	159	46.3	40	17	28.3	48	34	43.7	-6	13.8	334	9.2	-21	42.4	
12	188	32.4	40	17	37.8	45	64	48.0	-6	14.0	4	13.5	-21	42.4	
14	217	18.4	40	17	46.8	42	94	52.2	-6	14.3	34	17.8	-21	42.5	
16	246	4.3	39	17	55.2	40	124	56.4	-6	14.6	64	22.1	-21	42.5	
18	274	50.1	39	18	3.2	37	155	.7	-6	14.8	94	26.4	-21	42.6	
20	303	35.9	39	18	10.5	34	185	4.9	-6	15.1	124	30.7	-21	42.6	
22	332	21.6	38	18	17.4	31	215	9.2	-6	15.4	154	35.0	-21	42.7	
Δ								21		-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	5 50.8	-1.2	16.3	T _m	23 55	2.6	61.2

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 20.6 -23 13.1		83 5.5	132 43.3 -20 36.7		114 30.2 -13 59.6	
2	211 20.0 -23 13.4		113 10.5	162 42.3 -20 35.1		144 31.5 -13 58.3	
4	241 19.4 -23 13.6		143 15.4	192 41.4 -20 33.5		174 32.8 -13 56.9	
6	271 18.8 -23 13.9		173 20.3	222 40.4 -20 31.9		204 34.1 -13 55.5	
8	301 18.2 -23 14.2		203 25.2	252 39.5 -20 30.3		234 35.4 -13 54.2	
10	331 17.6 -23 14.5		233 30.2	282 38.6 -20 28.7		264 36.7 -13 52.8	
12	1 17.0 -23 14.8		263 35.1	312 37.7 -20 27.1		294 38.0 -13 51.4	
14	31 16.4 -23 15.0		293 40.0	342 36.7 -20 25.5		324 39.3 -13 50.1	
16	61 15.8 -23 15.3		323 45.0	12 35.8 -20 23.8		354 40.7 -13 48.7	
18	91 15.2 -23 15.6		353 49.9	42 34.9 -20 22.2		24 42.0 -13 47.3	
20	121 14.6 -23 15.8		23 54.8	72 34.0 -20 20.6		54 43.3 -13 46.0	
22	151 14.0 -23 16.1		53 59.7	102 33.1 -20 18.9		84 44.6 -13 44.6	
Δ	-3	-1		-5	8	7	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	16 12	2.7	8 39	2.6
55	8 18	15 31	0 45	2 17	16 41	2.7	8 10	2.6
50	7 51	15 58	0 38	1 59	17 3	2.6	7 49	2.6
45	7 31	16 19	0 34	1 47	17 19	2.6	7 32	2.6
40	7 14	16 35	0 31	1 38	17 33	2.6	7 19	2.6
35	7 0	16 50	0 28	1 31	17 45	2.6	7 7	2.6
30	6 48	17 2	0 26	1 25	17 55	2.6	6 57	2.6
20	6 27	17 23	0 24	1 19	18 13	2.6	6 39	2.6
10	6 8	17 41	0 23	1 15	18 28	2.5	6 24	2.6
0	5 51	17 59	0 23	1 15	18 43	2.5	6 10	2.6
10	5 34	18 16	0 23	1 18	18 57	2.5	5 56	2.6
20	5 15	18 35	0 25	1 24	19 12	2.5	5 41	2.6
30	4 53	18 57	0 27	1 36	19 30	2.5	5 23	2.5
35	4 40	19 10	0 30	1 47	19 41	2.4	5 13	2.5
40	4 25	19 25	0 33	2 3	19 53	2.4	5 1	2.5
45	4 7	19 43	0 37	2 32	20 7	2.4	4 48	2.5
50	3 45	20 5	0 44	:::	20 24	2.4	4 31	2.5
55	3 15	20 35	0 58	:::	20 46	2.3	4 10	2.5
60	2 31	21 19	1 42	:::	21 16	2.2	3 41	2.4
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	1 7.3 38	18 23.7	29		245 13.4 -6 15.6		184 39.3 -21 42.7	
2	29 53.0 38	18 29.4	26		275 17.7 -6 15.9		214 43.6 -21 42.8	
4	58 38.6 38	18 34.6	23		305 21.9 -6 16.1		244 47.9 -21 42.8	
6	87 24.3 38	18 39.2	20		335 26.2 -6 16.4		274 52.2 -21 42.9	
8	116 10.0 39	18 43.3	18		5 30.4 -6 16.7		304 56.5 -21 42.9	
10	144 55.7 39	18 46.8	15		35 34.6 -6 16.9		335 .8 -21 43.0	
12	173 41.5 39	18 49.8	12		65 38.9 -6 17.2		5 5.1 -21 43.0	
14	202 27.3 40	18 52.2	9		95 43.1 -6 17.4		35 9.4 -21 43.1	
16	231 13.2 40	18 54.0	6		125 47.4 -6 17.7		65 13.7 -21 43.1	
18	259 59.2 41	18 55.3	4		155 51.6 -6 18.0		95 17.9 -21 43.2	
20	288 45.3 41	18 56.0	1		185 55.9 -6 18.2		125 22.2 -21 43.2	
22	317 31.5 42	18 56.2	-2		216 .2 -6 18.5		155 26.5 -21 43.3	
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	5 22.4	-1.2	16.3	T _m	1.0	61.0	16.6		
12	5 8.1	T _{m☉}	11 h 54.9 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	'	°	
♁	15 10	.1	50	-4.3	♃	7 38	.0	162	-1.4
♂	16 21	.1	31	.3	♄	11 40	.0	102	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	181 13.4 -23 16.3		84 4.7	132 32.1 -20 17.3		114 45.9 -13 43.2	
2	211 12.8 -23 16.6		114 9.6	162 31.2 -20 15.7		144 47.2 -13 41.8	
4	241 12.2 -23 16.8		144 14.5	192 30.3 -20 14.0		174 48.5 -13 40.5	
6	271 11.6 -23 17.1		174 19.5	222 29.4 -20 12.4		204 49.8 -13 39.1	
8	301 11.0 -23 17.3		204 24.4	252 28.5 -20 10.7		234 51.1 -13 37.7	
10	331 10.4 -23 17.5		234 29.3	282 27.7 -20 9.0		264 52.5 -13 36.3	
12	1 9.8 -23 17.8		264 34.2	312 26.8 -20 7.4		294 53.8 -13 35.0	
14	31 9.2 -23 18.0		294 39.2	342 25.9 -20 5.7		324 55.1 -13 33.6	
16	61 8.6 -23 18.2		324 44.1	12 25.0 -20 4.1		354 56.4 -13 32.2	
18	91 8.0 -23 18.5		354 49.0	42 24.1 -20 2.4		24 57.7 -13 30.8	
20	121 7.4 -23 18.7		24 53.9	72 23.2 -20 .7		54 59.0 -13 29.4	
22	151 6.8 -23 18.9		54 58.9	102 22.4 -19 59.0		85 .4 -13 28.1	
Δ	-3	-1		-4	8	7	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 57	2 46	17 17	3.1	9 41	1.9
55	8 19	15 31	0 45	2 17	17 45	3.0	9 12	2.1
50	7 52	15 58	0 38	1 59	18 6	2.8	8 51	2.2
45	7 32	16 19	0 34	1 47	18 22	2.8	8 34	2.2
40	7 15	16 36	0 31	1 38	18 36	2.7	8 21	2.3
35	7 1	16 50	0 28	1 31	18 47	2.7	8 9	2.3
30	6 48	17 2	0 26	1 25	18 57	2.6	7 59	2.3
20	6 27	17 23	0 24	1 19	19 14	2.5	7 41	2.4
10	6 9	17 42	0 23	1 15	19 29	2.5	7 26	2.4
0	5 52	17 59	0 23	1 15	19 43	2.4	7 12	2.5
10	5 34	18 17	0 23	1 18	19 57	2.4	6 57	2.5
20	5 15	18 35	0 25	1 24	20 12	2.3	6 42	2.6
30	4 53	18 57	0 27	1 36	20 29	2.2	6 24	2.6
35	4 40	19 10	0 30	1 47	20 39	2.2	6 14	2.6
40	4 25	19 25	0 33	2 3	20 51	2.1	6 2	2.7
45	4 8	19 43	0 37	2 33	21 4	2.0	5 48	2.7
50	3 45	20 6	0 45	:::	21 21	1.9	5 31	2.8
55	3 15	20 36	0 58	:::	21 41	1.8	5 9	2.8
60	2 31	21 20	1 44	:::	22 10	1.7	4 39	2.9
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	346 17.9 43	18 55.8	-5		246 4.4 -6 18.7		185 30.8 -21 43.3	
2	15 4.4 43	18 54.9	-7		276 8.7 -6 19.0		215 35.1 -21 43.4	
4	43 51.0 44	18 53.4	-10		306 12.9 -6 19.2		245 39.4 -21 43.4	
6	72 37.9 45	18 51.4	-13		336 17.2 -6 19.5		275 43.7 -21 43.5	
8	101 24.9 46	18 48.9	-15		6 21.4 -6 19.8		305 48.0 -21 43.5	
10	130 12.1 47	18 45.8	-18		36 25.7 -6 20.0		335 52.3 -21 43.6	
12	158 59.6 48	18 42.2	-21		66 29.9 -6 20.3		5 56.6 -21 43.6	
14	187 47.2 49	18 38.1	-23		96 34.2 -6 20.5		36 .9 -21 43.7	
16	216 35.1 51	18 33.5	-26		126 38.5 -6 20.8		66 5.2 -21 43.7	
18	245 23.2 52	18 28.4	-28		156 42.7 -6 21.0		96 9.5 -21 43.8	
20	274 11.6 53	18 22.7	-31		186 47.0 -6 21.3		126 13.8 -21 43.8	
22	303 .2 55	18 16.6	-33		216 51.2 -6 21.5		156 18.1 -21 43.9	
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 53.8	-1.2	16.3	T _m	0 57	2.5	60.5	16.5	
12	4 39.3	T _{m☉}	11 h 55.3 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	'	°	
♁	15 10	.1	48	-4.3	♃	7 35	.0	162	-1.4
♂	16 20	.1	31	.4	♄	11 36	.0	101	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}
h	°	'	°	'	°	'	°	'	°	'
0	181	6.2	-23	19.1	85	3.8	132	21.5	-19	57.4
2	211	5.6	-23	19.3	115	8.7	162	20.6	-19	55.7
4	241	5.0	-23	19.5	145	13.7	192	19.8	-19	54.0
6	271	4.4	-23	19.7	175	18.6	222	18.9	-19	52.3
8	301	3.8	-23	19.9	205	23.5	252	18.1	-19	50.6
10	331	3.2	-23	20.1	235	28.4	282	17.2	-19	48.9
12	1	2.6	-23	20.3	265	33.4	312	16.4	-19	47.2
14	31	2.0	-23	20.5	295	38.3	342	15.5	-19	45.5
16	61	1.4	-23	20.7	325	43.2	12	14.7	-19	43.8
18	91	.7	-23	20.9	355	48.2	42	13.8	-19	42.1
20	121	.1	-23	21.1	25	53.1	72	13.0	-19	40.4
22	150	59.5	-23	21.3	55	58.0	102	12.2	-19	38.7
Δ		-3		-1				-4		9

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 58	14 53	0 58	2 46	18 31	3.3	10 28	1.4
55	8 20	15 32	0 45	2 18	18 56	3.1	10 2	1.6
50	7 53	15 59	0 38	1 59	19 14	2.9	9 43	1.8
45	7 32	16 19	0 34	1 47	19 29	2.8	9 28	1.9
40	7 16	16 36	0 31	1 38	19 41	2.7	9 15	2.0
35	7 1	16 50	0 28	1 31	19 51	2.6	9 4	2.0
30	6 49	17 3	0 26	1 25	19 60	2.6	8 55	2.1
20	6 28	17 24	0 24	1 19	20 15	2.5	8 39	2.2
10	6 9	17 42	0 23	1 15	20 29	2.4	8 25	2.3
0	5 52	17 60	0 23	1 15	20 41	2.3	8 11	2.3
10	5 35	18 17	0 23	1 18	20 54	2.2	7 58	2.4
20	5 16	18 36	0 25	1 24	21 7	2.1	7 44	2.5
30	4 54	18 58	0 27	1 37	21 22	2.0	7 27	2.6
35	4 41	19 11	0 30	1 47	21 31	1.9	7 17	2.7
40	4 26	19 26	0 33	2 3	21 41	1.8	7 6	2.7
45	4 8	19 44	0 37	2 33	21 53	1.7	6 53	2.8
50	3 45	20 6	0 45	:::	22 7	1.6	6 38	2.9
55	3 15	20 36	0 58	:::	22 25	1.4	6 17	3.0
60	2 31	21 21	1 44	:::	22 49	1.2	5 50	3.2

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	331	49.2	56	18 10.0	-35	246	55.5	-6 21.8
2	0	38.4	57	18 2.9	-38	276	59.8	-6 22.0
4	29	27.9	59	17 55.3	-40	307	4.0	-6 22.3
6	58	17.6	60	17 47.3	-42	337	8.3	-6 22.6
8	87	7.7	62	17 38.9	-45	7	12.6	-6 22.8
10	115	58.1	64	17 29.9	-47	37	16.8	-6 23.1
12	144	48.9	65	17 20.6	-49	67	21.1	-6 23.3
14	173	39.9	67	17 10.8	-51	97	25.4	-6 23.6
16	202	31.3	69	17 .6	-53	127	29.6	-6 23.8
18	231	23.0	70	16 50.0	-55	157	33.9	-6 24.1
20	260	15.0	72	16 39.0	-57	187	38.2	-6 24.3
22	289	7.4	74	16 27.6	-59	217	42.4	-6 24.6
Δ						21		-1

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	'	h min	min	'	'
00	4 24.8	-1.2	16.3	$T_{\overline{m}}$ 1 57	2.4	59.8	16.3
12	4 10.2	$T_{\overline{m}\odot}$ 11 h 55.8 min		Starost 16.5 d	Faza \odot		

PLANETE									
Pl.	$T_{\overline{m}}$	π	$360-\alpha$	Vel.	Pl.	$T_{\overline{m}}$	π	$360-\alpha$	Vel.
ζ	h min	'	°		μ	h min	'	°	
σ	15 11	.1	47	-4.3	η	7 31	.0	162	-1.4
	16 19	.1	30	.4	η	11 33	.0	101	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA		MARS	
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}	δ_{ζ}	S_{σ}	δ_{σ}
h	°	'	°	'	°	'	°	'	°	'
0	180	58.9	-23	21.4	86	2.9	132	11.3	-19	37.0
2	210	58.3	-23	21.6	116	7.9	162	10.5	-19	35.2
4	240	57.7	-23	21.8	146	12.8	192	9.7	-19	33.5
6	270	57.1	-23	21.9	176	17.7	222	8.9	-19	31.8
8	300	56.5	-23	22.1	206	22.7	252	8.1	-19	30.0
10	330	55.9	-23	22.3	236	27.6	282	7.2	-19	28.3
12	0	55.3	-23	22.4	266	32.5	312	6.4	-19	26.6
14	30	54.6	-23	22.6	296	37.4	342	5.6	-19	24.8
16	60	54.0	-23	22.7	326	42.4	12	4.8	-19	23.1
18	90	53.4	-23	22.9	356	47.3	42	4.0	-19	21.3
20	120	52.8	-23	23.0	26	52.2	72	3.2	-19	19.6
22	150	52.2	-23	23.1	56	57.2	102	2.4	-19	17.8
Δ		-3		-1				-4		9

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 59	14 53	0 58	2 46	19 50	3.3	11 2	1.1
55	8 21	15 32	0 46	2 18	20 10	3.1	10 41	1.3
50	7 54	15 59	0 38	1 59	20 25	2.9	10 25	1.5
45	7 33	16 20	0 34	1 47	20 36	2.8	10 13	1.6
40	7 16	16 36	0 31	1 38	20 46	2.6	10 2	1.7
35	7 2	16 51	0 28	1 31	20 54	2.6	9 53	1.8
30	6 50	17 3	0 26	1 26	21 2	2.5	9 45	1.8
20	6 28	17 24	0 24	1 19	21 14	2.3	9 31	2.0
10	6 10	17 43	0 23	1 15	21 25	2.2	9 19	2.1
0	5 53	18 0	0 23	1 15	21 36	2.1	9 8	2.2
10	5 35	18 18	0 23	1 18	21 46	2.0	8 56	2.3
20	5 16	18 37	0 25	1 24	21 57	1.9	8 44	2.4
30	4 54	18 59	0 27	1 37	22 9	1.7	8 30	2.5
35	4 41	19 12	0 30	1 47	22 16	1.7	8 21	2.6
40	4 26	19 27	0 33	2 3	22 25	1.6	8 12	2.7
45	4 8	19 45	0 37	2 33	22 34	1.5	8 1	2.8
50	3 46	20 7	0 45	:::	22 45	1.3	7 47	2.9
55	3 16	20 37	0 58	:::	22 60	1.2	7 30	3.1
60	2 31	21 22	1 45	:::	23 18	.9	7 7	3.3

UT	MESEC				JUPITER		SATURN	
	S_{ζ}	Δ	δ_{ζ}	Δ	S_{μ}	δ_{μ}	S_{η}	δ_{η}
h	°	'	°	'	°	'	°	'
0	318	.2	75	16 15.8	-61	247	46.7	-6 24.8
2	346	53.3	77	16 3.7	-63	277	51.0	-6 25.1
4	15	46.7	79	15 51.2	-64	307	55.3	-6 25.3
6	44	40.5	81	15 38.3	-66	337	59.5	-6 25.6
8	73	34.6	82	15 25.1	-68	8	3.8	-6 25.8
10	102	29.1	84	15 11.6	-69	38	8.1	-6 26.0
12	131	24.0	86	14 57.7	-71	68	12.4	-6 26.3
14	160	19.2	88	14 43.5	-72	98	16.6	-6 26.5
16	189	14.8	90	14 29.1	-74	128	20.9	-6 26.8
18	218	10.7	91	14 14.3	-75	158	25.2	-6 27.0
20	247	7.0	93	13 59.2	-77	188	29.5	-6 27.3
22	276	3.6	95	13 43.9	-78	218	33.7	-6 27.5
Δ						21		-1

SUNCE				MESEC			
UT	$e = T_p - UT$	$\Delta/24$	r	Prolaz	$\Delta/24$	π_{ζ}	r
h	min	s	'	h min	min	'	'
00	3 55.7	-1.2	16.3	$T_{\overline{m}}$ 2 54	2.2	58.9	16.1
12	3 41.0	$T_{\overline{m}\odot}$ 11 h 56.3 min		Starost 17.5 d	Faza \odot		

PLANETE									
Pl.	$T_{\overline{m}}$	π	$360-\alpha$	Vel.	Pl.	$T_{\overline{m}}$	π	$360-\alpha$	Vel.
ζ	h min	'	°		μ	h min	'	°	
σ	15 12	.1	46	-4.3	η	7 28	.0	162	-1.4
	16 18	.1	29	.4	η	11 29	.0	101	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	51.6	-23	23.3	87	2.1	132	1.7	-19	16.1	115	33.5	-12	53.3
2	210	51.0	-23	23.4	117	7.0	162	.9	-19	14.3	145	34.8	-12	51.9
4	240	50.4	-23	23.5	147	11.9	192	.1	-19	12.5	175	36.2	-12	50.5
6	270	49.7	-23	23.7	177	16.9	221	59.3	-19	10.8	205	37.5	-12	49.1
8	300	49.1	-23	23.8	207	21.8	251	58.5	-19	9.0	235	38.8	-12	47.7
10	330	48.5	-23	23.9	237	26.7	281	57.8	-19	7.2	265	40.2	-12	46.3
12	0	47.9	-23	24.0	267	31.7	311	57.0	-19	5.5	295	41.5	-12	44.9
14	30	47.3	-23	24.1	297	36.6	341	56.2	-19	3.7	325	42.9	-12	43.4
16	60	46.7	-23	24.3	327	41.5	11	55.5	-19	1.9	355	44.2	-12	42.0
18	90	46.0	-23	24.4	357	46.4	41	54.7	-19	.1	25	45.5	-12	40.6
20	120	45.4	-23	24.5	27	51.4	71	54.0	-18	58.3	55	46.9	-12	39.2
22	150	44.8	-23	24.6	57	56.3	101	53.2	-18	56.5	85	48.2	-12	37.8
Δ		-3		-1				-4		9		7		7

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	9 0	14 53	0 58	2 46	21 9	3.2	11 28	.9
55	8 21	15 32	0 46	2 18	21 23	3.0	11 12	1.1
50	7 54	15 59	0 39	1 60	21 34	2.8	11 0	1.2
45	7 34	16 20	0 34	1 47	21 43	2.7	10 51	1.4
40	7 17	16 37	0 31	1 38	21 50	2.6	10 42	1.5
35	7 3	16 51	0 28	1 31	21 56	2.5	10 35	1.6
30	6 50	17 3	0 26	1 26	22 1	2.4	10 29	1.7
20	6 29	17 25	0 24	1 19	22 10	2.2	10 19	1.8
10	6 10	17 43	0 23	1 15	22 19	2.1	10 9	1.9
0	5 53	18 1	0 23	1 15	22 26	2.0	10 0	2.0
10	5 35	18 18	0 23	1 18	22 34	1.9	9 51	2.2
20	5 17	18 37	0 25	1 24	22 42	1.7	9 41	2.3
30	4 54	18 59	0 27	1 37	22 51	1.6	9 30	2.4
35	4 41	19 12	0 30	1 47	22 56	1.5	9 24	2.5
40	4 26	19 27	0 33	2 3	23 2	1.4	9 17	2.6
45	4 8	19 45	0 37	2 33	23 9	1.3	9 8	2.7
50	3 46	20 8	0 45	:::	23 17	1.2	8 58	2.9
55	3 16	20 38	0 58	:::	23 28	2.0	8 45	3.0
60	2 31	21 23	1 46	:::	23 41	2.0	8 27	3.3

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{μ}		δ_{μ}		S_{η}		δ_{η}		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	305	.6	97	13	28.3	-79	248	38.0	-6	27.8	188	5.5	-21	45.1
2	333	57.9	98	13	12.5	-80	278	42.3	-6	28.0	218	9.8	-21	45.2
4	2	55.5	100	12	56.4	-82	308	46.6	-6	28.3	248	14.1	-21	45.2
6	31	53.6	102	12	40.1	-83	338	50.9	-6	28.5	278	18.4	-21	45.3
8	60	51.9	103	12	23.5	-84	8	55.2	-6	28.7	308	22.7	-21	45.3
10	89	50.6	105	12	6.8	-85	38	59.4	-6	29.0	338	27.0	-21	45.4
12	118	49.6	107	11	49.8	-86	69	3.7	-6	29.2	8	31.3	-21	45.4
14	147	48.9	108	11	32.6	-87	99	8.0	-6	29.5	38	35.6	-21	45.5
16	176	48.6	110	11	15.2	-88	129	12.3	-6	29.7	68	39.9	-21	45.5
18	205	48.6	111	10	57.6	-89	159	16.6	-6	30.0	98	44.2	-21	45.6
20	234	48.9	113	10	39.9	-90	239	20.9	-6	30.2	128	48.5	-21	45.6
22	263	49.5	115	10	22.0	-90	219	25.2	-6	30.4	158	52.8	-21	45.7
Δ							21		-1		21			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 26.3	-1.2	16.3	T_m	3 48	2.1	58.0	15.8
12	3 11.6	$T_{m\odot}$	11 h 56.8 min	Starost	18.5 d	Faza	☉	

