



Astrodienst Ephemeris Tables for the year 1646

tropical geocentric zodiac

contains Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, True Node, Moon's Node, Lilith, Chiron

Programming
Dieter Koch and Alois Treindl
based on Swiss Ephemeris
Code D5EPH

ASTRODIENST EPHEMERIS for the year 1646

geocentric

JANUARY 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
M 1	6 42 46	10°34'32	29°48'48	18°38' 8	22°28'46	2°38' 4	29°R41	27°V24	28°M30	7°A12	5°R35	10°R17	11°Q45	19°A22	5°R23	M 1
T 2	6 46 43	11°50'41	14°58'59	19°47' 23°57	2°50' 29°II33	27°24' 28°33	7°14' 5°II34	10°Q14	11°42' 19°28	5°Q19	T 2					T 2
W 3	6 50 40	12°51'49	29°59' 21°26	25° 7' 3°35	29°25' 27°24	28°36' 7°16	5°33' 10°12	11°39' 19°35	5°15' W 3							W 3
T 4	6 54 36	13°52'58	14°Q39	23° 6' 26°18	4°21' 29°18	27°25' 28°39	7°17' 5°32	10°D12	11°36' 19°42	5°11' T 4						T 4
F 5	6 58 33	14°54'06	28°54' 24°45	27°29' 5° 6	29°10' 27°26	28°42' 7°19	5°31' 10°13	11°32' 19°48	5° 6' F 5							F 5
S 6	7 2 29	15°55'14	12°M42	26°25' 28°39	5°52' 29° 3	27°26' 28°44	7°21' 5°31	10°14' 11°29	19°55' 5° 2	S 6						S 6
S 7	7 6 26	16°56'22	26° 3' 28° 5	29°50' 6°38	28°55' 27°27	28°47' 7°23	5°30' 10°16	11°26' 20° 2	4°58' S 7							S 7
M 8	7 10 22	17°57'30	8°A58	29°44' 1°H 0	7°23' 28°48	27°28' 28°50	7°25' 5°29	10°17' 11°23	20° 8' 4°54	M 8						M 8
T 9	7 14 19	18°58'38	21°32' 1°A24	2°10' 8° 9	28°41' 27°29	28°53' 7°27	5°28' 10°R17	11°20' 20°15	4°50' T 9							T 9
W10	7 18 15	19°59'46	3°M48	3° 3' 3°20	8°55' 28°34	27°31' 28°55	7°29' 5°27	10°17' 11°16	20°22' 4°46	W10						W10
T 11	7 22 12	21° 0'53	15°52' 4°41	4°30' 9°41	28°27' 27°32	28°58' 7°30	5°27' 10°15	11°13' 20°28	4°42' T 11							T 11
F 12	7 26 9	22° 2'01	27°47' 6°19	5°39' 10°27	28°20' 27°33	29° 1' 7°32	5°26' 10°12	11°10' 20°35	4°38' F 12							F 12
S 13	7 30 5	23° 3'08	9°A38	7°56' 6°49	11°12' 28°13	27°35' 29° 3	7°34' 5°25	10°10' 11° 7	20°42' 4°34	S 13						S 13
S 14	7 34 2	24° 4'14	21°27' 9°31	7°58' 11°58	28° 6' 27°37	29° 6' 7°35	5°24' 10° 7	11° 4' 20°49	4°31' S 14							S 14