PLANETE									
Pl.	T_m	π	$360-\alpha$	Vel.	Pl.	T_m	π	$360-\alpha$	Vel.
♀	h min	'	°		♃	h min	'	°	
♁	15 12	.1	45	-4.4	♂	7 24	.0	162	-1.4
♂	16 17	.1	29	.4	♄	11 26	.0	101	.7

UT	SUNCE				PROLEĆ. TAČKA		VENERA				MARS			
	S_{\odot}		δ_{\odot}		S_{Υ}		S_{ζ}		δ_{ζ}		S_{σ}		δ_{σ}	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	180	44.2	-23	24.7	88	1.2	131	52.5	-18	54.7	115	49.5	-12	36.4
2	210	43.6	-23	24.8	118	6.2	161	51.7	-18	52.9	145	50.9	-12	35.0
4	240	43.0	-23	24.9	148	11.1	191	51.0	-18	51.1	175	52.2	-12	33.6
6	270	42.3	-23	24.9	178	16.0	221	50.2	-18	49.3	205	53.6	-12	32.2
8	300	41.7	-23	25.0	208	20.9	251	49.5	-18	47.5	235	54.9	-12	30.8
10	330	41.1	-23	25.1	238	25.9	281	48.8	-18	45.7	265	56.3	-12	29.3
12	0	40.5	-23	25.2	268	30.8	311	48.1	-18	43.9	295	57.6	-12	27.9
14	30	39.9	-23	25.3	298	35.7	341	47.3	-18	42.1	325	58.9	-12	26.5
16	60	39.3	-23	25.3	328	40.6	11	46.6	-18	40.3	356	.3	-12	25.1
18	90	38.6	-23	25.4	358	45.6	41	45.9	-18	38.4	26	1.6	-12	23.7
20	120	38.0	-23	25.5	28	50.5	71	45.2	-18	36.6	56	3.0	-12	22.3
22	150	37.4	-23	25.5	58	55.4	101	44.5	-18	34.8	86	4.3	-12	20.8
Δ		-3		0				-4		9		7		7

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	9 1	14 54	0 58	2 46	22 27	3.1	11 49	.7
55	8 22	15 32	0 46	2 18	22 35	2.9	11 38	.9
50	7 55	15 60	0 39	1 60	22 41	2.7	11 30	1.1
45	7 34	16 20	0 34	1 47	22 47	2.6	11 24	1.2
40	7 17	16 37	0 31	1 38	22 51	2.5	11 18	1.3
35	7 3	16 51	0 28	1 31	22 55	2.4	11 13	1.4
30	6 51	17 4	0 26	1 26	22 58	2.3	11 9	1.5
20	6 30	17 25	0 24	1 19	23 4	2.1	11 2	1.7
10	6 11	17 44	0 23	1 15	23 9	2.0	10 55	1.8
0	5 54	18 1	0 23	1 15	23 14	1.9	10 49	1.9
10	5 36	18 19	0 23	1 18	23 18	1.9	10 43	2.0
20	5 17	18 38	0 25	1 24	23 23	1.9	10 36	2.2
30	4 55	18 60	0 27	1 37	23 29	1.9	10 29	2.3
35	4 42	19 13	0 30	1 47	23 32	1.9	10 24	2.4
40	4 27	19 28	0 33	2 3	23 36	1.9	10 19	2.5
45	4 9	19 46	0 37	2 33	23 40	1.9	10 13	2.6
50	3 46	20 8	0 45	:::	23 45	1.9	10 6	2.8
55	3 16	20 39	0 58	:::	...	.0	9 58	3.0
60	2 31	21 23	1 46	:::	...	.0	9 46	3.2

UT	MESEC				JUPITER				SATURN					
	S_{ζ}		Δ	δ_{ζ}	Δ	S_{μ}		δ_{μ}		S_{η}		δ_{η}		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	292	50.4	116	10	3.9	-91	249	29.5	-6	30.7	188	57.1	-21	45.7
2	321	51.6	118	9	45.7	-92	279	33.7	-6	30.9	219	1.4	-21	45.8
4	350	53.1	119	9	27.3	-93	309	38.0	-6	31.2	249	5.6	-21	45.8
6	19	54.9	120	9	8.8	-93	339	42.3	-6	31.4	279	9.9	-21	45.9
8	48	57.0	122	8	50.2	-94	9	46.6	-6	31.6	309	14.2	-21	45.9
10	77	59.3	123	8	31.4	-94	39	50.9	-6	31.9	339	18.5	-21	45.9
12	107	2.0	124	8	12.6	-95	69	55.2	-6	32.1	9	22.8	-21	46.0
14	136	4.8	126	7	53.6	-95	99	59.5	-6	32.4	39	27.1	-21	46.0
16	165	8.0	127	7	34.5	-96	130	3.8	-6	32.6	69	31.4	-21	46.1
18	194	11.4	128	7	15.3	-96	160	8.1	-6	32.8	99	35.7	-21	46.1
20	223	15.0	129	6	56.1	-97	190	12.4	-6	33.1	129	40.0	-21	46.2
22	252	18.9	131	6	36.7	-97	220	16.7	-6	33.3	159	44.3	-21	46.2
Δ							21		-1		21			0

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

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	36.8	-23	25.6	89	.4	131	43.8	-18	32.9	116	5.7	-12	19.4	
2	210	36.2	-23	25.6	119	5.3	161	43.1	-18	31.1	146	7.0	-12	18.0	
4	240	35.5	-23	25.7	149	10.2	191	42.4	-18	29.3	176	8.4	-12	16.6	
6	270	34.9	-23	25.7	179	15.1	221	41.7	-18	27.4	206	9.7	-12	15.2	
8	300	34.3	-23	25.8	209	20.1	251	41.0	-18	25.6	236	11.1	-12	13.7	
10	330	33.7	-23	25.8	239	25.0	281	40.3	-18	23.7	266	12.4	-12	12.3	
12	0	33.1	-23	25.9	269	29.9	311	39.6	-18	21.9	296	13.8	-12	10.9	
14	30	32.4	-23	25.9	299	34.9	341	38.9	-18	20.0	326	15.1	-12	9.5	
16	60	31.8	-23	25.9	329	39.8	11	38.3	-18	18.2	356	16.5	-12	8.1	
18	90	31.2	-23	26.0	359	44.7	41	37.6	-18	16.3	26	17.8	-12	6.6	
20	120	30.6	-23	26.0	29	49.6	71	36.9	-18	14.5	56	19.2	-12	5.2	
22	150	30.0	-23	26.0	59	54.6	101	36.2	-18	12.6	86	20.5	-12	3.8	
Δ		-3		0				-3		9			7		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	14 54	0 58	2 46	23 42	2.4	12 6	.6
55	8 23	15 33	0 46	2 18	23 45	2.3	12 1	.8
50	7 56	16 0	0 39	1 60	23 47	2.2	11 56	1.0
45	7 35	16 21	0 34	1 47	23 49	2.1	11 53	1.1
40	7 18	16 38	0 31	1 38	23 50	2.1	11 50	1.3
35	7 4	16 52	0 28	1 31	23 52	2.0	11 48	1.4
30	6 51	17 4	0 26	1 26	23 53	2.0	11 46	1.4
20	6 30	17 26	0 24	1 19	23 55	1.9	11 42	1.6
10	6 12	17 44	0 23	1 15	23 57	1.9	11 39	1.7
0	5 54	18 2	0 23	1 15	23 59	1.8	11 35	1.8
10	5 36	18 19	0 23	1 18	...	.0	11 32	2.0
20	5 17	18 38	0 25	1 24	...	.0	11 29	2.1
30	4 55	19 0	0 27	1 37	...	.0	11 25	2.3
35	4 42	19 13	0 30	1 47	...	.0	11 22	2.3
40	4 27	19 28	0 33	2 3	...	.0	11 20	2.4
45	4 9	19 46	0 37	2 33	...	.0	11 17	2.6
50	3 47	20 9	0 45	:::	...	.0	11 13	2.7
55	3 17	20 39	0 58	:::	0 8	.8	11 9	2.9
60	2 32	21 24	1 47	:::	0 0	.6	11 3	3.1

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	281	23.0	132	6	17.3	-97	250	21.0	-6	33.5	189	48.6	-21	46.3		
2	310	27.4	133	5	57.8	-98	280	25.3	-6	33.8	219	52.9	-21	46.3		
4	339	31.9	134	5	38.3	-98	310	29.6	-6	34.0	249	57.2	-21	46.4		
6	8	36.7	135	5	18.7	-98	340	33.9	-6	34.2	280	1.5	-21	46.4		
8	37	41.7	136	4	59.1	-98	10	38.2	-6	34.5	310	5.8	-21	46.5		
10	66	46.9	137	4	39.4	-99	40	42.5	-6	34.7	340	10.1	-21	46.5		
12	95	52.2	138	4	19.6	-99	70	46.8	-6	34.9	10	14.4	-21	46.6		
14	124	57.8	139	3	59.9	-99	100	51.1	-6	35.2	40	18.7	-21	46.6		
16	154	3.5	140	3	40.1	-99	130	55.4	-6	35.4	70	23.0	-21	46.7		
18	183	9.4	140	3	20.3	-99	160	59.7	-6	35.6	100	27.3	-21	46.7		
20	212	15.5	141	3	.4	-99	191	4.0	-6	35.9	130	31.6	-21	46.7		
22	241	21.8	142	2	40.6	-99	221	8.4	-6	36.1	160	35.9	-21	46.8		
Δ								22		-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 27.1	-1.2	16.3	T _m	5 24	1.9	56.1	15.3
12	2 12.3	T _{m☉}	11 h 57.8 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	'	°	
♂	15 13	.1	43	-4.4	♄	7 18	.0	161	-1.5
♂	16 15	.1	27	.4	♂	11 19	.0	101	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	180	29.3	-23	26.0	89	59.5	131	35.6	-18	10.7	116	21.9	-12	2.3	
2	210	28.7	-23	26.0	120	4.4	161	34.9	-18	8.9	146	23.2	-12	.9	
4	240	28.1	-23	26.1	150	9.4	191	34.3	-18	7.0	176	24.6	-11	59.5	
6	270	27.5	-23	26.1	180	14.3	221	33.6	-18	5.1	206	25.9	-11	58.1	
8	300	26.9	-23	26.1	210	19.2	251	33.0	-18	3.2	236	27.3	-11	56.6	
10	330	26.2	-23	26.1	240	24.1	281	32.3	-18	1.4	266	28.7	-11	55.2	
12	0	25.6	-23	26.1	270	29.1	311	31.7	-17	59.5	296	30.0	-11	53.8	
14	30	25.0	-23	26.1	300	34.0	341	31.0	-17	57.6	326	31.4	-11	52.3	
16	60	24.4	-23	26.1	330	38.9	11	30.4	-17	55.7	356	32.7	-11	50.9	
18	90	23.7	-23	26.1	0	43.9	41	29.8	-17	53.8	26	34.1	-11	49.5	
20	120	23.1	-23	26.0	30	48.8	71	29.1	-17	51.9	56	35.4	-11	48.0	
22	150	22.5	-23	26.0	60	53.7	101	28.5	-17	50.0	86	36.8	-11	46.6	
Δ		-3		0				-3		9			7		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	14 54	0 58	2 46	...	.0	12 21	2.8
55	8 23	15 33	0 46	2 18	...	.0	12 21	2.6
50	7 56	16 1	0 39	1 60	...	.0	12 21	2.5
45	7 35	16 21	0 34	1 47	...	.0	12 21	2.4
40	7 18	16 38	0 31	1 38	...	.0	12 20	2.3
35	7 4	16 52	0 28	1 31	...	.0	12 20	2.2
30	6 52	17 5	0 26	1 26	...	.0	12 20	2.1
20	6 31	17 26	0 24	1 19	...	.0	12 20	2.0
10	6 12	17 45	0 23	1 15	...	.0	12 20	1.9
0	5 55	18 2	0 23	1 15	...	.0	12 20	1.8
10	5 37	18 20	0 23	1 18	0 0	1.8	12 19	1.7
20	5 18	18 39	0 25	1 24	0 2	1.8	12 19	1.6
30	4 56	19 1	0 27	1 37	0 4	1.7	12 19	1.5
35	4 43	19 14	0 30	1 47	0 6	1.7	12 19	1.4
40	4 28	19 29	0 33	2 3	0 7	1.7	12 18	1.3
45	4 10	19 47	0 37	2 33	0 8	1.7	12 18	1.2
50	3 47	20 10	0 45	:::	0 10	1.7	12 18	1.1
55	3 17	20 40	0 58	:::	0 12	1.7	12 17	1.0
60	2 32	21 24	1 47	:::	0 14	1.7	12 17	.8

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	270	28.1	143	2	20.7	-99	251	12.7	-6	36.3	190	40.2	-21	46.8		
2	299	34.7	143	2	.9	-99	281	17.0	-6	36.6	220	44.5	-21	46.9		
4	328	41.4	144	1	41.1	-99	311	21.3	-6	36.8	250	48.8	-21	46.9		
6	357	48.2	145	1	21.2	-99	341	25.6	-6	37.0	280	53.1	-21	47.0		
8	26	55.1	145	1	1.4	-99	11	29.9	-6	37.3	310	57.4	-21	47.0		
10	56	2.1	146	0	41.6	-99	41	34.2	-6	37.5	341	1.7	-21	47.1		
12	85	9.3	146	0	21.8	-99	71	38.5	-6	37.7	11	6.0	-21	47.1		
14	114	16.6	147	0	2.1	78	101	42.9	-6	38.0	41	10.3	-21	47.2		
16	143	23.9	147	0	17.6	98	131	47.2	-6	38.2	71	14.6	-21	47.2		
18	172	31.4	148	0	37.3	98	161	51.5	-6	38.4	101	18.9	-21	47.3		
20	201	38.9	148	0	57.0	98	191	55.8	-6	38.6	131	23.2	-21	47.3		
22	230	46.6	148	1	16.5	98	222	.1	-6	38.9	161	27.5	-21	47.3		
Δ								22		-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 57.4	-1.2	16.3	T _m	6 9	1.8	55.4	15.1
12	1 42.5	T _{m☉}	11 h 58.3 min</					

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 21.9 -23 26.0		90 58.6	131 27.9 -17 48.1	116 38.2 -11 45.2		
2	210 21.3 -23 26.0		121 3.6	161 27.3 -17 46.2	146 39.5 -11 43.7		
4	240 20.6 -23 25.9		151 8.5	191 26.6 -17 44.3	176 40.9 -11 42.3		
6	270 20.0 -23 25.9		181 13.4	221 26.0 -17 42.4	206 42.3 -11 40.9		
8	300 19.4 -23 25.9		211 18.4	251 25.4 -17 40.5	236 43.6 -11 39.4		
10	330 18.8 -23 25.8		241 23.3	281 24.8 -17 38.6	266 45.0 -11 38.0		
12	0 18.2 -23 25.8		271 28.2	311 24.2 -17 36.6	296 46.3 -11 36.5		
14	30 17.5 -23 25.8		301 33.1	341 23.6 -17 34.7	326 47.7 -11 35.1		
16	60 16.9 -23 25.7		331 38.1	11 23.0 -17 32.8	356 49.1 -11 33.7		
18	90 16.3 -23 25.7		1 43.0	41 22.4 -17 30.9	26 50.4 -11 32.2		
20	120 15.7 -23 25.6		31 47.9	71 21.8 -17 28.9	56 51.8 -11 30.8		
22	150 15.0 -23 25.6		61 52.8	101 21.3 -17 27.0	86 53.2 -11 29.3		
Δ	-3 0			-3 10	7 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	0 31	.6	13 29	3.0
55	8 24	15 34	0 46	2 18	0 33	.8	13 24	2.7
50	7 57	16 1	0 39	1 60	0 34	1.0	13 21	2.6
45	7 36	16 22	0 34	1 47	0 35	1.1	13 18	2.5
40	7 19	16 39	0 31	1 38	0 36	1.2	13 15	2.3
35	7 5	16 53	0 28	1 31	0 37	1.3	13 13	2.2
30	6 52	17 5	0 26	1 26	0 38	1.4	13 11	2.2
20	6 31	17 27	0 24	1 19	0 39	1.5	13 8	2.0
10	6 13	17 45	0 23	1 15	0 41	1.7	13 5	1.9
0	5 55	18 3	0 23	1 15	0 42	1.8	13 3	1.8
10	5 37	18 20	0 23	1 18	0 43	1.9	12 60	1.7
20	5 18	18 39	0 25	1 24	0 45	2.0	12 57	1.5
30	4 56	19 1	0 27	1 37	0 46	2.2	12 54	1.4
35	4 43	19 14	0 30	1 47	0 47	2.3	12 52	1.3
40	4 28	19 29	0 33	2 3	0 48	2.4	12 50	1.2
45	4 10	19 47	0 37	2 33	0 49	2.5	12 47	1.1
50	3 48	20 10	0 45	:::	0 51	2.6	12 44	1.0
55	3 17	20 40	0 58	:::	0 53	2.8	12 41	.8
60	2 33	21 25	1 46	:::	0 55	3.0	12 36	.6

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	259 54.3 149	1 36.1	97	252 4.4 -6 39.1	191 31.8 -21 47.4			
2	289 2.0 149	1 55.6	97	282 8.8 -6 39.3	221 36.1 -21 47.4			
4	318 9.8 149	2 15.0	97	312 13.1 -6 39.6	251 40.4 -21 47.5			
6	347 17.7 150	2 34.3	96	342 17.4 -6 39.8	281 44.7 -21 47.5			
8	16 25.6 150	2 53.6	96	12 21.7 -6 40.0	311 49.0 -21 47.6			
10	45 33.6 150	3 12.9	96	42 26.1 -6 40.2	341 53.3 -21 47.6			
12	74 41.6 150	3 32.0	95	72 30.4 -6 40.5	11 57.6 -21 47.7			
14	103 49.6 150	3 51.1	95	102 34.7 -6 40.7	42 1.9 -21 47.7			
16	132 57.7 150	4 10.0	94	132 39.0 -6 40.9	72 6.2 -21 47.8			
18	162 5.7 150	4 28.9	94	162 43.4 -6 41.1	102 10.5 -21 47.8			
20	191 13.8 150	4 47.7	94	192 47.7 -6 41.4	132 14.8 -21 47.8			
22	220 21.9 150	5 6.4	93	222 52.0 -6 41.6	162 19.1 -21 47.9			
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	1 27.5	-1.2	16.3	T _m	6 52	1.8	54.8 14.9
12	1 12.6	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 min	'	°		♃	h min	'	°	
♂	15 14	.1	40	-4.4	♄	7 11	.0	161	-1.5
♂	16 13	.1	26	.4	♂	11 12	.0	101	.7

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	180 14.4 -23 25.5		91 57.8	131 20.7 -17 25.1	116 54.5 -11 27.9		
2	210 13.8 -23 25.4		122 2.7	161 20.1 -17 23.1	146 55.9 -11 26.5		
4	240 13.2 -23 25.4		152 7.6	191 19.5 -17 21.2	176 57.3 -11 25.0		
6	270 12.5 -23 25.3		182 12.6	221 19.0 -17 19.2	206 58.6 -11 23.6		
8	300 11.9 -23 25.2		212 17.5	251 18.4 -17 17.3	237 .0 -11 22.1		
10	330 11.3 -23 25.2		242 22.4	281 17.8 -17 15.4	267 1.4 -11 20.7		
12	0 10.7 -23 25.1		272 27.3	311 17.3 -17 13.4	297 2.7 -11 19.2		
14	30 10.1 -23 25.0		302 32.3	341 16.7 -17 11.5	327 4.1 -11 17.8		
16	60 9.4 -23 24.9		332 37.2	11 16.2 -17 9.5	357 5.5 -11 16.3		
18	90 8.8 -23 24.8		2 42.1	41 15.6 -17 7.5	27 6.9 -11 14.9		
20	120 8.2 -23 24.7		32 47.1	71 15.1 -17 5.6	57 8.2 -11 13.4		
22	150 7.6 -23 24.6		62 52.0	101 14.5 -17 3.6	87 9.6 -11 12.0		
Δ	-3 0			-3 10	7 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	0 46	.7	14 40	2.9
55	8 24	15 34	0 46	2 18	0 52	.9	14 30	2.7
50	7 57	16 2	0 39	1 60	0 58	1.0	14 23	2.6
45	7 36	16 22	0 34	1 47	1 2	1.2	14 17	2.4
40	7 19	16 39	0 31	1 38	1 6	1.3	14 12	2.3
35	7 5	16 53	0 28	1 31	1 9	1.3	14 7	2.2
30	6 53	17 6	0 26	1 26	1 12	1.4	14 3	2.2
20	6 32	17 27	0 24	1 19	1 16	1.6	13 57	2.0
10	6 13	17 46	0 23	1 15	1 21	1.7	13 51	1.9
0	5 56	18 3	0 23	1 15	1 25	1.8	13 45	1.8
10	5 38	18 21	0 23	1 18	1 29	1.9	13 40	1.7
20	5 19	18 40	0 25	1 24	1 33	2.0	13 34	1.6
30	4 57	19 2	0 27	1 37	1 38	2.2	13 28	1.4
35	4 44	19 15	0 30	1 47	1 41	2.2	13 24	1.4
40	4 29	19 30	0 33	2 3	1 45	2.3	13 19	1.3
45	4 11	19 48	0 37	2 33	1 49	2.4	13 14	1.2
50	3 48	20 10	0 45	:::	1 53	2.6	13 9	1.1
55	3 18	20 40	0 58	:::	1 59	2.7	13 1	.9
60	2 33	21 25	1 46	:::	2 7	2.9	12 52	.7

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	249 30.0 150	5 25.0	92	252 56.3 -6 41.8	192 23.4 -21 47.9			
2	278 38.1 150	5 43.5	92	283 .7 -6 42.0	222 27.7 -21 48.0			
4	307 46.1 150	6 1.9	91	313 5.0 -6 42.2	252 32.0 -21 48.0			
6	336 54.2 150	6 20.2	91	343 9.3 -6 42.5	282 36.3 -21 48.1			
8	6 2.2 150	6 38.4	90	13 13.7 -6 42.7	312 40.6 -21 48.1			
10	35 10.2 150	6 56.4	90	43 18.0 -6 42.9	342 44.9 -21 48.2			
12	64 18.2 150	7 14.3	89	73 22.3 -6 43.1	12 49.2 -21 48.2			
14	93 26.1 149	7 32.1	88	103 26.7 -6 43.3	42 53.5 -21 48.2			
16	122 34.0 149	7 49.7	88	133 31.0 -6 43.6	72 57.8 -21 48.3			
18	151 41.8 149	8 7.3	87	163 35.4 -6 43.8	103 2.1 -21 48.3			
20	180 49.6 149	8 24.6	86	193 39.7 -6 44.0	133 6.4 -21 48.4			
22	209 57.3 148	8 41.9	85	223 44.0 -6 44.2	163 10.7 -21 48.4			
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	0 57.7	-1.2	16.3	T _m	7 35	1.8	54.4 14.8
12	0 42.7	T _{m☉}	11 h 59.3 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	'	°	
♂	15 15	.1	39	-4.4	♄	7 7	.0	161	-1.5
♂	16 12	.1	25	.4	♂	11 9	.0	100	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	180	6.9	-23	24.5	92	56.9	131	14.0	-17	1.6	117	11.0	-11	10.5
2	210	6.3	-23	24.4	123	1.8	161	13.4	-16	59.7	147	12.4	-11	9.1
4	240	5.7	-23	24.3	153	6.8	191	12.9	-16	57.7	177	13.7	-11	7.6
6	270	5.1	-23	24.2	183	11.7	221	12.4	-16	55.7	207	15.1	-11	6.2
8	300	4.5	-23	24.1	213	16.6	251	11.9	-16	53.8	237	16.5	-11	4.7
10	330	3.8	-23	24.0	243	21.6	281	11.3	-16	51.8	267	17.9	-11	3.3
12	0	3.2	-23	23.9	273	26.5	311	10.8	-16	49.8	297	19.2	-11	1.8
14	30	2.6	-23	23.8	303	31.4	341	10.3	-16	47.8	327	20.6	-11	.4
16	60	2.0	-23	23.6	333	36.3	11	9.8	-16	45.8	357	22.0	-10	58.9
18	90	1.4	-23	23.5	3	41.3	41	9.3	-16	43.8	27	23.4	-10	57.4
20	120	.7	-23	23.4	33	46.2	71	8.8	-16	41.8	57	24.7	-10	56.0
22	150	.1	-23	23.2	63	51.1	101	8.3	-16	39.8	87	26.1	-10	54.5
Δ		-3		1				-3		10		7		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	1 2	.8	15 50	2.9
55	8 24	15 35	0 46	2 18	1 13	1.0	15 35	2.7
50	7 57	16 2	0 39	1 60	1 22	1.1	15 24	2.5
45	7 37	16 23	0 34	1 47	1 30	1.2	15 15	2.4
40	7 20	16 40	0 31	1 38	1 36	1.3	15 7	2.3
35	7 6	16 54	0 28	1 31	1 41	1.4	15 1	2.2
30	6 53	17 6	0 26	1 26	1 46	1.5	14 55	2.2
20	6 32	17 28	0 24	1 19	1 54	1.6	14 45	2.0
10	6 13	17 46	0 23	1 15	2 1	1.7	14 37	1.9
0	5 56	18 4	0 23	1 15	2 8	1.8	14 29	1.8
10	5 38	18 21	0 23	1 18	2 15	1.9	14 21	1.7
20	5 19	18 40	0 25	1 24	2 22	2.0	14 12	1.6
30	4 57	19 2	0 27	1 37	2 30	2.2	14 2	1.5
35	4 44	19 15	0 30	1 47	2 35	2.2	13 57	1.5
40	4 29	19 30	0 33	2 3	2 41	2.3	13 50	1.4
45	4 11	19 48	0 37	2 33	2 47	2.4	13 43	1.3
50	3 49	20 11	0 45	:::	2 55	2.5	13 34	1.2
55	3 19	20 41	0 58	:::	3 5	2.7	13 23	1.0
60	2 34	21 25	1 45	:::	3 17	2.9	13 9	.8

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	239	5.0	148	8	58.9	85	253	48.4	-6	44.4	193	15.0	-21	48.5
2	268	12.6	148	9	15.9	84	283	52.7	-6	44.7	223	19.3	-21	48.5
4	297	20.1	147	9	32.6	83	313	57.1	-6	44.9	253	23.7	-21	48.6
6	326	27.6	147	9	49.2	82	344	1.4	-6	45.1	283	28.0	-21	48.6
8	355	34.9	146	10	5.7	81	14	5.7	-6	45.3	313	32.3	-21	48.6
10	24	42.2	146	10	22.0	81	44	10.1	-6	45.5	343	36.6	-21	48.7
12	53	49.4	146	10	38.1	80	74	14.4	-6	45.7	13	40.9	-21	48.7
14	82	56.5	145	10	54.0	79	104	18.8	-6	46.0	43	45.2	-21	48.8
16	112	3.5	145	11	9.7	78	134	23.1	-6	46.2	73	49.5	-21	48.8
18	141	10.4	144	11	25.3	77	164	27.5	-6	46.4	103	53.8	-21	48.9
20	170	17.2	143	11	40.7	76	194	31.8	-6	46.6	133	58.1	-21	48.9
22	199	23.9	143	11	55.8	75	224	36.2	-6	46.8	164	2.4	-21	49.0
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	0 27.8	-1.2	16.3	T _m	8 18	1.8	54.1	14.7
12	0 12.9	T _{m☉}	11 h 59.8 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	'	°	'
♀	15 15	.1	38	-4.5	♃	7 4	.0	161	-1.5
♂	16 11	.1	24	.4	♄	11 5	.0	100	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	59.5	-23	23.1	93	56.1	131	7.8	-16	37.8	117	27.5	-10	53.1
2	209	58.9	-23	23.0	124	1.0	161	7.3	-16	35.8	147	28.9	-10	51.6
4	239	58.2	-23	22.8	154	5.9	191	6.8	-16	33.8	177	30.3	-10	50.2
6	269	57.6	-23	22.7	184	10.8	221	6.3	-16	31.8	207	31.6	-10	48.7
8	299	57.0	-23	22.5	214	15.8	251	5.8	-16	29.8	237	33.0	-10	47.2
10	329	56.4	-23	22.4	244	20.7	281	5.4	-16	27.8	267	34.4	-10	45.8
12	359	55.8	-23	22.2	274	25.6	311	4.9	-16	25.8	297	35.8	-10	44.3
14	29	55.1	-23	22.0	304	30.6	341	4.4	-16	23.8	327	37.2	-10	42.8
16	59	54.5	-23	21.9	334	35.5	11	3.9	-16	21.8	357	38.6	-10	41.4
18	89	53.9	-23	21.7	4	40.4	41	3.5	-16	19.8	27	39.9	-10	39.9
20	119	53.3	-23	21.5	34	45.3	71	3.0	-16	17.7	57	41.3	-10	38.5
22	149	52.7	-23	21.4	64	50.3	101	2.6	-16	15.7	87	42.7	-10	37.0
Δ		-3		1				-2		10		7		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	1 20	.9	16 59	2.8
55	8 25	15 36	0 46	2 18	1 37	1.1	16 39	2.6
50	7 58	16 3	0 38	1 59	1 49	1.3	16 25	2.5
45	7 37	16 24	0 34	1 47	1 59	1.4	16 13	2.4
40	7 20	16 40	0 31	1 38	2 8	1.4	16 3	2.3
35	7 6	16 55	0 28	1 31	2 15	1.5	15 54	2.2
30	6 54	17 7	0 26	1 26	2 21	1.6	15 47	2.2
20	6 32	17 28	0 24	1 19	2 32	1.7	15 34	2.1
10	6 14	17 47	0 23	1 15	2 42	1.8	15 23	2.0
0	5 57	18 4	0 23	1 15	2 51	1.9	15 13	1.9
10	5 39	18 22	0 23	1 18	3 1	2.0	15 3	1.8
20	5 20	18 41	0 25	1 24	3 11	2.1	14 52	1.7
30	4 58	19 3	0 27	1 37	3 22	2.2	14 39	1.6
35	4 45	19 16	0 30	1 47	3 29	2.2	14 32	1.6
40	4 30	19 31	0 33	2 3	3 36	2.3	14 23	1.5
45	4 12	19 49	0 37	2 33	3 45	2.4	14 14	1.4
50	3 49	20 11	0 45	:::	3 56	2.5	14 2	1.3
55	3 19	20 41	0 58	:::	4 9	2.6	13 48	1.2
60	2 35	21 25	1 44	:::	4 27	2.8	13 29	1.0

UT	MESEC				JUPITER				SATURN					
	S _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	228	30.5	142	12	10.8	74	254	40.5	-6	47.0	194	6.7	-21	49.0
2	257	37.0	142	12	25.6	73	284	44.9	-6	47.3	224	11.0	-21	49.0
4	286	43.3	141	12	40.1	72	314	49.2	-6	47.5	254	15.3	-21	49.1
6	315	49.5	141	12	54.5	71	344	53.6	-6	47.7	284	19.6	-21	49.1
8	344	55.7	140	13	8.6	70	14	57.9	-6	47.9	314	23.9	-21	49.2
10	14	1.6	139	13	22.6	68	45	2.3	-6	48.1	344	28.2	-21	49.2
12	43	7.5	139	13	36.3	67	75	6.6	-6	48.3	14	32.5	-21	49.3
14	72	13.2	138	13	49.7	66	105	11.0	-6	48.5	44	36.8	-21	49.3
16	101	18.8	137	14	3.0	65	135	15.4	-6	48.7	74	41.1	-21	49.3
18	130	24.3	137	14	16.0	64	165	19.7	-6	48.9	104	45.4	-21	49.4
20	159	29.6	136	14	28.7	63	195	24.1	-6	49.2	134	49.7	-21	49.4
22	188	34.8	135	14	41.3	61	225	28.4	-6	49.4	164	54.0	-21	49.5
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	- 0 2.0	-1.2	16.3	T _m	9 2	1.9	54.0	14.7
12	- 0 16.9	T _{m☉}	12 h .3 min	Starost	25.			

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	52.0	-23	21.2	94	55.2	131	2.1	-16	13.7	117	44.1	-10	35.5
2	209	51.4	-23	21.0	125	.1	161	1.7	-16	11.6	147	45.5	-10	34.1
4	239	50.8	-23	20.8	155	5.1	191	1.2	-16	9.6	177	46.9	-10	32.6
6	269	50.2	-23	20.6	185	10.0	221	.8	-16	7.6	207	48.3	-10	31.1
8	299	49.6	-23	20.4	215	14.9	251	.3	-16	5.5	237	49.6	-10	29.7
10	329	49.0	-23	20.3	245	19.8	280	59.9	-16	3.5	267	51.0	-10	28.2
12	359	48.3	-23	20.1	275	24.8	310	59.5	-16	1.5	297	52.4	-10	26.7
14	29	47.7	-23	19.9	305	29.7	340	59.0	-15	59.4	327	53.8	-10	25.3
16	59	47.1	-23	19.7	335	34.6	10	58.6	-15	57.4	357	55.2	-10	23.8
18	89	46.5	-23	19.5	5	39.5	40	58.2	-15	55.3	27	56.6	-10	22.3
20	119	45.9	-23	19.2	35	44.5	70	57.8	-15	53.3	57	58.0	-10	20.8
22	149	45.2	-23	19.0	65	49.4	100	57.4	-15	51.2	87	59.4	-10	19.4
Δ		-3		1				-2		10		7		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 58	0 58	2 46	1 42	1.1	18 6	2.6
55	8 25	15 37	0 45	2 18	2 3	1.3	17 42	2.5
50	7 58	16 4	0 38	1 59	2 19	1.4	17 24	2.4
45	7 37	16 24	0 34	1 47	2 32	1.5	17 9	2.3
40	7 21	16 41	0 31	1 38	2 42	1.6	16 58	2.2
35	7 6	16 55	0 28	1 31	2 51	1.7	16 48	2.2
30	6 54	17 8	0 26	1 25	3 59	1.7	16 39	2.1
20	6 33	17 29	0 24	1 19	3 13	1.8	16 24	2.1
10	6 14	17 47	0 23	1 15	3 25	1.9	16 11	2.0
0	5 57	18 5	0 23	1 15	3 36	1.9	15 59	2.0
10	5 39	18 22	0 23	1 18	3 48	2.0	15 46	1.9
20	5 21	18 41	0 25	1 24	3 60	2.1	15 33	1.8
30	4 59	19 3	0 27	1 36	4 14	2.2	15 18	1.8
35	4 46	19 16	0 30	1 47	4 22	2.2	15 10	1.7
40	4 31	19 31	0 33	2 3	4 31	2.3	14 60	1.7
45	4 13	19 49	0 37	2 32	4 42	2.3	14 48	1.6
50	3 50	20 11	0 44	:::	4 56	2.4	14 34	1.5
55	3 20	20 41	0 58	:::	5 12	2.5	14 17	1.4
60	2 36	21 25	1 43	:::	5 35	2.7	13 53	1.3
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	217	39.8	135	14	53.5	60	255	32.8	-6	49.6	194	58.3	-21	49.5		
2	246	44.7	134	15	5.6	59	285	37.2	-6	49.8	225	2.6	-21	49.6		
4	275	49.5	133	15	17.3	58	315	41.5	-6	50.0	255	7.0	-21	49.6		
6	304	54.1	132	15	28.8	56	345	45.9	-6	50.2	285	11.3	-21	49.6		
8	333	58.6	132	15	40.1	55	15	50.2	-6	50.4	315	15.6	-21	49.7		
10	3	3.0	131	15	51.0	53	45	54.6	-6	50.6	345	19.9	-21	49.7		
12	32	7.1	130	16	1.7	52	75	59.0	-6	50.8	15	24.2	-21	49.8		
14	61	11.2	130	16	12.1	51	106	3.3	-6	51.0	45	28.5	-21	49.8		
16	90	15.1	129	16	22.3	49	136	7.7	-6	51.2	75	32.8	-21	49.9		
18	119	18.8	128	16	32.1	48	166	12.1	-6	51.4	105	37.1	-21	49.9		
20	148	22.5	127	16	41.7	46	196	16.4	-6	51.6	135	41.4	-21	49.9		
22	177	25.9	127	16	50.9	45	226	20.8	-6	51.8	165	45.7	-21	50.0		
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	- 0 31.8	-1.2	16.3	T _m	9 47	2.0	54.1	14.7	
12	- 0 46.6	T _{m☉}	12 h .8 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	'	°	°
♁	15 16	.1	36	-4.5	♄	6 57	.0	161	-1.5
♂	16 8	.1	23	.5	♅	10 59	.0	100	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS				
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂		
h	°	'	°	'	°	'	°	'	°	'	°	'		
0	179	44.6	-23	18.8	95	54.3	130	56.9	-15	49.2	118	.8	-10	17.9
2	209	44.0	-23	18.6	125	59.3	160	56.5	-15	47.1	148	2.2	-10	16.4
4	239	43.4	-23	18.4	156	4.2	190	56.1	-15	45.0	178	3.5	-10	14.9
6	269	42.8	-23	18.1	186	9.1	220	55.7	-15	43.0	208	4.9	-10	13.5
8	299	42.2	-23	17.9	216	14.0	250	55.3	-15	40.9	238	6.3	-10	12.0
10	329	41.6	-23	17.7	246	19.0	280	54.9	-15	38.9	268	7.7	-10	10.5
12	359	40.9	-23	17.4	276	23.9	310	54.5	-15	36.8	298	9.1	-10	9.0
14	29	40.3	-23	17.2	306	28.8	340	54.2	-15	34.7	328	10.5	-10	7.6
16	59	39.7	-23	17.0	336	33.8	10	53.8	-15	32.6	358	11.9	-10	6.1
18	89	39.1	-23	16.7	6	38.7	40	53.4	-15	30.6	28	13.3	-10	4.6
20	119	38.5	-23	16.5	36	43.6	70	53.0	-15	28.5	58	14.7	-10	3.1
22	149	37.9	-23	16.2	66	48.5	100	52.7	-15	26.4	88	16.1	-10	1.7
Δ		-3		1				-2		10		7		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 59	0 57	2 46	2 10	1.5	19 8	2.3
55	8 25	15 38	0 45	2 17	2 35	1.6	18 41	2.3
50	7 58	16 4	0 38	1 59	2 54	1.7	18 20	2.2
45	7 38	16 25	0 34	1 47	3 8	1.7	18 4	2.2
40	7 21	16 42	0 31	1 38	3 21	1.8	17 51	2.2
35	7 7	16 56	0 28	1 31	3 31	1.8	17 40	2.1
30	6 54	17 8	0 26	1 25	3 40	1.8	17 31	2.1
20	6 33	17 29	0 24	1 19	3 56	1.9	17 14	2.1
10	6 15	17 48	0 23	1 15	4 10	2.0	16 59	2.0
0	5 58	18 5	0 23	1 15	4 23	2.0	16 46	2.0
10	5 40	18 23	0 23	1 18	4 36	2.0	16 32	2.0
20	5 21	18 41	0 25	1 24	4 50	2.1	16 18	2.0
30	4 59	19 3	0 27	1 36	5 6	2.1	16 1	1.9
35	4 46	19 16	0 30	1 47	5 15	2.2	15 51	1.9
40	4 31	19 31	0 33	2 3	5 26	2.2	15 40	1.9
45	4 13	19 49	0 37	2 32	5 38	2.2	15 27	1.8
50	3 51	20 11	0 44	:::	5 54	2.3	15 11	1.8
55	3 21	20 41	0 58	:::	6 13	2.4	14 51	1.7
60	2 37	21 25	1 42	:::	6 40	2.5	14 24	1.6
S								

UT	MESEC				JUPITER				SATURN							
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄	
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'
0	206	29.2	126	16	59.9	43	256	25.2	-6	52.1	195	50.0	-21	50.0		
2	235	32.4	125	17	8.6	42	286	29.6	-6	52.3	225	54.3	-21	50.1		
4	264	35.5	124	17	16.9	40	316	33.9	-6	52.5	255	58.6	-21	50.1		
6	293	38.4	124	17	25.0	39	346	38.3	-6	52.7	286	2.9	-21	50.1		
8	322	41.1	123	17	32.7	37	16	42.7	-6	52.9	316	7.2	-21	50.2		
10	351	43.7	122	17	40.2	36	46	47.1	-6	53.1	346	11.5	-21	50.2		
12	20	46.2	122	17	47.3	34	76	51.4	-6	53.3	16	15.9	-21	50.3		
14	49	48.5	121	17	54.1	32	106	55.8	-6	53.5	46	20.2	-21	50.3		
16	78	50.8	120	18	.5	31	137	.2	-6	53.7	76	24.5	-21	50.4		
18	107	52.8	120	18	6.6	29	167	4.6	-6	53.9	106	28.8	-21	50.4		
20	136	54.8	119	18	12.4	27	197	9.0	-6	54.1	136	33.1	-21	50.4		
22	165	56.6	118	18	17.9	26	227	13.3	-6	54.3	166	37.4	-21	50.5		
Δ								22		-1		22		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	179 37.3 -23 16.0		96 53.5	130 52.3 -15 24.3		118 17.5 -10 .2	
2	209 36.6 -23 15.7		126 58.4	160 51.9 -15 22.2		148 18.9 -9 58.7	
4	239 36.0 -23 15.4		157 3.3	190 51.6 -15 20.1		178 20.3 -9 57.2	
6	269 35.4 -23 15.2		187 8.3	220 51.2 -15 18.1		208 21.7 -9 55.7	
8	299 34.8 -23 14.9		217 13.2	250 50.8 -15 16.0		238 23.1 -9 54.3	
10	329 34.2 -23 14.6		247 18.1	280 50.5 -15 13.9		268 24.5 -9 52.8	
12	359 33.6 -23 14.4		277 23.0	310 50.1 -15 11.8		298 25.9 -9 51.3	
14	29 33.0 -23 14.1		307 28.0	340 49.8 -15 9.7		328 27.3 -9 49.8	
16	59 32.4 -23 13.8		337 32.9	10 49.5 -15 7.6		358 28.7 -9 48.3	
18	89 31.7 -23 13.5		7 37.8	40 49.1 -15 5.5		28 30.1 -9 46.8	
20	119 31.1 -23 13.2		37 42.8	70 48.8 -15 3.4		58 31.5 -9 45.4	
22	149 30.5 -23 13.0		67 47.7	100 48.5 -15 1.3		88 32.9 -9 43.9	
Δ	-3 1			-2 10		7 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 0	0 57	2 45	2 45	1.8	20 4	2.0
55	8 25	15 39	0 45	2 17	3 13	1.9	19 35	2.0
50	7 58	16 5	0 38	1 59	3 34	1.9	19 14	2.0
45	7 38	16 26	0 34	1 47	3 50	2.0	18 57	2.0
40	7 21	16 42	0 31	1 38	4 3	2.0	18 43	2.0
35	7 7	16 57	0 28	1 31	4 15	2.0	18 31	2.0
30	6 55	17 9	0 26	1 25	4 24	2.0	18 21	2.0
20	6 34	17 30	0 24	1 19	4 42	2.0	18 4	2.1
10	6 15	17 48	0 23	1 15	4 57	2.0	17 48	2.1
0	5 58	18 6	0 23	1 15	5 11	2.0	17 34	2.1
10	5 41	18 23	0 23	1 18	5 25	2.1	17 20	2.1
20	5 22	18 42	0 25	1 24	5 40	2.1	17 5	2.1
30	4 60	19 4	0 27	1 36	5 57	2.1	16 47	2.1
35	4 47	19 17	0 30	1 47	6 7	2.1	16 37	2.1
40	4 32	19 31	0 33	2 3	6 19	2.1	16 25	2.1
45	4 14	19 49	0 37	2 32	6 32	2.1	16 11	2.1
50	3 52	20 12	0 44	:::	6 49	2.1	15 55	2.1
55	3 22	20 41	0 58	:::	7 10	2.1	15 33	2.1
60	2 38	21 25	1 41	:::	7 39	2.2	15 4	2.1
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	194 58.3 118	18 23.0	24	257 17.7 -6 54.5		196 41.7 -21 50.5		
2	223 59.9 117	18 27.8	22	287 22.1 -6 54.7		226 46.0 -21 50.6		
4	253 1.3 117	18 32.2	20	317 26.5 -6 54.9		256 50.3 -21 50.6		
6	282 2.7 116	18 36.3	19	347 30.9 -6 55.1		286 54.6 -21 50.6		
8	311 3.9 116	18 40.0	17	17 35.3 -6 55.3		316 58.9 -21 50.7		
10	340 5.0 115	18 43.4	15	47 39.6 -6 55.5		347 3.2 -21 50.7		
12	9 6.1 115	18 46.4	13	77 44.0 -6 55.7		17 7.6 -21 50.8		
14	38 7.0 114	18 49.1	12	107 48.4 -6 55.9		47 11.9 -21 50.8		
16	67 7.8 114	18 51.4	10	137 52.8 -6 56.1		77 16.2 -21 50.8		
18	96 8.5 113	18 53.3	8	167 57.2 -6 56.3		107 20.5 -21 50.9		
20	125 9.2 113	18 54.9	6	198 1.6 -6 56.5		137 24.8 -21 50.9		
22	154 9.7 112	18 56.1	4	228 6.0 -6 56.7		167 29.1 -21 51.0		
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	- 1 31.0	-1.2	16.3	T _m	11 22	2.1	54.4 14.8		
12	- 1 45.7	T _{m☉}	12 h 1.8 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	'	°	'
♁	15 17	.1	34	-4.5	♃	6 50	.0	160	-1.5
♂	16 6	.1	21	.5	♄	10 52	.0	100	.7