M15	7 37 58	25° 5'20	3°B18	11° 5' 9° 7	12°44' 28° 0	27°38' 29° 8	7°37' 5°24	10° 4' 11° 1	20°55' 4°27	M15						M15
T 16	7 41 55	26° 6'25	15°14' 12°37	10°16' 13°30	27°53' 27°40	29°11' 7°39	5°23' 10° 2	10°57' 21° 2	4°23' T 16							T 16
W17	7 45 51	27° 7'30	27°15' 14° 7	11°25' 14°16	27°47' 27°42	29°13' 7°40	5°22' 10° 1	10°54' 21° 9	4°19' W17							W17
T 18	7 49 48	28° 8'34	9°A24	15°33' 12°34	15° 3' 27°41	27°44' 29°15	7°42' 5°22	10°D 1	10°51' 21°15	4°16' T 18						T 18
F 19	7 53 44	29° 9'37	21°43' 16°56	13°43' 15°49	27°35' 27°47	29°18' 7°44	5°21' 10° 1	10°48' 21°22	4°12' F 19							F 19
S 20	7 57 41	0°A10'39	4°H12	18°15' 14°51	16°35' 27°29	27°49' 29°20	7°45' 5°21	10° 2' 10°45	21°29' 4° 8	S 20						S 20
S 21	8 1 38	1°11'41	16°54' 19°29	15°59' 17°21	27°24' 27°51	29°22' 7°47	5°20' 10° 3	10°42' 21°35	4° 5' S 21							S 21
M22	8 5 34	2°12'41	29°50' 20°38	17° 7' 18° 7	27°18' 27°54	29°24' 7°48	5°19' 10° 4	10°38' 21°42	4° 1' M22							M22
T 23	8 9 31	3°13'39	13°V 2	21°40' 18°15	18°53' 27°13	27°56' 29°27	7°50' 5°19	10° 4' 10°35	21°49' 3°58	T 23						T 23
W24	8 13 27	4°14'37	26°31' 22°35	19°23' 19°40	27° 8' 27°59	29°29' 7°51	5°18' 10° 5	10°32' 21°55	3°54' W24							W24
T 25	8 17 24	5°15'33	10°B20	23°22' 20°30	20°26' 27° 3	28° 2' 29°31	7°53' 5°18	10°R 5	10°29' 22° 2	3°51' T 25						T 25
F 26	8 21 20	6°16'28	24°27' 24° 0	21°37' 21°12	26°58' 28° 5	29°33' 7°54	5°17' 10° 4	10°26' 22° 9	3°48' F 26							F 26
S 27	8 25 17	7°17'22	8°II51	24°29' 22°44	21°59' 26°53	28° 8' 29°35	7°55' 5°17	10° 4' 10°22	22°16' 3°45	S 27						S 27
S 28	8 29 13	8°18'14	23°29' 24°47	23°51' 22°45	26°49' 28°11	29°36' 7°57	5°16' 10° 4	10°19' 22°22	3°41' S 28							S 28
M29	8 33 10	9°19'05	8°B17	24°R55	24°57' 23°31	26°44' 28°14	29°38' 7°58	5°16' 10° 4	10°16' 22°29	3°38' M29						M29
T 30	8 37 7	10°19'55	23° 1' 24°52	26° 4' 24°18	26°40' 28°18	29°40' 7°59	5°15' 10°D 4	10°13' 22°36	3°35' T 30							T 30
W31	8 41 3	11°A20'43	7°Q52	24°A38	27°H10	25°B 4	26°II36	28°V21	29°M42	8°A 1	5°II15	10°R 4	10°Q10	22°A42	3°B32	W31