29. DECEMBAR

ČETVRTAK

UT	SUNCE		PROLEĆ. TAČKA S _γ	VENERA		MARS	
	S _☉	δ _☉		S _♀	δ _♀	S _♂	δ _♂
h	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	179 29.9 -23 12.7		97 52.6	130 48.1 -14 59.1		118 34.3 -9 42.4	
2	209 29.3 -23 12.4		127 57.5	160 47.8 -14 57.0		148 35.7 -9 40.9	
4	239 28.7 -23 12.1		158 2.5	190 47.5 -14 54.9		178 37.1 -9 39.4	
6	269 28.1 -23 11.8		188 7.4	220 47.2 -14 52.8		208 38.5 -9 37.9	
8	299 27.5 -23 11.5		218 12.3	250 46.9 -14 50.7		238 39.9 -9 36.4	
10	329 26.9 -23 11.1		248 17.3	280 46.6 -14 48.6		268 41.3 -9 35.0	
12	359 26.3 -23 10.8		278 22.2	310 46.3 -14 46.4		298 42.7 -9 33.5	
14	29 25.7 -23 10.5		308 27.1	340 46.0 -14 44.3		328 44.2 -9 32.0	
16	59 25.1 -23 10.2		338 32.0	10 45.7 -14 42.2		358 45.6 -9 30.5	
18	89 24.5 -23 9.9		8 37.0	40 45.4 -14 40.1		28 47.0 -9 29.0	
20	119 23.8 -23 9.5		38 41.9	70 45.1 -14 37.9		58 48.4 -9 27.5	
22	149 23.2 -23 9.2		68 46.8	100 44.8 -14 35.8		88 49.8 -9 26.0	
Δ	-3 2			-2 11		7 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 1	0 57	2 45	3 29	2.3	20 52	1.6
55	8 25	15 39	0 45	2 17	3 59	2.2	20 23	1.7
50	7 58	16 6	0 38	1 59	4 20	2.2	20 2	1.8
45	7 38	16 27	0 34	1 47	4 37	2.2	19 46	1.9
40	7 21	16 43	0 30	1 37	4 51	2.2	19 32	1.9
35	7 7	16 57	0 28	1 31	5 2	2.1	19 20	1.9
30	6 55	17 9	0 26	1 25	5 12	2.1	19 10	2.0
20	6 34	17 30	0 24	1 19	5 30	2.1	18 53	2.0
10	6 16	17 49	0 23	1 15	5 45	2.1	18 38	2.0
0	5 59	18 6	0 22	1 15	5 60	2.1	18 24	2.1
10	5 41	18 23	0 23	1 18	6 14	2.1	18 9	2.1
20	5 22	18 42	0 25	1 24	6 29	2.0	17 54	2.2
30	5 0	19 4	0 27	1 36	6 47	2.0	17 37	2.2
35	4 48	19 17	0 30	1 47	6 57	2.0	17 26	2.2
40	4 33	19 32	0 33	2 2	7 9	2.0	17 15	2.2
45	4 15	19 49	0 37	2 31	7 23	1.9	17 1	2.3
50	3 53	20 12	0 44	:::	7 40	1.9	16 44	2.3
55	3 23	20 41	0 57	:::	8 2	1.9	16 23	2.4
60	2 39	21 25	1 40	:::	8 31	1.8	15 53	2.5
S								

UT	MESEC				JUPITER		SATURN	
	S _♃	Δ	δ _♃	Δ	S _♃	δ _♃	S _♄	δ _♄
h	° / ' / "	' / "	° / ' / "	' / "	° / ' / "	° / ' / "	° / ' / "	° / ' / "
0	183 10.2 112	18 57.0	2	258 10.4 -6 56.8		197 33.4 -21 51.0		
2	212 10.5 112	18 57.5	1	288 14.8 -6 57.0		227 37.7 -21 51.1		
4	241 10.8 111	18 57.6	-1	318 19.2 -6 57.2		257 42.0 -21 51.1		
6	270 11.1 111	18 57.3	-3	348 23.6 -6 57.4		287 46.3 -21 51.1		
8	299 11.3 111	18 56.7	-5	18 28.0 -6 57.6		317 50.7 -21 51.2		
10	328 11.4 110	18 55.6	-7	48 32.4 -6 57.8		347 55.0 -21 51.2		
12	357 11.4 110	18 54.2	-9	78 36.8 -6 58.0		17 59.3 -21 51.3		
14	26 11.4 110	18 52.5	-11	108 41.2 -6 58.2		48 3.6 -21 51.3		
16	55 11.4 110	18 50.3	-13	138 45.6 -6 58.4		78 7.9 -21 51.3		
18	84 11.3 109	18 47.8	-14	168 50.0 -6 58.6		108 12.2 -21 51.4		
20	113 11.1 109	18 44.9	-16	198 54.4 -6 58.8		138 16.5 -21 51.4		
22	142 11.0 109	18 41.7	-18	228 58.8 -6 59.0		168 20.8 -21 51.5		
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	- 2 .3	-1.2	16.3	T _m	12 12	2.0	54.8 14.9		
12	- 2 14.9	T _{m☉}	12 h 2.2 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	'	°	'
♁	15 17	.1	33	-4.6	♃	6 46	.0	160	-1.5
♂	16 5	.1</							

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	22.6	-23	8.9	98	51.7	130	44.5	-14	33.7	118	51.2	-9	24.5	
2	209	22.0	-23	8.5	128	56.7	160	44.2	-14	31.5	148	52.6	-9	23.0	
4	239	21.4	-23	8.2	159	1.6	190	44.0	-14	29.4	178	54.0	-9	21.5	
6	269	20.8	-23	7.9	189	6.5	220	43.7	-14	27.3	208	55.4	-9	20.1	
8	299	20.2	-23	7.5	219	11.5	250	43.4	-14	25.1	238	56.8	-9	18.6	
10	329	19.6	-23	7.2	249	16.4	280	43.2	-14	23.0	268	58.3	-9	17.1	
12	359	19.0	-23	6.8	279	21.3	310	42.9	-14	20.8	298	59.7	-9	15.6	
14	29	18.4	-23	6.5	309	26.2	340	42.6	-14	18.7	329	1.1	-9	14.1	
16	59	17.8	-23	6.1	339	31.2	10	42.4	-14	16.5	359	2.5	-9	12.6	
18	89	17.2	-23	5.7	9	36.1	40	42.1	-14	14.4	29	3.9	-9	11.1	
20	119	16.6	-23	5.4	39	41.0	70	41.9	-14	12.2	59	5.3	-9	9.6	
22	149	16.0	-23	5.0	69	46.0	100	41.7	-14	10.1	89	6.7	-9	8.1	
Δ		-3		2				-1		11			7		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	4 24	2.7	21 31	1.3
55	8 25	15 41	0 45	2 17	4 52	2.5	21 5	1.5
50	7 59	16 7	0 38	1 59	5 13	2.4	20 45	1.6
45	7 38	16 27	0 34	1 47	5 29	2.4	20 30	1.7
40	7 22	16 44	0 30	1 37	5 42	2.3	20 17	1.7
35	7 8	16 58	0 28	1 31	5 54	2.3	20 7	1.8
30	6 55	17 10	0 26	1 25	6 4	2.2	19 57	1.9
20	6 34	17 31	0 24	1 19	6 21	2.2	19 41	1.9
10	6 16	17 49	0 23	1 15	6 36	2.1	19 27	2.0
0	5 59	18 6	0 22	1 15	6 49	2.1	19 13	2.1
10	5 42	18 24	0 23	1 17	7 3	2.0	19 0	2.1
20	5 23	18 42	0 24	1 24	7 18	2.0	18 46	2.2
30	5 1	19 4	0 27	1 36	7 35	1.9	18 29	2.3
35	4 48	19 17	0 30	1 46	7 45	1.9	18 20	2.3
40	4 33	19 32	0 33	2 2	7 56	1.8	18 9	2.4
45	4 16	19 50	0 37	2 31	8 10	1.8	17 56	2.5
50	3 54	20 12	0 44	:::	8 26	1.7	17 40	2.5
55	3 24	20 41	0 57	:::	8 46	1.6	17 20	2.7
60	2 40	21 24	1 38	:::	9 14	1.5	16 52	2.8
S								

UT	MESEC				JUPITER				SATURN									
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
0	171	10.8	109	18	38.0	-20	259	3.2	-6	59.2	198	25.1	-21	51.5	228	29.5	-21	51.5
2	200	10.5	109	18	34.0	-22	289	7.6	-6	59.3	228	29.5	-21	51.5	319	12.0	-6	59.5
4	229	10.3	109	18	29.6	-24	319	12.0	-6	59.5	258	33.8	-21	51.6	349	16.4	-6	59.7
6	258	10.0	109	18	24.8	-26	349	16.4	-6	59.7	288	38.1	-21	51.6	19	20.8	-6	59.9
8	287	9.7	109	18	19.6	-28	19	20.8	-6	59.9	318	42.4	-21	51.7	49	25.2	-7	.1
10	316	9.4	108	18	14.1	-29	49	25.2	-7	.1	348	46.7	-21	51.7	79	29.6	-7	.3
12	345	9.1	108	18	8.2	-31	79	29.6	-7	.3	18	51.0	-21	51.7	109	34.0	-7	.5
14	14	8.8	108	18	1.9	-33	109	34.0	-7	.5	48	55.3	-21	51.8	139	38.4	-7	.7
16	43	8.5	109	17	55.3	-35	139	38.4	-7	.7	78	59.6	-21	51.8	169	42.9	-7	.9
18	72	8.2	109	17	48.3	-37	169	42.9	-7	.9	109	4.0	-21	51.8	199	47.3	-7	1.0
20	101	8.0	109	17	40.9	-39	199	47.3	-7	1.0	139	8.3	-21	51.9	229	51.7	-7	1.2
22	130	7.7	109	17	33.2	-41	229	51.7	-7	1.2	169	12.6	-21	51.9				
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	- 2 29.4	-1.2	16.3	T _m	13 1	2.1	55.1 15.0
12	- 2 43.9	T _{m☉}	12 h 2.7 min	Starost	.7 d	Faza	●

PLANETE									
Pl.	T _m	π	360-α	Vel.	Pl.	T _m	π	360-α	Vel.
♀	h min	'	°		♃	h min	'	°	
♂	15 17	.1	32	-4.6	♄	6 43	.0	160	-1.5
♂	16 4	.1	20	.5	♂	10 45	.0	100	.7

UT	SUNCE				PROLEĆ. TAČKA S _γ	VENERA				MARS					
	S _☉		δ _☉			S _♀		δ _♀		S _♂		δ _♂			
h	°	'	°	'	°	'	°	'	°	'	°	'			
0	179	15.4	-23	4.6	99	50.9	130	41.4	-14	7.9	119	8.2	-9	6.6	
2	209	14.8	-23	4.3	129	55.8	160	41.2	-14	5.7	149	9.6	-9	5.1	
4	239	14.2	-23	3.9	160	.7	190	41.0	-14	3.6	179	11.0	-9	3.6	
6	269	13.6	-23	3.5	190	5.7	220	40.7	-14	1.4	209	12.4	-9	2.1	
8	299	13.0	-23	3.1	220	10.6	250	40.5	-13	59.2	239	13.8	-9	.6	
10	329	12.4	-23	2.7	250	15.5	280	40.3	-13	57.1	269	15.2	-8	59.1	
12	359	11.8	-23	2.4	280	20.5	310	40.1	-13	54.9	299	16.7	-8	57.6	
14	29	11.2	-23	2.0	310	25.4	340	39.8	-13	52.7	329	18.1	-8	56.1	
16	59	10.7	-23	1.6	340	30.3	10	39.6	-13	50.6	359	19.5	-8	54.6	
18	89	10.1	-23	1.2	10	35.2	40	39.4	-13	48.4	29	20.9	-8	53.1	
20	119	9.5	-23	.8	40	40.2	70	39.2	-13	46.2	59	22.3	-8	51.6	
22	149	8.9	-23	.4	70	45.1	100	39.0	-13	44.0	89	23.8	-8	50.1	
Δ		-3		2				-1		11			7		8

φ	SUNCE		TRAJANJE SUMRAKA		MESEC			
	IZLAZ	ZALAZ	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 4	0 57	2 44	5 28	3.0	22 2	1.0
55	8 25	15 42	0 45	2 17	5 53	2.8	21 40	1.3
50	7 59	16 8	0 38	1 59	6 11	2.6	21 23	1.4
45	7 38	16 28	0 34	1 46	6 26	2.5	21 10	1.5
40	7 22	16 45	0 30	1 37	6 38	2.5	20 59	1.6
35	7 8	16 59	0 28	1 30	6 49	2.4	20 50	1.7
30	6 56	17 11	0 26	1 25	6 58	2.3	20 42	1.7
20	6 35	17 32	0 24	1 18	7 13	2.2	20 27	1.9
10	6 17	17 50	0 23	1 15	7 27	2.1	20 15	2.0
0	5 59	18 7	0 22	1 15	7 39	2.1	20 3	2.1
10	5 42	18 24	0 23	1 17	7 52	2.0	19 51	2.1
20	5 24	18 43	0 24	1 24	8 5	1.9	19 39	2.2
30	5 2	19 4	0 27	1 36	8 21	1.8	19 24	2.4
35	4 49	19 17	0 30	1 46	8 30	1.7	19 16	2.4
40	4 34	19 32	0 33	2 2	8 40	1.7	19 6	2.5
45	4 17	19 50	0 37	2 30	8 52	1.6	18 55	2.6
50	3 54	20 12	0 44	:::	9 6	1.5	18 41	2.7
55	3 25	20 41	0 57	:::	9 25	1.4	18 23	2.9
60	2 42	21 24	1 37	:::	9 49	1.2	17 60	3.1
S								

UT	MESEC				JUPITER				SATURN									
	S _♃		Δ		δ _♃		Δ		S _♃		δ _♃		S _♄		δ _♄			
h	°	'	°	'	°	'	°	'	°	'	°	'	°	'	°	'		
0	159	7.4	109	17	25.1	-42	259	56.1	-7	1.4	199	16.9	-21	52.0	229	21.2	-21	52.0
2	188	7.2	109	17	16.6	-44	290	.5	-7	1.6	229	21.2	-21	52.0	320	4.9	-7	1.8
4	217	7.0	109	17	7.8	-46	320	4.9	-7	1.8	259	25.5	-21	52.0	350	9.4	-7	2.0
6	246	6.8	109	16	58.6	-48	350	9.4	-7	2.0	289	29.8	-21	52.1	19	13.8	-7	2.1
8	275	6.6	109	16	49.0	-49	20	13.8	-7	2.1	319	34.2	-21	52.1	49	18.2	-7	2.3
10	304	6.5	109	16	39.1	-51	50	18.2	-7	2.3	349	38.5	-21	52.2	80	22.6	-7	2.5
12	333	6.4	110	16	28.9	-53	80	22.6	-7	2.5	19	42.8	-21	52.2	110	27.0	-7	2.7
14	2	6.3	110	16	18.3	-55	110	27.0	-7	2.7	49	47.1	-21	52.2	140	31.5	-7	2.9
16	31	6.3	110	16	7.4	-56	140	31.5	-7	2.9	79	51.4	-21	52.3	170	35.9	-7	3.1
18	60	6.3	110	15	56.1	-5												



Efemeride

NAUTIČKIH ZVEZDA

SUREKTASCENZIJE NAUČIČKIH ZVEZDA

za 1. u mesecu

R. b.	Ime zvezde	360°-α	2016 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2017 JAN
1	ALPHERATZ	357	41.7	41.8	41.9	41.9	41.7	41.5	41.3	41.0	40.9	40.8	40.8	40.9	41.0
2	CAPH	357	29.2	29.5	29.6	29.6	29.4	29.1	28.7	28.3	28.1	28.0	28.1	28.3	28.5
3	DIPHDA	348	54.2	54.3	54.4	54.4	54.3	54.1	53.9	53.6	53.4	53.4	53.4	53.4	53.5
4	ACHERNAR	335	25.5	25.7	25.9	26.0	26.0	25.8	25.5	25.2	24.8	24.7	24.6	24.7	25.0
5	HAMAL	327	58.6	58.7	58.9	58.9	58.9	58.8	58.5	58.3	58.1	57.9	57.8	57.8	57.9
6	POLARIS	316	40.2	53.3	6.2	16.8	19.7	14.8	3.9	49.0	34.3	22.5	15.4	15.3	22.8
7	MIRFAK	308	37.4	37.6	37.8	38.0	38.0	37.9	37.7	37.4	37.0	36.8	36.6	36.5	36.5
8	ALDEBARAN	290	47.1	47.1	47.3	47.4	47.5	47.4	47.3	47.1	46.9	46.7	46.5	46.4	46.3
9	RIGEL	281	10.1	10.1	10.2	10.4	10.5	10.5	10.4	10.2	10.0	9.8	9.6	9.5	9.4
10	CAPELLA	280	31.4	31.5	31.6	31.8	32.0	32.0	31.9	31.6	31.3	31.0	30.7	30.5	30.4
11	BELLATRIX	278	29.8	29.9	30.0	30.1	30.2	30.2	30.1	30.0	29.7	29.5	29.3	29.2	29.1
12	EL NATH	278	10.1	10.1	10.2	10.4	10.5	10.5	10.4	10.2	9.9	9.7	9.5	9.3	9.2
13	ALNILAM	275	44.3	44.3	44.4	44.6	44.7	44.7	44.6	44.5	44.2	44.0	43.8	43.7	43.6
14	BETELGEUSE	270	59.1	59.1	59.2	59.3	59.5	59.5	59.4	59.3	59.1	58.8	58.6	58.5	58.4
15	CANOPUS	263	54.8	54.9	55.1	55.4	55.6	55.8	55.8	55.6	55.4	55.1	54.8	54.6	54.5
16	SIRIUS	258	31.9	31.9	31.9	32.1	32.2	32.3	32.3	32.2	32.0	31.8	31.6	31.4	31.3
17	ADHARA	255	10.8	10.8	10.9	11.0	11.2	11.3	11.3	11.2	11.0	10.8	10.6	10.4	10.2
18	PROCYON	244	57.6	57.5	57.6	57.7	57.8	57.9	57.9	57.8	57.7	57.5	57.3	57.1	56.9
19	POLLUX	243	25.3	25.2	25.3	25.4	25.5	25.6	25.6	25.5	25.4	25.2	24.9	24.7	24.5
20	AVIOR	234	16.6	16.6	16.7	16.9	17.2	17.5	17.7	17.7	17.6	17.3	17.0	16.6	16.4
21	AL SUHAIL	222	50.7	50.6	50.6	50.8	50.9	51.1	51.2	51.3	51.2	51.0	50.8	50.5	50.2
22	MIAPLACIDUS	221	38.4	38.2	38.3	38.6	39.0	39.5	39.8	40.0	39.9	39.6	39.2	38.6	38.2
23	ALPHARD	217	54.1	54.0	54.0	54.0	54.1	54.3	54.3	54.3	54.3	54.1	53.9	53.7	53.5
24	REGULUS	207	41.5	41.3	41.3	41.3	41.4	41.5	41.6	41.6	41.5	41.4	41.3	41.0	40.8
25	DUBHE	193	49.5	49.1	48.9	49.0	49.1	49.4	49.6	49.8	49.8	49.7	49.5	49.1	48.6
26	DENEbola	182	31.9	31.6	31.5	31.5	31.5	31.6	31.7	31.7	31.8	31.8	31.6	31.4	31.2
27	ACRUX	173	7.2	6.7	6.5	6.4	6.4	6.6	6.9	7.1	7.4	7.4	7.2	6.9	6.4
28	GACRUX	171	58.8	58.4	58.2	58.1	58.1	58.3	58.5	58.7	58.9	58.9	58.8	58.5	58.1
29	MINOSA	167	49.8	49.4	49.1	49.0	49.0	49.1	49.3	49.6	49.8	49.8	49.7	49.4	49.0
30	ALIOTh	166	19.4	19.0	18.7	18.6	18.6	18.8	19.0	19.2	19.3	19.4	19.3	19.1	18.7
31	MIZAR	158	51.8	51.5	51.2	51.0	51.0	51.1	51.3	51.5	51.7	51.8	51.8	51.6	51.3
32	SPICA	158	29.5	29.2	29.1	28.9	28.9	28.9	29.0	29.1	29.2	29.2	29.2	29.0	28.8
33	ALKAID	152	57.8	57.5	57.2	57.0	57.0	57.1	57.2	57.4	57.6	57.7	57.7	57.5	57.2
34	MENKENT	148	5.6	5.3	5.1	4.9	4.9	4.9	4.9	5.0	5.2	5.3	5.3	5.1	4.8
35	ARCTURUS	145	54.3	54.1	53.9	53.7	53.7	53.7	53.7	53.8	54.0	54.0	54.0	53.9	53.7
36	RIGEL KENTAURUS	139	49.7	49.3	48.9	48.6	48.4	48.5	48.6	48.8	49.1	49.3	49.4	49.2	48.8
37	KOHAB	137	21.0	20.3	19.8	19.3	19.1	19.2	19.6	20.2	20.8	21.2	21.5	21.4	21.0
38	ALPHECCA	126	9.8	9.6	9.4	9.2	9.0	9.0	9.0	9.1	9.3	9.4	9.5	9.4	9.3
39	DSCHUBBA	119	41.0	40.8	40.6	40.3	40.2	40.1	40.1	40.1	40.3	40.4	40.5	40.4	40.2
40	ANTARES	112	24.4	24.2	24.0	23.7	23.6	23.4	23.4	23.5	23.6	23.7	23.8	23.8	23.6
41	ATRIA	107	25.2	24.7	24.2	23.6	23.1	22.8	22.8	23.0	23.3	23.7	24.0	24.0	23.8
42	SHAULA	96	20.0	19.8	19.5	19.2	19.0	18.8	18.7	18.7	18.8	19.0	19.2	19.2	19.1
43	RASALHAGUE	96	5.2	5.0	4.8	4.6	4.4	4.3	4.2	4.2	4.3	4.5	4.6	4.6	4.6
44	ELTANIN	90	45.9	45.7	45.5	45.1	44.9	44.7	44.7	44.7	45.0	45.2	45.5	45.6	45.6
45	KAUS AUSTRALIS	83	41.9	41.8	41.6	41.3	41.0	40.8	40.7	40.7	40.8	40.9	41.1	41.1	41.1
46	VEGA	80	38.2	38.1	37.9	37.6	37.4	37.2	37.1	37.1	37.3	37.5	37.7	37.8	37.8
47	NUNKI	75	56.6	56.4	56.3	56.0	55.8	55.6	55.4	55.4	55.4	55.6	55.7	55.8	55.7
48	ALTAIR	62	6.9	6.8	6.7	6.5	6.3	6.1	5.9	5.8	5.9	6.0	6.1	6.2	6.2
49	PEACOCK	53	17.2	17.1	16.9	16.6	16.2	15.9	15.6	15.4	15.4	15.6	15.8	16.0	16.1
50	DENEb	49	30.7	30.7	30.6	30.4	30.1	29.8	29.6	29.5	29.6	29.7	29.9	30.1	30.2
51	ENIF	33	45.7	45.7	45.6	45.5	45.3	45.1	44.9	44.7	44.7	44.7	44.8	44.9	45.0
52	AL NA IR	27	42.0	42.0	42.0	41.8	41.5	41.2	40.9	40.7	40.6	40.7	40.8	41.0	41.1
53	FOMALHAUT	15	22.3	22.4	22.4	22.3	22.1	21.9	21.6	21.4	21.3	21.3	21.3	21.5	21.6
54	MARKAB	13	36.7	36.8	36.8	36.7	36.6	36.4	36.1	35.9	35.8	35.8	35.9	36.0	36.1