Delta T = 46.11 sec

Greg. Calendar

FEBRUARY 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	8 45 0	12°A21'31	22°Q25	24°R12	28°H15	25°B51	26°R33	28°V25	29°M44	8°A 2	5°R15	10°R 4	10°Q 7	22°A49	3°R29	T 1
F 2	8 48 56	13°22'16	6°M39	23°A37	29°21	26°37	26°II29	28°28	29°45	8° 3	5°II14	10°Q 4	10° 3	22°56	3°B27	F 2
S 3	8 52 53	14°23'01	20°31	22°52	0°V26	27°24	26°26	28°32	29°47	8° 4	5°14	10° 3	10° 0	23° 2	3°24	S 3
S 4	8 56 49	15°23'45	3°A58	21°59' 1°31	28°10' 26°22	28°36' 29°48	8° 5	5°14' 10° 3	9°57' 23° 9	3°21' S 4						S 4
M 5	9 0 46	16°24'27	17° 1' 20°58	2°35' 28°57	26°19' 28°40	29°50' 8° 7	5°13' 10° 2	9°54' 23°16	3°19' M 5							M 5
T 6	9 4 42	17°25'08	29°41	19°53' 3°40	29°44' 26°17	28°44' 29°51	8° 8	5°13' 10° 1	9°51' 23°22	3°16' T 6						T 6
W 7	9 8 39	18°25'48	12°M 2	18°44' 4°43	0°A30	26°14' 28°48	29°53' 8° 9	5°13' 10° 1	9°47' 23°29	3°14' W 7						W 7
T 8	9 12 36	19°26'27	24° 8	17°34' 5°47	1°17' 26°12	28°52' 29°54	8°10' 5°13	10°D 1	9°44' 23°36	3°11' T 8						T 8
F 9	9 16 32	20°27'05	6°A 4	16°25' 6°50	2° 4' 26° 9	28°56' 29°55	8°11' 5°13	10° 1	9°41' 23°42	3° 9' F 9						F 9
S 10	9 20 29	21°27'42	17°55	15°18' 7°53	2°50' 26° 7	29° 0' 29°57	8°12' 5°12	10° 2	9°38' 23°49	3° 7' S 10						S 10
S 11	9 24 25	22°28'17	29°44	14°14' 8°56	3°37' 26° 6	29° 5' 29°58	8°13' 5°12	10° 3	9°35' 23°56	3° 4' S 11						S 11
M12	9 28 22	23°28'52	11°B37	13°16' 9°58	4°24' 26° 4	29° 9' 29°59	8°13' 5°12	10° 5	9°32' 24° 3	3° 2' M12						M12
T 13	9 32 18	24°29'24	23°37	12°23' 11° 0	5°11' 26° 2	29°14' 0°A 0	8°14' 5°12	10° 6	9°28' 24° 9	3° 0' T 13						T 13
W14	9 36 15	25°29'56	5°A47	11°38' 12° 2	5°57' 26° 1	29°19' 0° 1	8°15' 5°12	10°R 6	9°25' 24°16	2°58' W14						W14
T 15	9 40 11	26°30'25	18° 9	10°59' 13° 3	6°44' 26° 0	29°23' 0° 2	8°16' 5°12	10° 6	9°22' 24°23	2°57' T 15						T 15
F 16	9 44 8	27°30'54	0°H45	10°28' 14° 4	7°31' 25°59	29°28' 0° 3	8°17' 5°12	10° 5	9°19' 24°29	2°55' F 16						F 16
S 17	9 48 5	28°31'20	13°35	10° 5' 15° 4	8°18' 25°59	29°33' 0° 4	8°17' 5°12	10° 3	9°16' 24°36	2°53' S 17						S 17
S 18	9 52 1	29°31'45	26°39	9°49' 16° 4	9° 5' 25°58	29°38' 0° 5	8°18' 5°D12	10° 1	9°13' 24°43	2°52' S 18						S 18
M19	9 55 58	0°H32'07	9°V57	9°40' 17° 3	9°51' 25°58	29°43' 0° 6	8°19' 5°12	9°57' 9° 9	24°49' 2°50	M19						M19
T 20	9 59 54	1°32'28	23°28	9°D38	18° 2' 10°38	25°D58	29°49' 0° 6	8°19' 5°12	9°54' 9° 6	24°56' 2°49	T 20					T 20
W21	10 3 51	2°32'47	7°B10	9°43' 19° 1	11°25' 25°58	29°54' 0° 7	8°20' 5°12	9°52' 9° 3	25° 3' 2°47	W21						W21
T 22	10 7 47	3°33'04	21° 3	9°54' 19°59	12°12' 25°59	29°59' 0° 8	8°21' 5°12	9°50' 9° 0	25° 9' 2°46	T 22						T 22
F 23	10 11 44	4°33'19	5°II 6	10°11' 20°56	12°59' 25°59	0°B 5	8°21' 5°12	9°D50	8°57' 25°16	2°45' F 23						F 23
S 24	10 15 40	5°33'32	19°16	10°33' 21°53	13°46' 26° 0	0°10' 0° 9	8°22' 5°12	9°50' 8°53	25°23' 2°44	S 24						S 24
S 25	10 19 37	6°33'43	3°B33	11° 0' 22°49	14°33' 26° 1	0°16' 0° 9	8°22' 5°12	9°51' 8°50	25°29' 2°43	S 25						S 25
M26	10 23 34	7°33'52	17°53	11°33' 23°45	15°20' 26° 2	0°21' 0°10	8°23' 5°13	9°53' 8°47	25°36' 2°42	M26						M26
T 27	10 27 30	8°33'58	2°Q14	12° 9' 24°40	16° 7' 26° 4	0°27' 0°10	8°23' 5°13	9°54' 8°44	25°43' 2°41	T 27						T 27
W28	10 31 27	9°H34'03	16°Q32	12°A50	25°V35	16°A54	26°II 5	0°B33	0°A10	8°A23	5°II13	9°R54	8°Q41	25°A49	2°B41	W28