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R.b.	Zvezda–Sazvežđe	δ	2016 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2017 JAN
1	α Andromedae	29	10.9	10.8	10.7	10.6	10.6	10.6	10.7	10.8	11.0	11.1	11.1	11.2	11.1
2	β Cassiopeae	59	14.5	14.5	14.4	14.2	14.1	14.1	14.1	14.3	14.4	14.6	14.7	14.8	14.8
3	β Ceti	-17	54.1	54.1	54.1	54.0	53.9	53.8	53.7	53.6	53.6	53.6	53.7	53.8	53.8
4	α Eridani	-57	9.7	9.7	9.6	9.5	9.3	9.1	9.0	8.9	9.0	9.1	9.2	9.4	9.4
5	α Arietis	23	32.3	32.2	32.2	32.1	32.1	32.1	32.2	32.3	32.3	32.4	32.5	32.5	32.5
6	α Ursae Minoris	89	20.1	20.2	20.1	20.0	19.9	19.7	19.6	19.6	19.7	19.8	20.0	20.2	20.3
7	α Persei	49	55.1	55.1	55.1	55.0	54.9	54.8	54.8	54.8	54.9	55.0	55.1	55.2	55.3
8	α Tauri	16	32.3	32.3	32.3	32.2	32.2	32.3	32.3	32.3	32.4	32.4	32.4	32.4	32.4
9	β Orionis	- 8	11.3	11.3	11.4	11.4	11.3	11.2	11.1	11.1	11.0	11.0	11.0	11.1	11.2
10	α Aurigae	46	0.7	0.7	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.7	0.7
11	γ Orionis	6	21.6	21.6	21.5	21.5	21.6	21.6	21.7	21.7	21.8	21.8	21.7	21.7	21.7
12	β Tauri	28	37.0	37.1	37.1	37.1	37.0	37.0	37.0	37.0	37.0	37.0	37.1	37.1	37.1
13	ε Orionis	- 1	11.8	11.8	11.8	11.9	11.8	11.8	11.7	11.6	11.6	11.5	11.6	11.7	11.7
14	α Orionis	7	24.3	24.3	24.3	24.3	24.3	24.3	24.4	24.4	24.5	24.5	24.5	24.4	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	44.5	44.6	44.7	44.7	44.7	44.6	44.5	44.4	44.3	44.3	44.4	44.5	44.6
17	ε Canis Majoris	-28	59.8	60.0	0.1	0.1	0.1	60.0	59.9	59.7	59.6	59.6	59.6	59.8	59.9
18	α Canis Minoris	5	10.8	10.7	10.7	10.7	10.7	10.8	10.8	10.8	10.9	10.9	10.8	10.7	10.7
19	β Geminorum	27	59.0	59.0	59.0	59.0	59.1	59.1	59.0	59.0	59.0	58.9	58.9	58.9	58.8
20	ε Carinae	-59	33.7	33.9	34.0	34.2	34.2	34.1	34.0	33.9	33.7	33.6	33.6	33.7	33.9
21	λ Velorum	-43	29.8	30.0	30.2	30.3	30.3	30.3	30.2	30.1	29.9	29.8	29.8	29.9	30.1
22	β Carinae	-69	46.9	47.1	47.3	47.4	47.5	47.5	47.4	47.2	47.1	47.0	46.9	47.0	47.1
23	α Hydrae	- 8	43.8	43.9	44.0	44.0	44.0	44.0	43.9	43.9	43.8	43.8	43.8	43.9	44.0
24	α Leonis	11	53.2	53.1	53.1	53.1	53.1	53.2	53.2	53.2	53.2	53.1	53.1	53.0	52.9
25	α Ursae Majoris	61	39.5	39.6	39.7	39.8	39.9	40.0	40.0	39.9	39.7	39.6	39.4	39.3	39.2
26	β Leonis	14	28.8	28.8	28.8	28.8	28.8	28.9	28.9	28.9	28.9	28.8	28.8	28.7	28.5
27	α Crucis	-63	10.9	11.0	11.2	11.4	11.5	11.6	11.7	11.6	11.5	11.4	11.2	11.2	11.2
28	γ Crucis	-57	11.9	12.0	12.1	12.3	12.4	12.5	12.5	12.5	12.4	12.3	12.1	12.1	12.2
29	β Crucis	-59	46.2	46.3	46.5	46.7	46.8	46.9	46.9	46.9	46.8	46.7	46.5	46.5	46.5
30	ε Ursae Majoris	55	52.1	52.1	52.2	52.3	52.4	52.5	52.6	52.6	52.5	52.3	52.1	52.0	51.8
31	ζ Ursae Majoris	54	50.3	50.3	50.3	50.4	50.6	50.7	50.7	50.7	50.6	50.5	50.3	50.2	50.0
32	α Virginis	-11	14.6	14.7	14.7	14.8	14.8	14.8	14.8	14.7	14.7	14.7	14.7	14.7	14.8
33	η Ursae Majoris	49	13.8	13.8	13.8	13.9	14.0	14.2	14.2	14.2	14.2	14.1	13.9	13.7	13.6
34	θ Centauri	-36	26.6	26.7	26.8	26.9	27.0	27.1	27.1	27.1	27.0	27.0	26.9	26.9	26.9
35	α Bootis	19	5.9	5.8	5.8	5.8	5.9	6.0	6.1	6.1	6.1	6.0	5.9	5.8	5.7
36	α Centauri	-60	53.7	53.7	53.8	53.9	54.1	54.2	54.3	54.3	54.3	54.2	54.0	53.9	53.9
37	β Ursae Minoris	74	5.2	5.1	5.2	5.3	5.4	5.6	5.7	5.7	5.7	5.5	5.4	5.2	5.0
38	α Coronae Borealis	26	39.7	39.6	39.5	39.6	39.7	39.8	39.9	39.9	39.9	39.9	39.8	39.7	39.5
39	δ Scorpii	-22	39.8	39.8	39.9	39.9	39.9	39.9	40.0	40.0	39.9	39.9	39.9	39.9	39.9
40	α Scorpii	-26	27.8	27.8	27.8	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9	27.9
41	α Trianguli Australi	-69	3.0	2.9	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.4	3.3	3.2	3.1
42	λ Scorpii	-37	6.6	6.6	6.6	6.6	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.7	6.7
43	α Ophiuchi	12	33.1	33.0	32.9	32.9	33.0	33.1	33.2	33.2	33.3	33.3	33.2	33.1	33.0
44	γ Draconis	51	29.4	29.2	29.1	29.1	29.2	29.3	29.5	29.6	29.7	29.7	29.6	29.5	29.3
45	ε Sagittarii	-34	22.4	22.4	22.3	22.3	22.3	22.3	22.4	22.4	22.4	22.4	22.4	22.4	22.4
46	α Lyrae	38	48.1	47.9	47.8	47.8	47.9	48.0	48.2	48.3	48.4	48.4	48.4	48.3	48.1
47	σ Sagittarii	-26	16.4	16.4	16.4	16.4	16.3	16.3	16.3	16.3	16.3	16.4	16.4	16.4	16.4
48	α Aquilae	8	54.8	54.7	54.7	54.7	54.7	54.8	54.9	55.0	55.1	55.1	55.1	55.0	55.0
49	α Pavonis	-56	41.0	40.8	40.7	40.6	40.6	40.6	40.6	40.7	40.8	40.9	40.9	40.9	40.8
50	α Cygni	45	20.5	20.4	20.2	20.1	20.2	20.2	20.4	20.6	20.7	20.8	20.9	20.8	20.7
51	ε Pegasi	9	57.0	57.0	56.9	56.9	56.9	57.0	57.1	57.2	57.3	57.4	57.4	57.3	57.3
52	α Gruis	-46	53.1	53.0	52.9	52.8	52.7	52.6	52.6	52.6	52.7	52.8	52.9	52.9	52.9
53	α Piscis Austrini	-29	32.4	32.3	32.3	32.2	32.1	32.0	31.9	31.9	31.9	31.9	32.0	32.1	32.1
54	α Pegasi	15	17.6	17.5	17.5	17.4	17.4	17.5	17.6	17.7	17.8	17.9	17.9	17.9	17.9

VREMENA GORNJIH PROLAZA NAUTIČKIH ZVEZDA

kroz meridijan u Griniču

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R.b.	Ime zvezde	2016 JAN	FEB	MAR	APR	MAJ	JUN	JUL	AVG	SEP	OKT	NOV	DEC	2017 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 29	15 27	13 36	11 30	9 32	7 30	5 31	3 29	1 27	23 29	21 26	19 28	17 26
2	CAPH	17 30	15 27	13 37	11 31	9 33	7 30	5 32	3 30	1 28	23 30	21 27	19 29	17 27
3	DIPHDA	18 4	16 2	14 11	12 5	10 7	8 5	6 6	4 4	2 2	0 4	22 2	20 3	18 1
4	ACHERNAR	18 58	16 56	15 5	12 59	11 1	8 59	7 0	4 58	2 56	0 58	22 56	20 57	18 55
5	HAMAL	19 28	17 25	15 35	13 29	11 31	9 28	7 30	5 28	3 26	1 28	23 25	21 27	19 25
6	POLARIS	20 13	18 10	16 19	14 12	12 13	10 11	8 14	6 13	4 11	2 14	0 12	22 14	20 11
7	MIRFAK	20 45	18 43	16 53	14 46	12 48	10 46	8 48	6 45	4 43	2 45	0 43	22 44	20 42
8	ALDEBARAN	21 56	19 54	18 4	15 58	13 59	11 57	9 59	7 57	5 55	3 56	1 54	23 56	21 54
9	RIGEL	22 35	20 33	18 42	16 36	14 38	12 36	10 37	8 35	6 33	4 35	2 33	0 34	22 32
10	CAPELLA	22 38	20 35	18 45	16 39	14 40	12 38	10 40	8 38	6 36	4 37	2 35	0 37	22 35
11	BELLATRIX	22 46	20 43	18 53	16 47	14 49	12 46	10 48	8 46	6 44	4 45	2 43	0 45	22 43
12	EL NATH	22 47	20 45	18 54	16 48	14 50	12 48	10 49	8 47	6 45	4 47	2 45	0 46	22 44
13	ALNILAM	22 57	20 54	19 4	16 58	14 60	12 57	10 59	8 57	6 55	4 56	2 54	0 56	22 54
14	BETELGEUSE	23 16	21 13	19 23	17 17	15 19	13 16	11 18	9 16	7 14	5 15	3 13	1 15	23 13
15	CANOPUS	23 44	21 42	19 51	17 45	15 47	13 45	11 46	9 44	7 42	5 44	3 41	1 43	23 41
16	SIRIUS	0 6	22 3	20 13	18 7	16 8	14 6	12 8	10 6	8 4	6 5	4 3	2 5	0 3
17	ADHARA	0 19	22 17	20 26	18 20	16 22	14 20	12 21	10 19	8 17	6 19	4 16	2 18	0 16
18	PROCYON	0 60	22 58	21 7	19 1	17 3	15 1	13 2	11 0	8 58	6 60	4 57	2 59	0 57
19	POLLUX	1 6	23 4	21 13	19 7	17 9	15 7	13 8	11 6	9 4	7 6	5 3	3 5	1 3
20	AVIOR	1 43	23 40	21 50	19 44	17 45	15 43	13 45	11 43	9 40	7 42	5 40	3 42	1 40
21	AL SUHAIL	2 28	0 26	22 36	20 29	18 31	16 29	14 31	12 28	10 26	8 28	6 26	4 28	2 25
22	MIAPLACIDUS	2 33	0 31	22 40	20 34	18 36	16 34	14 35	12 33	10 31	8 33	6 31	4 32	2 30
23	ALPHARD	2 48	0 46	22 55	20 49	18 51	16 49	14 50	12 48	10 46	8 48	6 46	4 47	2 45
24	REGULUS	3 29	1 27	23 36	21 30	19 32	17 30	15 31	13 29	11 27	9 29	7 26	5 28	3 26
25	DUBHE	4 24	2 22	0 32	22 26	20 27	18 25	16 27	14 25	12 22	10 24	8 22	6 24	4 21
26	DENEbola	5 10	3 7	1 17	23 11	21 12	19 10	17 12	15 10	13 8	11 9	9 7	7 9	5 7
27	ACRUX	5 47	3 45	1 55	23 48	21 50	19 48	17 50	15 47	13 45	11 47	9 45	7 46	5 44
28	GACRUX	5 52	3 50	1 59	23 53	21 55	19 52	17 54	15 52	13 50	11 51	9 49	7 51	5 49
29	MINOSA	6 8	4 6	2 16	0 10	22 11	20 9	18 11	16 9	14 6	12 8	10 6	8 8	6 5
30	ALIOth	6 14	4 12	2 22	0 16	22 17	20 15	18 17	16 15	14 12	12 14	10 12	8 14	6 11
31	MIZAR	6 44	4 42	2 52	0 45	22 47	20 45	18 47	16 44	14 42	12 44	10 42	8 43	6 41
32	SPICA	6 46	4 43	2 53	0 47	22 49	20 46	18 48	16 46	14 44	12 45	10 43	8 45	6 43
33	ALKAID	7 8	5 6	3 15	1 9	23 11	21 9	19 10	17 8	15 6	13 8	11 5	9 7	7 5
34	MENKENT	7 27	5 25	3 35	1 29	23 30	21 28	19 30	17 28	15 25	13 27	11 25	9 27	7 24
35	ARCTURUS	7 36	5 34	3 43	1 37	23 39	21 37	19 39	17 36	15 34	13 36	11 34	9 35	7 33
36	RIGEL KENTAURUS	8 0	5 58	4 8	2 2	0 3	22 1	20 3	18 1	15 58	14 0	11 58	9 60	7 57
37	KOHAB	8 10	6 8	4 18	2 12	0 13	22 11	20 13	18 11	16 8	14 10	12 8	10 9	8 7
38	ALPHECCA	8 55	6 53	5 2	2 56	0 58	22 56	20 57	18 55	16 53	14 55	12 53	10 54	8 52
39	DSCHUBBA	9 21	7 19	5 28	3 22	1 24	23 22	21 23	19 21	17 19	15 21	13 18	11 20	9 18
40	ANTARES	9 50	7 48	5 57	3 51	1 53	23 51	21 53	19 50	17 48	15 50	13 48	11 49	9 47
41	ATRIA	10 10	8 8	6 17	4 11	2 13	0 11	22 13	20 10	18 8	16 10	14 8	12 9	10 7
42	SHAULA	10 54	8 52	7 2	4 56	2 57	0 55	22 57	20 55	18 52	16 54	14 52	12 54	10 51
43	RASALHAGUE	10 55	8 53	7 3	4 57	2 58	0 56	22 58	20 56	18 53	16 55	14 53	12 55	10 52
44	ELTANIN	11 17	9 14	7 24	5 18	3 20	1 17	23 19	21 17	19 15	17 16	15 14	13 16	11 14
45	KAUS AUSTRALIS	11 45	9 43	7 52	5 46	3 48	1 46	23 47	21 45	19 43	17 45	15 42	13 44	11 42
46	VEGA	11 57	9 55	8 4	5 58	4 0	1 58	23 60	21 57	19 55	17 57	15 55	13 56	11 54
47	NUNKI	12 16	10 14	8 23	6 17	4 19	2 17	0 18	22 16	20 14	18 16	16 13	14 15	12 13
48	ALTAIR	13 11	11 9	9 19	7 12	5 14	3 12	1 14	23 11	21 9	19 11	17 9	15 10	13 8
49	PEACOCK	13 46	11 44	9 54	7 48	5 50	3 47	1 49	23 47	21 45	19 46	17 44	15 46	13 44
50	DENEB	14 2	11 59	10 9	8 3	6 5	4 2	2 4	0 2	21 60	20 1	17 59	16 1	13 59
51	ENIF	15 5	13 2	11 12	9 6	7 8	5 5	3 7	1 5	23 3	21 4	19 2	17 4	15 2
52	AL NA IR	15 29	13 27	11 36	9 30	7 32	5 30	3 31	1 29	23 27	21 29	19 26	17 28	15 26
53	FOMALHAUT	16 18	14 16	12 26	10 19	8 21	6 19	4 21	2 18	0 16	22 18	20 16	18 17	16 15
54	MARKAB	16 25	14 23	12 33	10 26	8 28	6 26	4 28	2 25	0 23	22 25	20 23	18 24	16 22

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

★ ★ ★ ★ ★

Tablice

ZA

*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
o	/	o	/	o	/	o	/	o	/	o	/
0	-29.6	60	-38.1	120	-8.5	180	29.6	240	38.1	300	8.5
1	-30.1	61	-37.9	121	-7.8	181	30.1	241	37.9	301	7.8
2	-30.5	62	-37.6	122	-7.1	182	30.5	242	37.6	302	7.1
3	-31.0	63	-37.4	123	-6.4	183	31.0	243	37.4	303	6.4
4	-31.4	64	-37.1	124	-5.7	184	31.4	244	37.1	304	5.7
5	-31.9	65	-36.9	125	-5.0	185	31.9	245	36.9	305	5.0
6	-32.3	66	-36.6	126	-4.3	186	32.3	246	36.6	306	4.3
7	-32.7	67	-36.3	127	-3.6	187	32.7	247	36.3	307	3.6
8	-33.1	68	-36.0	128	-2.9	188	33.1	248	36.0	308	2.9
9	-33.5	69	-35.7	129	-2.2	189	33.5	249	35.7	309	2.2
10	-33.8	70	-35.4	130	-1.5	190	33.8	250	35.4	310	1.5
11	-34.2	71	-35.1	131	-0.8	191	34.2	251	35.1	311	0.8
12	-34.6	72	-34.7	132	-0.2	192	34.6	252	34.7	312	0.2
13	-34.9	73	-34.4	133	0.5	193	34.9	253	34.4	313	-0.5
14	-35.2	74	-34.0	134	1.2	194	35.2	254	34.0	314	-1.2
15	-35.6	75	-33.6	135	1.9	195	35.6	255	33.6	315	-1.9
16	-35.9	76	-33.2	136	2.6	196	35.9	256	33.2	316	-2.6
17	-36.2	77	-32.9	137	3.3	197	36.2	257	32.9	317	-3.3
18	-36.5	78	-32.4	138	4.0	198	36.5	258	32.4	318	-4.0
19	-36.8	79	-32.0	139	4.7	199	36.8	259	32.0	319	-4.7
20	-37.0	80	-31.6	140	5.4	200	37.0	260	31.6	320	-5.4
21	-37.3	81	-31.2	141	6.1	201	37.3	261	31.2	321	-6.1
22	-37.5	82	-30.7	142	6.8	202	37.5	262	30.7	322	-6.8
23	-37.8	83	-30.3	143	7.5	203	37.8	263	30.3	323	-7.5
24	-38.0	84	-29.8	144	8.2	204	38.0	264	29.8	324	-8.2
25	-38.2	85	-29.4	145	8.9	205	38.2	265	29.4	325	-8.9
26	-38.4	86	-28.9	146	9.5	206	38.4	266	28.9	326	-9.5
27	-38.6	87	-28.4	147	10.2	207	38.6	267	28.4	327	-10.2
28	-38.8	88	-27.9	148	10.9	208	38.8	268	27.9	328	-10.9
29	-38.9	89	-27.4	149	11.6	209	38.9	269	27.4	329	-11.6
30	-39.1	90	-26.9	150	12.2	210	39.1	270	26.9	330	-12.2
31	-39.2	91	-26.4	151	12.9	211	39.2	271	26.4	331	-12.9
32	-39.4	92	-25.8	152	13.5	212	39.4	272	25.8	332	-13.5
33	-39.5	93	-25.3	153	14.2	213	39.5	273	25.3	333	-14.2
34	-39.6	94	-24.7	154	14.8	214	39.6	274	24.7	334	-14.8
35	-39.7	95	-24.2	155	15.5	215	39.7	275	24.2	335	-15.5
36	-39.8	96	-23.6	156	16.1	216	39.8	276	23.6	336	-16.1
37	-39.8	97	-23.1	157	16.8	217	39.8	277	23.1	337	-16.8
38	-39.9	98	-22.5	158	17.4	218	39.9	278	22.5	338	-17.4
39	-39.9	99	-21.9	159	18.0	219	39.9	279	21.9	339	-18.0
40	-40.0	100	-21.3	160	18.6	220	40.0	280	21.3	340	-18.6
41	-40.0	101	-20.7	161	19.3	221	40.0	281	20.7	341	-19.3
42	-40.0	102	-20.1	162	19.9	222	40.0	282	20.1	342	-19.9
43	-40.0	103	-19.5	163	20.5	223	40.0	283	19.5	343	-20.5
44	-40.0	104	-18.9	164	21.1	224	40.0	284	18.9	344	-21.1
45	-40.0	105	-18.3	165	21.7	225	40.0	285	18.3	345	-21.7
46	-39.9	106	-17.7	166	22.2	226	39.9	286	17.7	346	-22.2
47	-39.9	107	-17.0	167	22.8	227	39.9	287	17.0	347	-22.8
48	-39.8	108	-16.4	168	23.4	228	39.8	288	16.4	348	-23.4
49	-39.7	109	-15.8	169	24.0	229	39.7	289	15.8	349	-24.0
50	-39.6	110	-15.1	170	24.5	230	39.6	290	15.1	350	-24.5
51	-39.5	111	-14.5	171	25.1	231	39.5	291	14.5	351	-25.1
52	-39.4	112	-13.8	172	25.6	232	39.4	292	13.8	352	-25.6
53	-39.3	113	-13.2	173	26.1	233	39.3	293	13.2	353	-26.1
54	-39.2	114	-12.5	174	26.7	234	39.2	294	12.5	354	-26.7
55	-39.0	115	-11.8	175	27.2	235	39.0	295	11.8	355	-27.2
56	-38.8	116	-11.2	176	27.7	236	38.8	296	11.2	356	-27.7
57	-38.7	117	-10.5	177	28.2	237	38.7	297	10.5	357	-28.2
58	-38.5	118	-9.8	178	28.7	238	38.5	298	9.8	358	-28.7
59	-38.3	119	-9.1	179	29.2	239	38.3	299	9.1	359	-29.2
60	-38.1	120	-8.5	180	29.6	240	38.1	300	8.5	360	-29.6

TABLICA II

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	0.3	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	0.2	0.3	0.3	0.4	105	7
8	120	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	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	0.3	0.3	270	18
19	285	0.0	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	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	0.5	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		Datum													Datum \ S _γ	
		2015 1. JAN	1. FEB	1. MAR	1. APR	1. MAJ	1. JUN	1. JUL	1. AVG	1. SEP	1. OKT	1. NOV	1. DEC	2016 1. JAN		
h	°	/	/	/	/	/	/	/	/	/	/	/	/	/	°	h
1	15	- .1	- .2	- .1	.0	.1	.3	.4	.4	.2	.1	.0	- .2	- .3	15	1
2	30	- .1	- .2	- .1	.0	.1	.3	.4	.4	.3	.2	.0	- .2	- .3	30	2
3	45	- .1	- .2	- .1	.0	.1	.3	.4	.4	.3	.2	.0	- .2	- .3	45	3
4	60	- .1	- .2	- .1	.0	.1	.3	.4	.4	.3	.2	.0	- .2	- .3	60	4
5	75	- .1	- .2	- .1	.0	.0	.2	.3	.3	.3	.2	.0	- .1	- .2	75	5
6	90	- .1	- .1	- .1	- .1	.0	.1	.2	.3	.2	.2	.1	- .1	- .2	90	6
7	105	.0	- .1	- .1	- .1	.0	.1	.1	.2	.2	.2	.1	.0	- .1	105	7
8	120	.0	- .1	- .1	- .1	- .1	.0	.0	.1	.1	.1	.1	.0	.0	120	8
9	135	.0	.0	- .1	- .1	- .1	- .1	- .1	.0	.0	.1	.1	.1	.1	135	9
10	150	.0	.0	.0	- .1	- .1	- .2	- .2	- .1	- .1	.0	.1	.1	.2	150	10
11	165	.1	.1	.0	- .1	- .1	- .2	- .3	- .2	- .1	.0	.1	.2	.2	165	11
12	180	.1	.1	.0	- .1	- .1	- .3	- .3	- .3	- .2	- .1	.1	.2	.3	180	12
13	195	.1	.2	.1	.0	- .1	- .3	- .4	- .4	- .2	- .1	.0	.2	.3	195	13
14	210	.1	.2	.1	.0	- .1	- .3	- .4	- .4	- .3	- .2	.0	.2	.3	210	14
15	225	.1	.2	.1	.0	- .1	- .3	- .4	- .4	- .3	- .2	.0	.2	.3	225	15
16	240	.1	.2	.1	.0	- .1	- .3	- .4	- .4	- .3	- .2	.0	.2	.3	240	16
17	255	.1	.2	.1	.0	.0	- .2	- .3	- .3	- .3	- .2	.0	.1	.2	255	17
18	270	.1	.1	.1	.1	.0	- .1	- .2	- .3	- .2	- .2	- .1	.1	.2	270	18
19	285	.0	.1	.1	.1	.0	- .1	- .1	- .2	- .2	- .2	- .1	.0	.1	285	19
20	300	.0	.1	.1	.1	.1	.0	.0	- .1	- .1	- .1	- .1	.0	.0	300	20
21	315	.0	.0	.1	.1	.1	.1	.1	.0	.0	- .1	- .1	- .1	- .1	315	21
22	330	.0	.0	.0	.1	.1	.2	.2	.1	.1	.0	- .1	- .1	- .2	330	22
23	345	- .1	- .1	.0	.1	.1	.2	.3	.2	.1	.0	- .1	- .2	- .2	345	23
24	360	- .1	- .1	.0	.1	.1	.3	.3	.3	.2	.1	- .1	- .2	- .3	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	0.5	0.6	0.7	0.8	1.0	1.4	15
30	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.7	30
45	360.0	360.0	360.0	360.0	360.0	360.0	359.9	359.9	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	358.8	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	357.2	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	357.4	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	359.6	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	0.1	0.1	0.1	225
240	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.8	240
255	0.4	0.4	0.5	0.6	0.7	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	2.0	2.7	330
345	0.6	0.7	0.8	1.0	1.1	1.2	1.5	1.8	2.4	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	0.2	0.3	0.4	0.4	0.5	0.6	7
0.1	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.6	8
0.1	0.2	0.3	0.4	0.5	0.5	0.6	0.7	0.7	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.8	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	0.6	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	0.7	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	0.8	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	0.9	1.0	1.0	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

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λ $\frac{\Delta}{24}$	20°	30°	40°	50°	60°	70°	80°	90°	100°	110°	120°	130°	140°	150°	160°	170°	180°	λ $\frac{\Delta}{24}$
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.
	o	'	o	'	o	'						
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.
	o	'	o	'	o	'						
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	18	

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.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	0 30.0	0 30.1	0 28.6	0 .0	60 .3	120 .5
1	0 30.3	0 30.3	0 28.9	1 .0	61 .3	121 .5
2	0 30.5	0 30.6	0 29.1	2 .0	62 .3	122 .5
3	0 30.8	0 30.8	0 29.3	3 .0	63 .3	123 .5
4	0 31.0	0 31.1	0 29.6	4 .0	64 .3	124 .5
5	0 31.3	0 31.3	0 29.8	5 .0	65 .3	125 .5
6	0 31.5	0 31.6	0 30.1	6 .0	66 .3	126 .5
7	0 31.8	0 31.8	0 30.3	7 .0	67 .3	127 .5
8	0 32.0	0 32.1	0 30.5	8 .0	68 .3	128 .5
9	0 32.3	0 32.3	0 30.8	9 .0	69 .3	129 .5
10	0 32.5	0 32.6	0 31.0	10 .0	70 .3	130 .5
11	0 32.8	0 32.8	0 31.3	11 .0	71 .3	131 .5
12	0 33.0	0 33.1	0 31.5	12 .1	72 .3	132 .6
13	0 33.3	0 33.3	0 31.7	13 .1	73 .3	133 .6
14	0 33.5	0 33.6	0 32.0	14 .1	74 .3	134 .6
15	0 33.8	0 33.8	0 32.2	15 .1	75 .3	135 .6
16	0 34.0	0 34.1	0 32.5	16 .1	76 .3	136 .6
17	0 34.3	0 34.3	0 32.7	17 .1	77 .3	137 .6
18	0 34.5	0 34.6	0 32.9	18 .1	78 .3	138 .6
19	0 34.8	0 34.8	0 33.2	19 .1	79 .3	139 .6
20	0 35.0	0 35.1	0 33.4	20 .1	80 .3	140 .6
21	0 35.3	0 35.3	0 33.6	21 .1	81 .3	141 .6
22	0 35.5	0 35.6	0 33.9	22 .1	82 .3	142 .6
23	0 35.8	0 35.8	0 34.1	23 .1	83 .3	143 .6
24	0 36.0	0 36.1	0 34.4	24 .1	84 .4	144 .6
25	0 36.3	0 36.4	0 34.6	25 .1	85 .4	145 .6
26	0 36.5	0 36.6	0 34.8	26 .1	86 .4	146 .6
27	0 36.8	0 36.9	0 35.1	27 .1	87 .4	147 .6
28	0 37.0	0 37.1	0 35.3	28 .1	88 .4	148 .6
29	0 37.3	0 37.4	0 35.6	29 .1	89 .4	149 .6
30	0 37.5	0 37.6	0 35.8	30 .1	90 .4	150 .6
31	0 37.8	0 37.9	0 36.0	31 .1	91 .4	151 .6
32	0 38.0	0 38.1	0 36.3	32 .1	92 .4	152 .6
33	0 38.3	0 38.4	0 36.5	33 .1	93 .4	153 .6
34	0 38.5	0 38.6	0 36.7	34 .1	94 .4	154 .6
35	0 38.8	0 38.9	0 37.0	35 .1	95 .4	155 .6
36	0 39.0	0 39.1	0 37.2	36 .2	96 .4	156 .7
37	0 39.3	0 39.4	0 37.5	37 .2	97 .4	157 .7
38	0 39.5	0 39.6	0 37.7	38 .2	98 .4	158 .7
39	0 39.8	0 39.9	0 37.9	39 .2	99 .4	159 .7
40	0 40.0	0 40.1	0 38.2	40 .2	100 .4	160 .7
41	0 40.3	0 40.4	0 38.4	41 .2	101 .4	161 .7
42	0 40.5	0 40.6	0 38.7	42 .2	102 .4	162 .7
43	0 40.8	0 40.9	0 38.9	43 .2	103 .4	163 .7
44	0 41.0	0 41.1	0 39.1	44 .2	104 .4	164 .7
45	0 41.3	0 41.4	0 39.4	45 .2	105 .4	165 .7
46	0 41.5	0 41.6	0 39.6	46 .2	106 .4	166 .7
47	0 41.8	0 41.9	0 39.8	47 .2	107 .4	167 .7
48	0 42.0	0 42.1	0 40.1	48 .2	108 .5	168 .7
49	0 42.3	0 42.4	0 40.3	49 .2	109 .5	169 .7
50	0 42.5	0 42.6	0 40.6	50 .2	110 .5	170 .7
51	0 42.8	0 42.9	0 40.8	51 .2	111 .5	171 .7
52	0 43.0	0 43.1	0 41.0	52 .2	112 .5	172 .7
53	0 43.3	0 43.4	0 41.3	53 .2	113 .5	173 .7
54	0 43.5	0 43.6	0 41.5	54 .2	114 .5	174 .7
55	0 43.8	0 43.9	0 41.8	55 .2	115 .5	175 .7
56	0 44.0	0 44.1	0 42.0	56 .2	116 .5	176 .7
57	0 44.3	0 44.4	0 42.2	57 .2	117 .5	177 .7
58	0 44.5	0 44.6	0 42.5	58 .2	118 .5	178 .7
59	0 44.8	0 44.9	0 42.7	59 .2	119 .5	179 .7
60	0 45.0	0 45.1	0 43.0	60 .3	120 .5	180 .8

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.	Δ popr.
	° /	° /	° /	° /	° /	° /
0	0 45.0	0 45.1	0 43.0	0 .0	60 .4	120 .7
1	0 45.3	0 45.4	0 43.2	1 .0	61 .4	121 .7
2	0 45.5	0 45.6	0 43.4	2 .0	62 .4	122 .7
3	0 45.8	0 45.9	0 43.7	3 .0	63 .4	123 .7
4	0 46.0	0 46.1	0 43.9	4 .0	64 .4	124 .7
5	0 46.3	0 46.4	0 44.1	5 .0	65 .4	125 .7
6	0 46.5	0 46.6	0 44.4	6 .0	66 .4	126 .7
7	0 46.8	0 46.9	0 44.6	7 .0	67 .4	127 .7
8	0 47.0	0 47.1	0 44.9	8 .0	68 .4	128 .7
9	0 47.3	0 47.4	0 45.1	9 .1	69 .4	129 .8
10	0 47.5	0 47.6	0 45.3	10 .1	70 .4	130 .8
11	0 47.8	0 47.9	0 45.6	11 .1	71 .4	131 .8
12	0 48.0	0 48.1	0 45.8	12 .1	72 .4	132 .8
13	0 48.3	0 48.4	0 46.1	13 .1	73 .4	133 .8
14	0 48.5	0 48.6	0 46.3	14 .1	74 .4	134 .8
15	0 48.8	0 48.9	0 46.5	15 .1	75 .4	135 .8
16	0 49.0	0 49.1	0 46.8	16 .1	76 .4	136 .8
17	0 49.3	0 49.4	0 47.0	17 .1	77 .4	137 .8
18	0 49.5	0 49.6	0 47.2	18 .1	78 .5	138 .8
19	0 49.8	0 49.9	0 47.5	19 .1	79 .5	139 .8
20	0 50.0	0 50.1	0 47.7	20 .1	80 .5	140 .8
21	0 50.3	0 50.4	0 48.0	21 .1	81 .5	141 .8
22	0 50.5	0 50.6	0 48.2	22 .1	82 .5	142 .8
23	0 50.8	0 50.9	0 48.4	23 .1	83 .5	143 .8
24	0 51.0	0 51.1	0 48.7	24 .1	84 .5	144 .8
25	0 51.3	0 51.4	0 48.9	25 .1	85 .5	145 .8
26	0 51.5	0 51.6	0 49.2	26 .2	86 .5	146 .9
27	0 51.8	0 51.9	0 49.4	27 .2	87 .5	147 .9
28	0 52.0	0 52.1	0 49.6	28 .2	88 .5	148 .9
29	0 52.3	0 52.4	0 49.9	29 .2	89 .5	149 .9
30	0 52.5	0 52.6	0 50.1	30 .2	90 .5	150 .9
31	0 52.8	0 52.9	0 50.3	31 .2	91 .5	151 .9
32	0 53.0	0 53.1	0 50.6	32 .2	92 .5	152 .9
33	0 53.3	0 53.4	0 50.8	33 .2	93 .5	153 .9
34	0 53.5	0 53.6	0 51.1	34 .2	94 .5	154 .9
35	0 53.8	0 53.9	0 51.3	35 .2	95 .6	155 .9
36	0 54.0	0 54.2	0 51.5	36 .2	96 .6	156 .9
37	0 54.3	0 54.4	0 51.8	37 .2	97 .6	157 .9
38	0 54.5	0 54.7	0 52.0	38 .2	98 .6	158 .9
39	0 54.8	0 54.9	0 52.3	39 .2	99 .6	159 .9
40	0 55.0	0 55.2	0 52.5	40 .2	100 .6	160 .9
41	0 55.3	0 55.4	0 52.7	41 .2	101 .6	161 .9
42	0 55.5	0 55.7	0 53.0	42 .2	102 .6	162 .9
43	0 55.8	0 55.9	0 53.2	43 .3	103 .6	163 1.0
44	0 56.0	0 56.2	0 53.4	44 .3	104 .6	164 1.0
45	0 56.3	0 56.4	0 53.7	45 .3	105 .6	165 1.0
46	0 56.5	0 56.7	0 53.9	46 .3	106 .6	166 1.0
47	0 56.8	0 56.9	0 54.2	47 .3	107 .6	167 1.0
48	0 57.0	0 57.2	0 54.4	48 .3	108 .6	168 1.0
49	0 57.3	0 57.4	0 54.6	49 .3	109 .6	169 1.0
50	0 57.5	0 57.7	0 54.9	50 .3	110 .6	170 1.0
51	0 57.8	0 57.9	0 55.1	51 .3	111 .6	171 1.0
52	0 58.0	0 58.2	0 55.4	52 .3	112 .7	172 1.0
53	0 58.3	0 58.4	0 55.6	53 .3	113 .7	173 1.0
54	0 58.5	0 58.7	0 55.8	54 .3	114 .7	174 1.0
55	0 58.8	0 58.9	0 56.1	55 .3	115 .7	175 1.0
56	0 59.0	0 59.2	0 56.3	56 .3	116 .7	176 1.0
57	0 59.3	0 59.4	0 56.6	57 .3	117 .7	177 1.0
58	0 59.5	0 59.7	0 56.8	58 .3	118 .7	178 1.0
59	0 59.8	0 59.9	0 57.0	59 .3	119 .7	179 1.0
60	1 .0	1 .2	0 57.3	60 .4	120 .7	180 1.1

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.
	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 .5 134 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.
	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 1.1 178 1.6
59	1	29.8	1	30.0	1	25.7	59 .5 119 1.1 179 1.6
60	1	30.0	1	30.3	1	25.9	60 .6 120 1.1 180 1.7

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.
	o	'	o	'	o	'	'
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.
	o	'	o	'	o	'	'
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.	
	° /	° /	° /	/	/	/	
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 3.2	
36	3 9.0	3 9.5	3 .4 36	.8 96	2.0 156	3.3 3.3	
37	3 9.3	3 9.8	3 .6 37	.8 97	2.0 157	3.3 3.3	
38	3 9.5	3 10.0	3 .9 38	.8 98	2.0 158	3.3 3.3	
39	3 9.8	3 10.3	3 1.1 39	.8 99	2.1 159	3.3 3.3	
40	3 10.0	3 10.5	3 1.3 40	.8 100	2.1 160	3.3 3.3	
41	3 10.3	3 10.8	3 1.6 41	.9 101	2.1 161	3.4 3.4	
42	3 10.5	3 11.0	3 1.8 42	.9 102	2.1 162	3.4 3.4	
43	3 10.8	3 11.3	3 2.1 43	.9 103	2.1 163	3.4 3.4	
44	3 11.0	3 11.5	3 2.3 44	.9 104	2.2 164	3.4 3.4	
45	3 11.3	3 11.8	3 2.5 45	.9 105	2.2 165	3.4 3.4	
46	3 11.5	3 12.0	3 2.8 46	1.0 106	2.2 166	3.5 3.5	
47	3 11.8	3 12.3	3 3.0 47	1.0 107	2.2 167	3.5 3.5	
48	3 12.0	3 12.5	3 3.3 48	1.0 108	2.3 168	3.5 3.5	
49	3 12.3	3 12.8	3 3.5 49	1.0 109	2.3 169	3.5 3.5	
50	3 12.5	3 13.0	3 3.7 50	1.0 110	2.3 170	3.5 3.5	
51	3 12.8	3 13.3	3 4.0 51	1.1 111	2.3 171	3.6 3.6	
52	3 13.0	3 13.5	3 4.2 52	1.1 112	2.3 172	3.6 3.6	
53	3 13.3	3 13.8	3 4.4 53	1.1 113	2.4 173	3.6 3.6	
54	3 13.5	3 14.0	3 4.7 54	1.1 114	2.4 174	3.6 3.6	
55	3 13.8	3 14.3	3 4.9 55	1.1 115	2.4 175	3.6 3.6	
56	3 14.0	3 14.5	3 5.2 56	1.2 116	2.4 176	3.7 3.7	
57	3 14.3	3 14.8	3 5.4 57	1.2 117	2.4 177	3.7 3.7	
58	3 14.5	3 15.0	3 5.6 58	1.2 118	2.5 178	3.7 3.7	
59	3 14.8	3 15.3	3 5.9 59	1.2 119	2.5 179	3.7 3.7	
60	3 15.0	3 15.5	3 6.1 60	1.3 120	2.5 180	3.8 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.	
	° /	° /	° /	/	/	/	
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	
56	3 29.0	3 29.6	3 19.5	56 1.3	116 2.6	176 4.0	
57	3 29.3	3 29.8	3 19.7	57 1.3	117 2.6	177 4.0	
58	3 29.5	3 30.1	3 20.0	58 1.3	118 2.7	178 4.0	
59	3 29.8	3 30.3	3 20.2	59 1.3	119 2.7	179 4.0	
60	3 30.0	3 30.6	3 20.4	60 1.4	120 2.7	180 4.1	

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	'	o	'	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	'	o	'	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				

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.					
	o	'	o	'	o	'	o	'				
0	8	30.0	8	31.4	8	6.8	0	.0	60	3.5	120	6.9
1	8	30.3	8	31.7	8	7.0	1	.1	61	3.5	121	7.0
2	8	30.5	8	31.9	8	7.2	2	.1	62	3.6	122	7.0
3	8	30.8	8	32.2	8	7.5	3	.2	63	3.6	123	7.1
4	8	31.0	8	32.4	8	7.7	4	.2	64	3.7	124	7.1
5	8	31.3	8	32.7	8	8.0	5	.3	65	3.7	125	7.2
6	8	31.5	8	32.9	8	8.2	6	.3	66	3.8	126	7.2
7	8	31.8	8	33.2	8	8.4	7	.4	67	3.9	127	7.3
8	8	32.0	8	33.4	8	8.7	8	.5	68	3.9	128	7.4
9	8	32.3	8	33.7	8	8.9	9	.5	69	4.0	129	7.4
10	8	32.5	8	33.9	8	9.2	10	.6	70	4.0	130	7.5
11	8	32.8	8	34.2	8	9.4	11	.6	71	4.1	131	7.5
12	8	33.0	8	34.4	8	9.6	12	.7	72	4.1	132	7.6
13	8	33.3	8	34.7	8	9.9	13	.7	73	4.2	133	7.6
14	8	33.5	8	34.9	8	10.1	14	.8	74	4.3	134	7.7
15	8	33.8	8	35.2	8	10.3	15	.9	75	4.3	135	7.8
16	8	34.0	8	35.4	8	10.6	16	.9	76	4.4	136	7.8
17	8	34.3	8	35.7	8	10.8	17	1.0	77	4.4	137	7.9
18	8	34.5	8	35.9	8	11.1	18	1.0	78	4.5	138	7.9
19	8	34.8	8	36.2	8	11.3	19	1.1	79	4.5	139	8.0
20	8	35.0	8	36.4	8	11.5	20	1.2	80	4.6	140	8.1
21	8	35.3	8	36.7	8	11.8	21	1.2	81	4.7	141	8.1
22	8	35.5	8	36.9	8	12.0	22	1.3	82	4.7	142	8.2
23	8	35.8	8	37.2	8	12.3	23	1.3	83	4.8	143	8.2
24	8	36.0	8	37.4	8	12.5	24	1.4	84	4.8	144	8.3
25	8	36.3	8	37.7	8	12.7	25	1.4	85	4.9	145	8.3
26	8	36.5	8	37.9	8	13.0	26	1.5	86	4.9	146	8.4
27	8	36.8	8	38.2	8	13.2	27	1.6	87	5.0	147	8.5
28	8	37.0	8	38.4	8	13.4	28	1.6	88	5.1	148	8.5
29	8	37.3	8	38.7	8	13.7	29	1.7	89	5.1	149	8.6
30	8	37.5	8	38.9	8	13.9	30	1.7	90	5.2	150	8.6
31	8	37.8	8	39.2	8	14.2	31	1.8	91	5.2	151	8.7
32	8	38.0	8	39.4	8	14.4	32	1.8	92	5.3	152	8.7
33	8	38.3	8	39.7	8	14.6	33	1.9	93	5.3	153	8.8
34	8	38.5	8	39.9	8	14.9	34	2.0	94	5.4	154	8.9
35	8	38.8	8	40.2	8	15.1	35	2.0	95	5.5	155	8.9
36	8	39.0	8	40.4	8	15.4	36	2.1	96	5.5	156	9.0
37	8	39.3	8	40.7	8	15.6	37	2.1	97	5.6	157	9.0
38	8	39.5	8	40.9	8	15.8	38	2.2	98	5.6	158	9.1
39	8	39.8	8	41.2	8	16.1	39	2.2	99	5.7	159	9.1
40	8	40.0	8	41.4	8	16.3	40	2.3	100	5.8	160	9.2
41	8	40.3	8	41.7	8	16.5	41	2.4	101	5.8	161	9.3
42	8	40.5	8	41.9	8	16.8	42	2.4	102	5.9	162	9.3
43	8	40.8	8	42.2	8	17.0	43	2.5	103	5.9	163	9.4
44	8	41.0	8	42.4	8	17.3	44	2.5	104	6.0	164	9.4
45	8	41.3	8	42.7	8	17.5	45	2.6	105	6.0	165	9.5
46	8	41.5	8	42.9	8	17.7	46	2.6	106	6.1	166	9.5
47	8	41.8	8	43.2	8	18.0	47	2.7	107	6.2	167	9.6
48	8	42.0	8	43.5	8	18.2	48	2.8	108	6.2	168	9.7
49	8	42.3	8	43.7	8	18.5	49	2.8	109	6.3	169	9.7
50	8	42.5	8	44.0	8	18.7	50	2.9	110	6.3	170	9.8
51	8	42.8	8	44.2	8	18.9	51	2.9	111	6.4	171	9.8
52	8	43.0	8	44.5	8	19.2	52	3.0	112	6.4	172	9.9
53	8	43.3	8	44.7	8	19.4	53	3.0	113	6.5	173	9.9
54	8	43.5	8	45.0	8	19.7	54	3.1	114	6.6	174	10.0
55	8	43.8	8	45.2	8	19.9	55	3.2	115	6.6	175	10.1
56	8	44.0	8	45.5	8	20.1	56	3.2	116	6.7	176	10.1
57	8	44.3	8	45.7	8	20.4	57	3.3	117	6.7	177	10.2
58	8	44.5	8	46.0	8	20.6	58	3.3	118	6.8	178	10.2
59	8	44.8	8	46.2	8	20.8	59	3.4	119	6.8	179	10.3
60	8	45.0	8	46.5	8	21.1	60	3.5	120	6.9	180	10.4