Delta T = 46.05 sec

Greg. Calendar

ASTRODIENST EPHEMERIS for the year 1646
geocentric

MARCH 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	10 35 23	10 ^h 34'05	0 ^m 42	13 [°] 35	26 [°] 29	17 [°] 41	26 [°] 11	0 [°] 38	0 [°] 10	8 [°] 24	5 [°] 13	9 [°] 53	8 [°] 38	25 [°] 56	2 [°] 40	T 1
F 2	10 39 20	11 [°] 34'06	14 [°] 40	14 [°] 23	27 [°] 22	18 [°] 28	26 [°] 9	0 [°] 44	0 [°] 11	8 [°] 24	5 [°] 13	9 [°] 50	8 [°] 34	26 [°] 3	2 [°] 40	F 2
S 3	10 43 16	12 [°] 34'04	28 [°] 22	15 [°] 15	28 [°] 14	19 [°] 14	26 [°] 11	0 [°] 50	0 [°] 11	8 [°] 24	5 [°] 14	9 [°] 45	8 [°] 31	26 [°] 9	2 [°] 39	S 3
S 4	10 47 13	13 [°] 34'01	11 [°] 44	16 [°] 10	29 [°] 6	20 [°] 1	26 [°] 13	0 [°] 56	0 [°] 11	8 [°] 24	5 [°] 14	9 [°] 39	8 [°] 28	26 [°] 16	2 [°] 39	S 4
M 5	10 51 9	14 [°] 33'56	24 [°] 47	17 [°] 8	29 [°] 57	20 [°] 48	26 [°] 16	1 [°] 2	0 [°] 11	8 [°] 25	5 [°] 14	9 [°] 34	8 [°] 25	26 [°] 23	2 [°] 39	M 5
T 6	10 55 6	15 [°] 33'49	7 ^m 29	18 [°] 8	0 [°] 47	21 [°] 35	26 [°] 19	1 [°] 8	0 [°] 11	8 [°] 25	5 [°] 15	9 [°] 28	8 [°] 22	26 [°] 30	2 [°] 39	T 6
W 7	10 59 3	16 [°] 33'41	19 [°] 52	19 [°] 11	1 [°] 37	22 [°] 22	26 [°] 21	1 [°] 15	0 [°] 11	8 [°] 25	5 [°] 15	9 [°] 23	8 [°] 19	26 [°] 36	2 [°] 39	W 7
T 8	11 2 59	17 [°] 33'30	2 ^m 1	20 [°] 16	2 [°] 25	23 [°] 9	26 [°] 24	1 [°] 21	0 [°] 11	8 [°] 25	5 [°] 15	9 [°] 20	8 [°] 15	26 [°] 43	2 [°] 39	T 8
F 9	11 6 56	18 [°] 33'18	13 [°] 58	21 [°] 24	3 [°] 13	23 [°] 56	26 [°] 28	1 [°] 27	0 [°] 10	8 [°] 25	5 [°] 16	9 [°] 19	8 [°] 12	26 [°] 50	2 [°] 39	F 9
S 10	11 10 52	19 [°] 33'05	25 [°] 50	22 [°] 34	4 [°] 0	24 [°] 43	26 [°] 31	1 [°] 33	0 [°] 10	8 [°] 25	5 [°] 16	9 [°] 19	8 [°] 9	26 [°] 56	2 [°] 39	S 10
S 11	11 14 49	20 [°] 32'49	7 ^m 34	23 [°] 46	4 [°] 46	25 [°] 30	26 [°] 35	1 [°] 40	0 [°] 10	8 [°] 25	5 [°] 17	9 [°] 20	8 [°] 6	27 [°] 3	2 [°] 39	S 11