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.					
	o	'	o	'	o	'	o	'				
0	8	45.0	8	46.5	8	21.1	0	.0	60	3.6	120	7.1
1	8	45.3	8	46.7	8	21.3	1	.1	61	3.6	121	7.2
2	8	45.5	8	47.0	8	21.6	2	.1	62	3.7	122	7.2
3	8	45.8	8	47.2	8	21.8	3	.2	63	3.7	123	7.3
4	8	46.0	8	47.5	8	22.0	4	.2	64	3.8	124	7.3
5	8	46.3	8	47.7	8	22.3	5	.3	65	3.8	125	7.4
6	8	46.5	8	48.0	8	22.5	6	.4	66	3.9	126	7.5
7	8	46.8	8	48.2	8	22.8	7	.4	67	4.0	127	7.5
8	8	47.0	8	48.5	8	23.0	8	.5	68	4.0	128	7.6
9	8	47.3	8	48.7	8	23.2	9	.5	69	4.1	129	7.6
10	8	47.5	8	49.0	8	23.5	10	.6	70	4.1	130	7.7
11	8	47.8	8	49.2	8	23.7	11	.7	71	4.2	131	7.8
12	8	48.0	8	49.5	8	23.9	12	.7	72	4.3	132	7.8
13	8	48.3	8	49.7	8	24.2	13	.8	73	4.3	133	7.9
14	8	48.5	8	50.0	8	24.4	14	.8	74	4.4	134	7.9
15	8	48.8	8	50.2	8	24.7	15	.9	75	4.4	135	8.0
16	8	49.0	8	50.5	8	24.9	16	.9	76	4.5	136	8.0
17	8	49.3	8	50.7	8	25.1	17	1.0	77	4.6	137	8.1
18	8	49.5	8	51.0	8	25.4	18	1.1	78	4.6	138	8.2
19	8	49.8	8	51.2	8	25.6	19	1.1	79	4.7	139	8.2
20	8	50.0	8	51.5	8	25.9	20	1.2	80	4.7	140	8.3
21	8	50.3	8	51.7	8	26.1	21	1.2	81	4.8	141	8.3
22	8	50.5	8	52.0	8	26.3	22	1.3	82	4.9	142	8.4
23	8	50.8	8	52.2	8	26.6	23	1.4	83	4.9	143	8.5
24	8	51.0	8	52.5	8	26.8	24	1.4	84	5.0	144	8.5
25	8	51.3	8	52.7	8	27.0	25	1.5	85	5.0	145	8.6
26	8	51.5	8	53.0	8	27.3	26	1.5	86	5.1	146	8.6
27	8	51.8	8	53.2	8	27.5	27	1.6	87	5.1	147	8.7
28	8	52.0	8	53.5	8	27.8	28	1.7	88	5.2	148	8.8
29	8	52.3	8	53.7	8	28.0	29	1.7	89	5.3	149	8.8
30	8	52.5	8	54.0	8	28.2	30	1.8	90	5.3	150	8.9
31	8	52.8	8	54.2	8	28.5	31	1.8	91	5.4	151	8.9
32	8	53.0	8	54.5	8	28.7	32	1.9	92	5.4	152	9.0
33	8	53.3	8	54.7	8	29.0	33	2.0	93	5.5	153	9.1
34	8	53.5	8	55.0	8	29.2	34	2.0	94	5.6	154	9.1
35	8	53.8	8	55.2	8	29.4	35	2.1	95	5.6	155	9.2
36	8	54.0	8	55.5	8	29.7	36	2.1	96	5.7	156	9.2
37	8	54.3	8	55.7	8	29.9	37	2.2	97	5.7	157	9.3
38	8	54.5	8	56.0	8	30.2	38	2.2	98	5.8	158	9.3
39	8	54.8	8	56.2	8	30.4	39	2.3	99	5.9	159	9.4
40	8	55.0	8	56.5	8	30.6	40	2.4	100	5.9	160	9.5
41	8	55.3	8	56.7	8	30.9	41	2.4	101	6.0	161	9.5
42	8	55.5	8	57.0	8	31.1	42	2.5	102	6.0	162	9.6
43	8	55.8	8	57.2	8	31.3	43	2.5	103	6.1	163	9.6
44	8	56.0	8	57.5	8	31.6	44	2.6	104	6.2	164	9.7
45	8	56.3	8	57.7	8	31.8	45	2.7	105	6.2	165	9.8
46	8	56.5	8	58.0	8	32.1	46	2.7	106	6.3	166	9.8
47	8	56.8	8	58.2	8	32.3	47	2.8	107	6.3	167	9.9
48	8	57.0	8	58.5	8	32.5	48	2.8	108	6.4	168	9.9
49	8	57.3	8	58.7	8	32.8	49	2.9	109	6.4	169	10.0
50	8	57.5	8	59.0	8	33.0	50	3.0	110	6.5	170	10.1
51	8	57.8	8	59.2	8	33.3	51	3.0	111	6.6	171	10.1
52	8	58.0	8	59.5	8	33.5	52	3.1	112	6.6	172	10.2
53	8	58.3	8	59.7	8	33.7	53	3.1	113	6.7	173	10.2
54	8	58.5	8	60.0								

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	'	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	'	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			

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.		
	o	'	o	'	'	'	'		
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.		
	o	'	o	'	'	'	'		
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.
	° /	° /	° /	′	″	′	″	′	″
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.
	° /	° /	° /	′	″	′	″	′	″
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	'	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	'	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 18.4
50	16	27.5	16	30.2	15	42.5	50 5.5 110 12.0 170 18.6
51	16	27.8	16	30.5	15	42.8	51 5.6 111 12.1 171 18.7
52	16	28.0	16	30.7	15	43.0	52 5.7 112 12.2 172 18.8
53	16	28.3	16	31.0	15	43.2	53 5.8 113 12.3 173 18.9
54	16	28.5	16	31.2	15	43.5	54 5.9 114 12.4 174 19.0
55	16	28.8	16	31.5	15	43.7	55 6.0 115 12.6 175 19.1
56	16	29.0	16	31.7	15	43.9	56 6.1 116 12.7 176 19.2
57	16	29.3	16	32.0	15	44.2	57 6.2 117 12.8 177 19.3
58	16	29.5	16	32.2	15	44.4	58 6.3 118 12.9 178 19.4
59	16	29.8	16	32.5	15	44.7	59 6.4 119 13.0 179 19.5
60	16	30.0	16	32.8	15	44.9	60 6.6 120 13.1 180 19.7

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.
	°	'	°	'	°	'	'
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.
	°	'	°	'	°	'	'
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.		
	o	'	o	'	'	'	'		
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.		
	o	'	o	'	'	'	'		
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.
	o	'	o	'	o	'	'		'		'	
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.
	o	'	o	'	o	'	'		'		'	
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.		
	°	'	°	'	'	'	'		
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.		
	°	'	°	'	'	'	'		
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 25.2
50	22	27.5	22	31.2	21	26.1	50 7.5	110 16.4	170 25.4
51	22	27.8	22	31.5	21	26.4	51 7.6	111 16.6	171 25.5
52	22	28.0	22	31.7	21	26.6	52 7.8	112 16.7	172 25.7
53	22	28.3	22	32.0	21	26.8	53 7.9	113 16.9	173 25.8
54	22	28.5	22	32.2	21	27.1	54 8.1	114 17.0	174 26.0
55	22	28.8	22	32.5	21	27.3	55 8.2	115 17.2	175 26.1
56	22	29.0	22	32.7	21	27.5	56 8.4	116 17.3	176 26.3
57	22	29.3	22	33.0	21	27.8	57 8.5	117 17.5	177 26.4
58	22	29.5	22	33.2	21	28.0	58 8.7	118 17.6	178 26.6
59	22	29.8	22	33.5	21	28.3	59 8.8	119 17.8	179 26.7
60	22	30.0	22	33.8	21	28.5	60 9.0	120 17.9	180 26.9

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.
	o /	o /	o /	/	/	/
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.
	o /	o /	o /	/	/	/
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.
	° /	° /	° /	/	/	/
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.
	° /	° /	° /	/	/	/
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.		
	o	'	o	'	'	'	'		
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.		
	o	'	o	'	'	'	'		
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	'	'	'	'		
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	'	'	'	'		
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.		
	o	'	o	'	'	'	'		
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.		
	o	'	o	'	'	'	'		
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	1
2	0	8	62	4	8	122	8	8	182	12	8	242	16	8	302	20	8	2	0	30	2
3	0	12	63	4	12	123	8	12	183	12	12	243	16	12	303	20	12	3	0	45	3
4	0	16	64	4	16	124	8	16	184	12	16	244	16	16	304	20	16	4	0	15	4
5	0	20	65	4	20	125	8	20	185	12	20	245	16	20	305	20	20	5	0	30	5
6	0	24	66	4	24	126	8	24	186	12	24	246	16	24	306	20	24	6	0	45	6
7	0	28	67	4	28	127	8	28	187	12	28	247	16	28	307	20	28	7	0	15	7
8	0	32	68	4	32	128	8	32	188	12	32	248	16	32	308	20	32	8	0	30	8
9	0	36	69	4	36	129	8	36	189	12	36	249	16	36	309	20	36	9	0	45	9
10	0	40	70	4	40	130	8	40	190	12	40	250	16	40	310	20	40	10	0	15	10
11	0	44	71	4	44	131	8	44	191	12	44	251	16	44	311	20	44	11	0	30	11
12	0	48	72	4	48	132	8	48	192	12	48	252	16	48	312	20	48	12	0	45	12
13	0	52	73	4	52	133	8	52	193	12	52	253	16	52	313	20	52	13	0	15	13
14	0	56	74	4	56	134	8	56	194	12	56	254	16	56	314	20	56	14	0	30	14
15	1	0	75	5	0	135	9	0	195	13	0	255	17	0	315	21	0	15	1	0	15
16	1	4	76	5	4	136	9	4	196	13	4	256	17	4	316	21	4	16	1	15	16
17	1	8	77	5	8	137	9	8	197	13	8	257	17	8	317	21	8	17	1	30	17
18	1	12	78	5	12	138	9	12	198	13	12	258	17	12	318	21	12	18	1	45	18
19	1	16	79	5	16	139	9	16	199	13	16	259	17	16	319	21	16	19	1	15	19
20	1	20	80	5	20	140	9	20	200	13	20	260	17	20	320	21	20	20	1	30	20
21	1	24	81	5	24	141	9	24	201	13	24	261	17	24	321	21	24	21	1	45	21
22	1	28	82	5	28	142	9	28	202	13	28	262	17	28	322	21	28	22	1	15	22
23	1	32	83	5	32	143	9	32	203	13	32	263	17	32	323	21	32	23	1	30	23
24	1	36	84	5	36	144	9	36	204	13	36	264	17	36	324	21	36	24	1	45	24
25	1	40	85	5	40	145	9	40	205	13	40	265	17	40	325	21	40	25	1	15	25
26	1	44	86	5	44	146	9	44	206	13	44	266	17	44	326	21	44	26	1	30	26
27	1	48	87	5	48	147	9	48	207	13	48	267	17	48	327	21	48	27	1	45	27
28	1	52	88	5	52	148	9	52	208	13	52	268	17	52	328	21	52	28	1	15	28
29	1	56	89	5	56	149	9	56	209	13	56	269	17	56	329	21	56	29	1	30	29
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	15	31
32	2	8	92	6	8	152	10	8	212	14	8	272	18	8	332	22	8	32	2	30	32
33	2	12	93	6	12	153	10	12	213	14	12	273	18	12	333	22	12	33	2	45	33
34	2	16	94	6	16	154	10	16	214	14	16	274	18	16	334	22	16	34	2	15	34
35	2	20	95	6	20	155	10	20	215	14	20	275	18	20	335	22	20	35	2	30	35
36	2	24	96	6	24	156	10	24	216	14	24	276	18	24	336	22	24	36	2	45	36
37	2	28	97	6	28	157	10	28	217	14	28	277	18	28	337	22	28	37	2	15	37
38	2	32	98	6	32	158	10	32	218	14	32	278	18	32	338	22	32	38	2	30	38
39	2	36	99	6	36	159	10	36	219	14	36	279	18	36	339	22	36	39	2	45	39
40	2	40	100	6	40	160	10	40	220	14	40	280	18	40	340	22	40	40	2	15	40
41	2	44	101	6	44	161	10	44	221	14	44	281	18	44	341	22	44	41	2	30	41
42	2	48	102	6	48	162	10	48	222	14	48	282	18	48	342	22	48	42	2	45	42
43	2	52	103	6	52	163	10	52	223	14	52	283	18	52	343	22	52	43	2	15	43
44	2	56	104	6	56	164	10	56	224	14	56	284	18	56	344	22	56	44	2	30	44
45	3	0	105	7	0	165	11	0	225	15	0	285	19	0	345	23	0	45	3	0	45
46	3	4	106	7	4	166	11	4	226	15	4	286	19	4	346	23	4	46	3	15	46
47	3	8	107	7	8	167	11	8	227	15	8	287	19	8	347	23	8	47	3	30	47
48	3	12	108	7	12	168	11	12	228	15	12	288	19	12	348	23	12	48	3	45	48
49	3	16	109	7	16	169	11	16	229	15	16	289	19	16	349	23	16	49	3	15	49
50	3	20	110	7	20	170	11	20	230	15	20	290	19	20	350	23	20	50	3	30	50
51	3	24	111	7	24	171	11	24	231	15	24	291	19	24	351	23	24	51	3	45	51
52	3	28	112	7	28	172	11	28	232	15	28	292	19	28	352	23	28	52	3	15	52
53	3	32	113	7	32	173	11	32	233	15	32	293	19	32	353	23	32	53	3	30	53
54	3	36	114	7	36	174	11	36	234	15	36	294	19	36	354	23	36	54	3	45	54
55	3	40	115	7	40	175	11	40	235	15	40	295	19	40	355	23	40	55	3	15	55
56	3	44	116	7	44	176	11	44	236	15	44	296	19	44	356	23	44	56	3	30	56
57	3	48	117	7	48	177	11	48	237	15	48	297	19	48	357	23	48	57	3	45	57
58	3	52	118	7	52	178	11	52	238	15	52	298	19	52	358	23	52	58	3	15	58
59	3	56	119	7	56	179	11	56	239	15	56	299	19	56	359	23	56	59	3	30	59
60	4	0	120	8	0	180	12	0	240	16	0	300	20	0	360	24	0	60	4	0	60

★ ★ ★ ★ ★

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 2007. 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

1. Određivanje časovnog ugla i deklinacije nebeskih tela

Primer:

- | | |
|--|------|
| 1.1. Određivanje časovnog ugla i deklinacije Sunca | 1, 2 |
| 1.2. Određivanje časovnog ugla i deklinacije Meseca | 3, 4 |
| 1.3. Određivanje časovnog ugla i deklinacije planeta | 5, 6 |
| 1.4. Određivanje časovnog ugla i deklinacije zvezda | 7, 8 |

2. Određivanje izlaza i zalaza nebeskih tela

- | | |
|---|--------|
| 2.1. Određivanje izlaza i zalaza Sunca, početka i završetka građanskog i astronomskog sumraka | 9, 10 |
| 2.2. Određivanje izlaza i zalaza Meseca | 11, 12 |

	Primer:
3. Određivanje gornjeg prolaza nebeskih tela kroz meridijan	13, 14
3.1. Određivanje gornjeg prolaza Sunca kroz meridijan	13, 14
3.2. Određivanje gornjeg prolaza Meseca kroz meridijan	15, 16
3.3. Određivanje gornjeg prolaza planeta kroz meridijan	17
3.4. Određivanje gornjeg prolaza zvezda kroz meridijan	18
4. Severnjača	
4.1. Određivanje geografske širine pomoću visine Severnjače i određivanje azimuta Severnjače	19
5. Pretvaranje raznih vrsta vremena	
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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 2007. godine u $UT = 7^h 31^m 46^s$ na $\lambda = 96^\circ 14'.6E$.

a) časovni ugao	b) deklinacija
Sa strane za 14. april S za 6^h $269^\circ 53'.3$	Sa strane za 14. april δ za 6^h $+9^\circ 16'.9$
Iz interpolacionih tablica za $1^h 31^m 46^s$ popravka časovnog ugla Sunca $22^\circ 56'.5$	Iz interpol. tablica za $1^h 31^m$ popravka za $\delta(\Delta = +9)$. . . $+ 1'.4$
Iz interpolacionih tablica za $1^h 31^m$ popravka drugog reda za $S(\Delta = +2)$ $0'.3$	δ $+9^\circ 18'.3$
S $292^\circ 50'.1$	
$+\lambda$ $+ 96^\circ 14'.6$	
s $389^\circ 04'.7 \rightarrow s_W = 29^\circ 04'.7$	

► **PRIMER 2.** Odrediti mesni časovni ugao i deklinaciju Sunca za 18. septembar 2007. godine u $UT = 13^h 05^m 14^s$ na $\lambda = 28^\circ 53'.6W$.

a) časovni ugao	b) deklinacija
Sa strane za 18. septembar S za 12^h $1^\circ 25'.7$	Sa strane za 18. septembar δ za 12^h $+1^\circ 54'.4$
Iz interpolacionih tablica za $1^h 5^m 14^s$ popravka časovnog ugla Sunca $16^\circ 18'.5$	Iz interpol. tablica za $1^h 5^m$ popravka za $\delta(\Delta = -10)$. . . $- 1'.1$
Popravka drugog reda za $S(\Delta = +2)$ $0'.2$	δ $+1^\circ 53'.3$
S $17^\circ 44'.4$	
$+\lambda$ $- 28^\circ 53'.6$	
s $348^\circ 50'.8 \rightarrow s_E = 11^\circ 09'.2$	

1.2. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE MESECA

► **PRIMER 3.** Odrediti mesni časovni ugao i deklinaciju Meseca za 15. mart 2007. 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	346°23'.8
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($\Delta = +76$)	2'.0

S	350°6'.5
+ λ	- 15°32'.0

$$s_W \dots\dots\dots 334^{\circ}34'.5 \rightarrow s_E = 25^{\circ}25'.5$$

b) deklinacija

Sa strane za 15. mart δ za 8 ^h	-23° 1'.6
Iz interpol. tablica za 0 ^h 15 ^m popravka za $\delta(\Delta = +105)$	+ 2'.7
δ	-22°58'.9

► **PRIMER 4.** Odrediti mesni časovni ugao i deklinaciju Meseca za 20. jun 2007. 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	261°24'.9
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($\Delta = +152$)	8'.0

S	269° 1'.0
+ λ	+ 34°23'.8

$$s_W \dots\dots\dots 303^{\circ}24'.8 \rightarrow s_E = 56^{\circ}35'.2$$

b) deklinacija

Sa strane za 20. jun δ za 10 ^h	+10° 9'.1
Iz interpol. tablica za 0 ^h 31 ^m popravka za $\delta(\Delta = -139)$	- 7'.3
δ	+10° 1'.8

1.3. ODREĐIVANJE ČASOVNOG UGLA I DEKLINACIJE PLANETA

► **PRIMER 5.** Odrediti mesni časovni ugao i deklinaciju Venere za 7. decembar 2007. 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°57'.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($\Delta = -3$)	- 0'.4

S	183°43'.9
+ λ	+ 58°34'.2

$$s_W \dots\dots\dots 242^{\circ}18'.1 \rightarrow s_E = 117^{\circ}41'.9$$

b) deklinacija

Sa strane za 7. decembar δ za 20 ^h	-10°15'.2
Iz interpol. tablica za 1 ^h 15 ^m popravka za $\delta(\Delta = -10)$	- 1'.3
δ	-10°16'.5

► **PRIMER 6.** Odrediti mesni časovni ugao i deklinaciju Jupitera za 23. oktobar 2007. 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	254°25'.8
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($\Delta = +20$)	1'.9

S	268°18'.7
+ λ	-145°20'.1

$$s \dots\dots\dots 122^{\circ}58'.6 \rightarrow s_E = 237^{\circ} 1'.4$$

b) deklinacija

Sa strane za 23. oktobar δ za 8 ^h	-22°36'.2
Iz interpol. tablica za 0 ^h 55 ^m popravka za $\delta(\Delta = 0)$	0'.0
δ	-22°36'.2

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 2007. 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	83°56'.5
Iz interpolacionih tablica za 0 ^h 11 ^m 26 ^s popravka časovnog ugla Υ tačke	2°52'.0
<hr/>	
S_{Υ}	86°48'.5
<hr/>	
Deklinacija (iz tablice deklinacija nautičkih zvezda pod r.b. 24 za 1. mart): δ	+11°56'.2

b) časovni ugao zvezde

S_{Υ}	86°48'.5
Iz tablice surektascenzija nautičkih zvezda pod r.b. 24 za 1. mart	207°48'.3
<hr/>	
S_{*}	294°36'.8
+ λ	- 62°13'.2
<hr/>	
S_{*}	232°23'.6
S_E	127°36'.4

► **PRIMER 8.** Odrediti mesni časovni ugao i deklinaciju zvezde Deneb (α Cyg) za 10. avgust 2007. 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	258°54'.8
Iz interpolacionih tablica za 1 ^h 42 ^m 8 ^s popravka časovnog ugla Υ tačke	25°36'.3
<hr/>	
S_{Υ}	284°31'.1
<hr/>	
Deklinacija (iz tablice deklinacija nautičkih zvezda pod r.b. 50 za 1. avgust): δ	+ 45°18'.2

b) časovni ugao zvezde

S_{Υ}	284°31'.1
Iz tablice surektascenzija nautičkih zvezda pod r.b. 50 za 1. avgust	49°34'.2
<hr/>	
S_{*}	334° 5'.3
+ λ	+ 93°14'.2
<hr/>	
S_{*}	427°19'.5
S_{*}	67°19'.5

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 2007. 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 ^h 38 ^m .0
Popravka za 3° .5 iz interpolacionih tablica ($\Delta = +20^{\text{m}}$)	+ 14 ^m .0
<hr/>	
t_s izlaza za $\varphi = 48^{\circ}.5S$	7 ^h 52 ^m .0
+ ($x - \lambda$)	+ 9 ^m .1
<hr/>	
t_x	8 ^h 01 ^m .1
- trajanje građanskog sumraka	- 37 ^m .0
<hr/>	
početak građanskog svitanja	7 ^h 24 ^m .1

b) zalaz

UT = t_s zalaza za $\varphi = 45^{\circ}S$	16 ^h 31 ^m .0
Popravka za 3° .5 iz interpolacionih tablica ($\Delta = -20^{\text{m}}$)	- 14 ^m .0
<hr/>	
t_s zalaza za $\varphi = 48^{\circ}.5S$	16 ^h 17 ^m .0
+ ($x - \lambda$)	+ 9 ^m .1
<hr/>	
t_x	16 ^h 26 ^m .1
+ trajanje građanskog sumraka	+ 37 ^m .0
<hr/>	
završetak građanskog sumraka	17 ^h 03 ^m .1

► **PRIMER 10.** Odrediti vreme izlaza i zalaza Sunca, početak astronomskog svitanja i završetak astronomskog sumraka za 21. septembar 2007. 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 ^h 49 ^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 ^h 58 ^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
<hr/>	
t_x	5 ^h 35 ^m .5
- trajanje astronomskog sumraka	-1 ^h 14 ^m .5
<hr/>	
početak astronomskog svitanja	4 ^h 21 ^m .0

t_s zalaza za $\varphi = 22^\circ.2N$	17 ^h 58 ^m .0
+ (x - λ)	- 13 ^m .3
<hr/>	
t_x	17 ^h 44 ^m .7
+ trajanje astronomskog sumraka	+ 1 ^h 14 ^m .5
<hr/>	
završetak astronomskog sumraka	18 ^h 59 ^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 2007. 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 $\varphi = 10^\circ N$	9 ^h 40 ^m .0
Popravka za $7^\circ.6$ iz interpolacionih tabl. ($\Delta = -2^m$)	- 1 ^m .5
<hr/>	
UT izlaza za $\varphi = 17^\circ.6N$	9 ^h 38 ^m .5
$\lambda = 72^\circ.3E$	
$\Delta/24 = v = 2^m.0$	- λv
<hr/>	
t_s	9 ^h 28 ^m .9
+ (x - λ)	+ 11 ^m .0
<hr/>	
t_x	9 ^h 39 ^m .9

b) zalaz

UT = t_s zalaza za $\varphi = 10^\circ N$	22 ^h 23 ^m .0
Popravka za $7^\circ.6$ iz interpolacionih tabl. ($\Delta = +4^m$)	+ 3 ^m .0
<hr/>	
UT zalaza za $\varphi = 17^\circ.6N$	22 ^h 26 ^m .0
$\lambda = 72^\circ.3E$	
$\Delta/24 = v = 1^m.6$	- λv
<hr/>	
t_s	22 ^h 18 ^m .3
+ (x - λ)	+ 11 ^m .0
<hr/>	
t_x	22 ^h 29 ^m .3

► **PRIMER 12.** Odrediti vreme izlaza i zalaza Meseca za 23. oktobar 2007. 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 $\varphi = 30^\circ S$	+15 ^h 27 ^m .0
Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = -10^m$)	- 6 ^m .8
<hr/>	
UT izlaza za $\varphi = 33^\circ.4S$	+15 ^h 20 ^m .2
$\lambda = 38^\circ.9W$	
$\Delta/24 = v = 2^m.8$	- λv
<hr/>	
t_s	+15 ^h 12 ^m .9
+ (x - λ)	- 24 ^m .5
<hr/>	
t_x	+14 ^h 48 ^m .4

b) zalaz

UT = t_s zalaza za $\varphi = 30^\circ S$	3 ^h 14 ^m .0
Popravka za $3^\circ.4$ iz interpolacionih tabl. ($\Delta = +12^m$)	+ 8 ^m .2
<hr/>	
UT zalaza za $\varphi = 33^\circ.4S$	3 ^h 22 ^m .2
$\lambda = 38^\circ.9W$	
$\Delta/24 = v = 1^m.4$	- λv
<hr/>	
t_s	3 ^h 18 ^m .6
+ (x - λ)	- 24 ^m .5
<hr/>	
t_x	2 ^h 54 ^m .1

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 2007. 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°17'.6

Iz interpolacione tablice za Sunce u 1^h04^m45^s.0 ... 16°11'.2

UT	19 ^h 04 ^m 45 ^s .0
+x	- 7 ^h 00 ^m 00 ^s .0

t_x

b) pomoću jednačine vremena

t_p	12 ^h 00 ^m 00 ^s .0	e_{12^h}	-10 ^m 53 ^s .0
$-\lambda$	+ 6 ^h 53 ^m 55 ^s .0	$\Delta/24$	+ 0 ^s .6

T_p

$-e$	+ 10 ^m 48 ^s .9	Popravka	
UT	19 ^h 04 ^m 43 ^s .9	6.9×0.6	4 ^s .1

t_x

► **PRIMER 14.** Odrediti vreme gornjeg prolaza Sunca kroz meridijan za 22. januar 2007. 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'.7

Iz interpolacione tablice za Sunce u 0^h27^m41^s.0 ... 6°59'.2

UT	2 ^h 27 ^m 41 ^s .0
+x	+10 ^h 00 ^m 00 ^s .0

t_x

b) skraćeni postupak

$T_m = t_m$	12 ^h 11 ^m .5	$T_m = t_m$	12 ^h 11 ^m .5
$-\lambda$	- 9 ^h 43 ^m .5	$+(x - \lambda)$	0 ^h 16 ^m .5

UT	2 ^h 28 ^m .0
+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 2007. godine na $\lambda = 48^\circ 6' .0W$.

T_m	11 ^h 36 ^m .0	$\Delta/24 = v$	2 ^m .4	x	- 3 ^h 00 ^m .0
$-\lambda_v$	+ 7 ^m .7	λ	48° .1	$-\lambda$	+ 3 ^h 12 ^m .4

t_m	11 ^h 43 ^m .7	λ_v	- 7 ^m .7	$+(x - \lambda)$	+ 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 2007. godine na $\lambda = 126^{\circ}40'.2E$.

T_m	18 ^h 46 ^m .0	$\Delta/24 = v$	1 ^m .7	x	+ 8 ^h 00 ^m .0
$-\lambda v$	— 14 ^m .4	λ	126 ^o .7	$-\lambda$	— 8 ^h 26 ^m .7
<hr/>					
t_m	19 ^h 0 ^m .4	λv	14 ^m .4	$+(x - \lambda)$	— 0 ^h 26 ^m .7
$+(x - \lambda)$	— 0 ^h 26 ^m .7				
<hr/>					
t_x	18 ^h 33 ^m .7				

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 2007. 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	23 ^h 18 ^m .0	T_m	23 ^h 23 ^m .2
$-\lambda v$	0 ^m .5	$+(x - \lambda)$	5 ^m .2
<hr/>		<hr/>	
t_m	23 ^h 17 ^m .5	t_x	23 ^h 23 ^m .2
$+(x - \lambda)$	+ 5 ^m .2		
<hr/>			
t_x	23 ^h 22 ^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 2007. 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 2007. godine (r.b. zvezde 35) $T_m = t_m$

Popravka za 23 dana iz iste tablice

t_m

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 2007. 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 $UT\ 22^h$	$327^\circ26'.1$
Iz interpolacionih tablica popravka S_γ za 36^m	$9^\circ\ 1'.5$
<hr/>	
S_γ	$336^\circ27'.6$
$+\lambda$	$- 38^\circ47'.0$
<hr/>	
s_γ	$297^\circ40'.6$

b) određivanje visine

V_p	$41^\circ54'.2$
I	$+ 8'.1$
II	$+ 0'.2$
III	$- 0'.0$
<hr/>	
φ	$42^\circ\ 2'.5$
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.

► **PRIMER 22.** Odrediti zonsko vreme t_x za mesno srednje vreme $t_s = 13^h 15^m 36^s$ na $\lambda = 107^\circ 28' .0 W$, $\lambda = 7^h 9^m 52^s$ ($x = -7$).

a) duži postupak

t_s	$13^h 15^m 36^s$
$-\lambda$	$7^h 09^m 52^s$
<hr/>	
UT	$20^h 25^m 28^s$
$+x$	$- 7^h 00^m 00^s$
<hr/>	
t_x	$13^h 25^m 28^s$

b) kraći postupak

t_s	$13^h 15^m 36^s$	x	$-7^h 00^m 00^s$
$+(x - \lambda)$	$+ 9^m 52^s$	$-\lambda$	$7^h 09^m 52^s$
<hr/>		$(x - \lambda)$	$9^m 52^s$
<hr/>		t_x	$13^h 25^m 28^s$

5.2. PRETVARANJE ZVEZDANOG VREMENA U ZONSKO I MESNO SREDNJE VREME

Određeno zvezdano vreme pretvorimo u mesni časovni ugao Prolećne tačke. Grinički časovni ugao Prolećne tačke dobija se oduzimanjem geografske dužine od mesnog časovnog ugla Prolećne tačke. Iz efemerida pomoću griničkog časovnog ugla Prolećne tačke određujemo univerzalno vreme. Dodavanjem zonskog indeksa dobija se zonsko vreme, ili dodavanjem geografske širine izražene u vremenu dobija se mesno srednje vreme. Moguće je da dobijemo t_x ili t_s za prethodni dan ili naredni dan od datuma za koji tražimo t_x ili t_s . U tom slučaju postupak određivanja vremena se ponavlja, ali od zapadne geografske širine se oduzima S_φ za naredni dan, a za istočne geografske širine za prethodni dan.

► **PRIMER 23.** Odrediti zonsko vreme t_x odnosno mesno srednje vreme t_s za 19. januar 2007. godine ako je zvezdano vreme $t_z = 6^h 36^m 3^s$ na $\lambda = 112^\circ 10' .5 E$, $\lambda = 7^h 28^m 42^s$ ($x = +7$).

$t_z = 6^h 36^m 03^s = s_\gamma$	$99^\circ 0' .8 + 360^\circ$	a) t_s	b) t_x
$-\lambda$	$-112^\circ 10' .5$	UT	$15^h 13^m 2^s$
<hr/>		$+\lambda$	$7^h 28^m 42^s$
S_γ	$346^\circ 50' .3$	t_s	$22^h 41^m 44^s$
19. januar u UT	$14^h 00^m 00^s$	$-\lambda$	$-112^\circ 10' .5$
		$-\lambda$	$-328^\circ 34' .8$
Iz interpol. tablice za	\leftarrow	$18^\circ 15' .5$	
Prolećnu tačku u	$1^h 13^m 2^s$		
UT	$15^h 13^m 2^s$		

6. IDENTIFIKACIJA ZVEZDA POMOĆU ZVEZDANIH KARATA

Zvezdane karte u prilogu služe za opštu orijentaciju na zvezdanom nebu i prepoznavanje zvezda na dva moguća načina.

1. Meridijan posmatrača moguće je odrediti na zvezdanoj karti pomoću surektascenzije zvezde na tom meridijanu. Ako je posmatrač na zapadnoj geografskoj dužini i zvezda je tačno u meridijanu, vrednost λ_W jednaka je griničkom časovnom uglu te zvezde ($\lambda_W = S_*$). Za posmatrača na istoj geografskoj dužini odnos je $(360^\circ - \lambda_E) = S_*$. Pošto je grinički časovni ugao zvezde S_* jednak griničkom časovnom uglu Prolećne tačke umanjenom za rektascenziju zvezde ($S_* = S_\gamma - \alpha_*$), onda je ($\alpha_* = S_\gamma - S_*$). Surektascenzija je jednaka časovnom uglu zvezde umanjenom za časovni ugao Prolećne tačke ($360^\circ - \alpha_*) = S_* - S_\gamma$. Grinički časovni ugao zvezde odgovara zapadnoj geografskoj dužini ($S_* = \lambda_W$), pa je ($360^\circ - \alpha_*) = \lambda_W - S_\gamma$, dok je za istočne geografske dužine ($360^\circ - \alpha_*) = (360^\circ - \lambda_E) - S_\gamma$.

► **PRIMER 24.** Odrediti za 5. jul 2007. godine u UT = $00^h 06^m .3$ na zvezdanoj karti meridijan posmatrača i prepoznajte zvezdu u zenitu ako je posmatrač na $\varphi = 45^\circ 11' N$, $\lambda = 25^\circ 45' .6 E$.

a) određivanje S_γ

5. jul za $00^h S_\gamma$	$282^\circ 36' .5$
Popravka časovnog ugla Prolećne tačke za $06^m 18^s$	$+ 1^\circ 34' .8$
<hr/>	
S_γ	$284^\circ 11' .3$

b) određivanje surektascenzije zvezde pomoću izraza

$$(360^\circ - \alpha_*) = (360^\circ - \lambda_E) - S_\gamma$$

$-\lambda$	$- 25^\circ 45' .6$
<hr/>	
$(360^\circ - \lambda)$	$334^\circ 14' .4$
$-S_\gamma$	$284^\circ 11' .3$
<hr/>	
$(360^\circ - \alpha_*)$	$50^\circ 3' .1$
	$\cong 50^\circ .0$

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 $50^{\circ}.0$, 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 $49^{\circ}34'.0$ i deklinacijom $45^{\circ}18'.0$. Ostale zvezde koje nisu u zenitu raspoznaju se upoređenjem slike zvezdanog neba sa zvezdanom kartom.

► **PRIMER 25.** Odrediti za 22. januar 2007. godine u $t_x = 4^h 08^m.6$ ($x = +2$) na zvezdanoj karti meridijan posmatrača i prepoznajte 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 $(360^{\circ} - \alpha_*) = (360^{\circ} - \lambda_E) - S_{\gamma}$
t_x $4^h 08^m.6$	22. januar u $02^h S_{\gamma}$ $151^{\circ} 2'.7$	$(360^{\circ} - \lambda)$ $312^{\circ}39'.9$
$-x$ $-2^h 00^m.0$	Popravka časovnog ugla Prolećne tačke za $08^m.6$ $2^{\circ}09'.4$	$-S_{\gamma}$ $153^{\circ}12'.1$
<hr/> UT $2^h 08^m.6$	<hr/> S_{γ} $153^{\circ}12'.1$	<hr/> $(360^{\circ} - \alpha_*)$ $159^{\circ}27'.8$

Iz zvezdane karte ili pregleda zvezda vidljivo je da je zvezda blizu zenita Mizar (ζ Ursae Majoris) čija je deklinacija $54^{\circ}53'.3N$, a surektascenzija $158^{\circ}56'.8$.

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 2007. 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 $20^h S_{\gamma}$ $142^{\circ}36'.4$
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/> $-S_{\gamma}$ $162^{\circ} 7'.9$
	$+\lambda$ $+ 37^{\circ}55'.6$
	<hr/> s_{γ} $200^{\circ} 3'.5$
	α $200^{\circ} 3'.5$
	$(360^{\circ} - s_{\gamma})$ $159^{\circ}56'.5$
	$(360^{\circ} - \alpha)$ $159^{\circ}56'.5$

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 $54^{\circ}53'.5$ i surektascenzija $158^{\circ}55'.9$.

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 2007. 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° 0' N	180°	48° 0' N	180°
75° 0' N	180°	05° 0' S	180°
68° 0' N	168° 58' 22" W (ostrva Diomedea)	15° 0' S	172° 5' W
65° 5' N	168° 58' 22" W (Beringov moreuz)	45° 0' S	172° 5' W
53° 0' N	170° E	51° 0' S	180°
		90° 0' S	180°

Prilikom prelaza granice datuma, ploveći prema zapadu datum se *povećava* za jedan dan. Kada se ona prelazi ploveći prema istoku, *smanjuje* 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

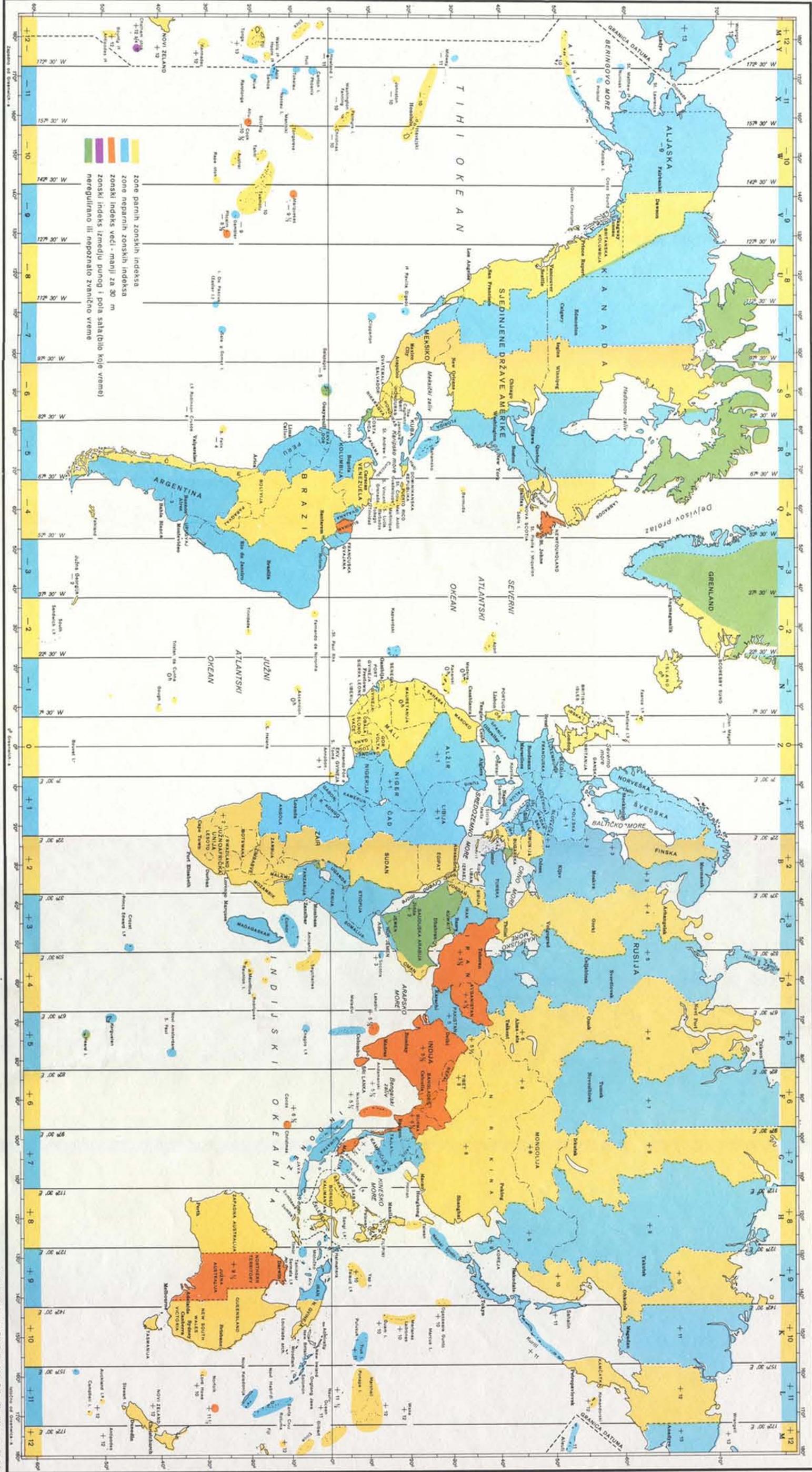
Epakta	21	Julijanski period	6729		
Zlatni broj (Mesečev ciklus)	III	Sunčev ciklus	9		
ERA	GODINA	POCINJE	ERA	GODINA	POCINJE
Vizantijska	7525	14. Sep.	Japanska	2676	1. Jan.
Jevrejska	5777	2. Okt.	Grčka (Seleukidova)	2328	14. Sep.
Kineska (bing-shen)	(4653)	8. Feb.	Indijska (Saka)	1938	21. Mart
Rimska	2769	14. Jan.	Dioklecijanovna	1733	11. Sep.
Nabonasarova	2765	19. Apr.	Islamska (Hegira)	1438	2. Okt.

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
Sudan	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
Yucón	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



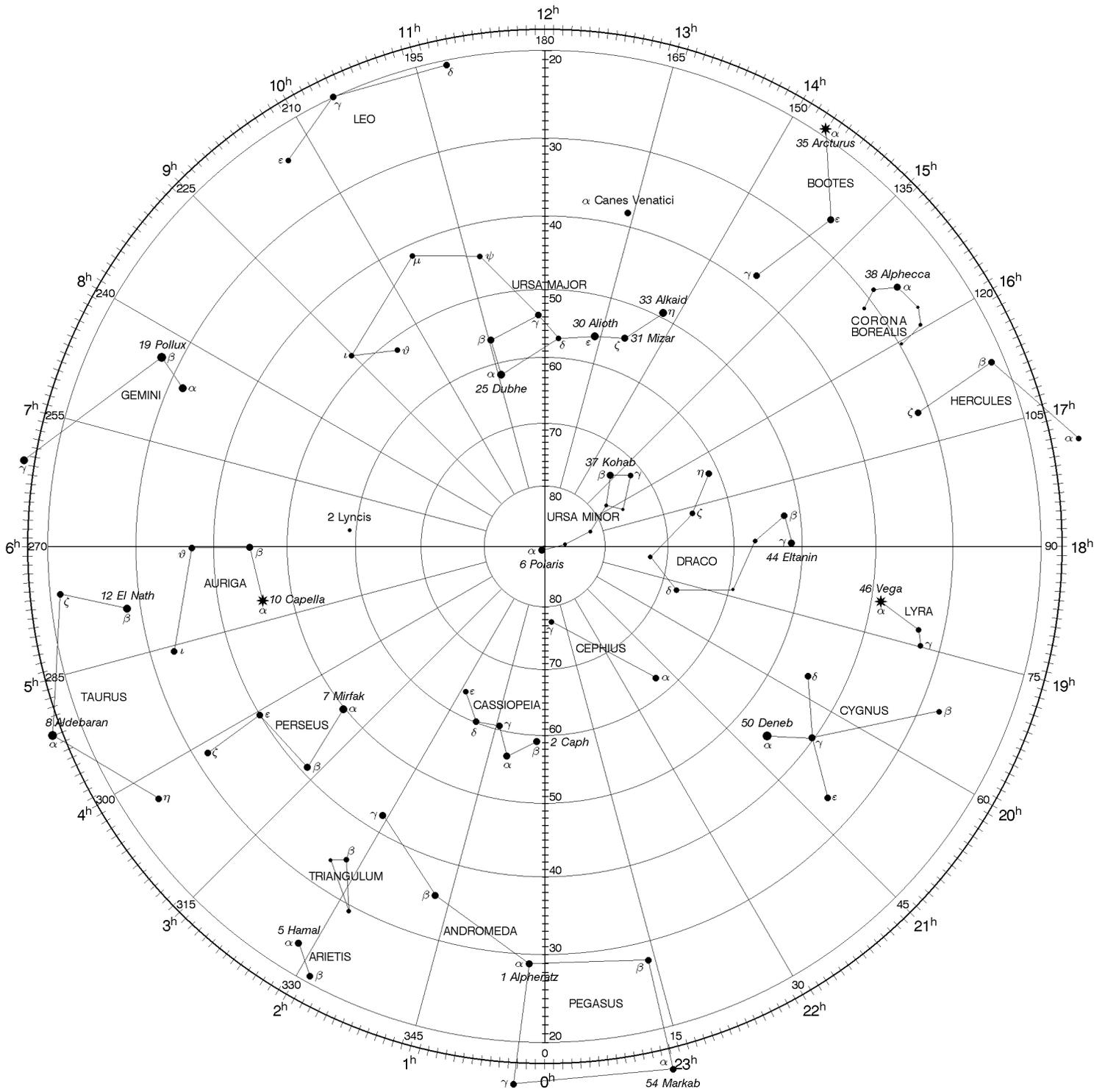
Hydrografički Institut, RM Split, 1990 - Prilog Nautičkom godišnjaku



Karte

ZVEZDANOG NEBA

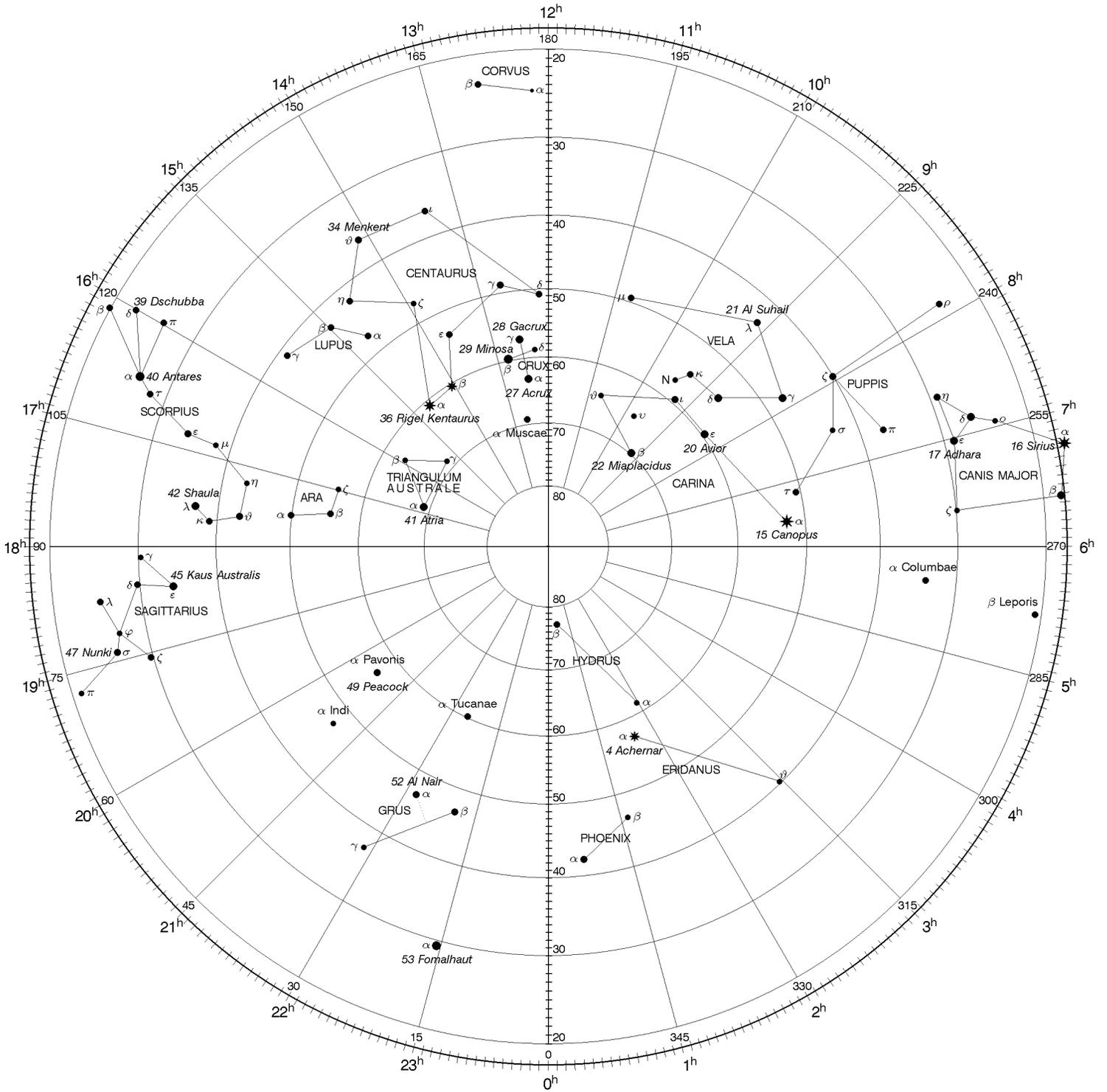
KARTA SAZVEŽDA SEVERNOG NEBA



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