M 12	11 18 45	21 [°] 32'32	19 [°] 33	25 [°] 0	5 [°] 31	26 [°] 17	26 [°] 39	1 [°] 46	0 [°] 9	8 [°] 25	5 [°] 17	9 [°] 22	8 [°] 3	27 [°] 10	2 [°] 40	M 12
T 13	11 22 42	22 [°] 32'13	1 ^m 36	26 [°] 16	6 [°] 15	27 [°] 4	26 [°] 43	1 [°] 53	0 [°] 9	8 [°] 25	5 [°] 18	9 [°] 23	7 [°] 59	27 [°] 16	2 [°] 40	T 13
W 14	11 26 38	23 [°] 31'53	13 [°] 52	27 [°] 33	6 [°] 58	27 [°] 51	26 [°] 47	1 [°] 59	0 [°] 9	8 [°] 25	5 [°] 18	9 [°] 23	7 [°] 56	27 [°] 23	2 [°] 41	W 14
T 15	11 30 35	24 [°] 31'30	26 [°] 24	28 [°] 53	7 [°] 40	28 [°] 38	26 [°] 51	2 [°] 6	0 [°] 8	8 [°] 25	5 [°] 19	9 [°] 22	7 [°] 53	27 [°] 30	2 [°] 42	T 15
F 16	11 34 31	25 [°] 31'06	9 ^m 15	0 [°] 14	8 [°] 21	29 [°] 25	26 [°] 56	2 [°] 13	0 [°] 8	8 [°] 25	5 [°] 19	9 [°] 18	7 [°] 50	27 [°] 36	2 [°] 42	F 16
S 17	11 38 28	26 [°] 30'39	22 [°] 25	1 [°] 36	9 [°] 1	0 [°] 12	27 [°] 0	2 [°] 19	0 [°] 7	8 [°] 24	5 [°] 20	9 [°] 12	7 [°] 47	27 [°] 43	2 [°] 43	S 17
S 18	11 42 25	27 [°] 30'10	5 ^m 54	3 [°] 1	9 [°] 39	0 [°] 59	27 [°] 5	2 [°] 26	0 [°] 6	8 [°] 24	5 [°] 21	9 [°] 5	7 [°] 44	27 [°] 50	2 [°] 44	S 18
M 19	11 46 21	28 [°] 29'40	19 [°] 39	4 [°] 26	10 [°] 17	1 [°] 46	27 [°] 10	2 [°] 33	0 [°] 6	8 [°] 24	5 [°] 21	8 [°] 57	7 [°] 40	27 [°] 56	2 [°] 45	M 19
T 20	11 50 18	29 [°] 29'07	3 ^m 37	5 [°] 54	10 [°] 53	2 [°] 33	27 [°] 15	2 [°] 40	0 [°] 5	8 [°] 24	5 [°] 22	8 [°] 48	7 [°] 37	28 [°] 3	2 [°] 47	T 20
W 21	11 54 14	0 [°] 28'32	17 [°] 43	7 [°] 22	11 [°] 27	3 [°] 20	27 [°] 21	2 [°] 47	0 [°] 4	8 [°] 23	5 [°] 22	8 [°] 41	7 [°] 34	28 [°] 10	2 [°] 48	W 21
T 22	11 58 11	1 [°] 27'55	1 ^m 54	8 [°] 53	12 [°] 0	4 [°] 7	27 [°] 26	2 [°] 54	0 [°] 3	8 [°] 23	5 [°] 23	8 [°] 35	7 [°] 31	28 [°] 16	2 [°] 49	T 22
F 23	12 2 7	2 [°] 27'15	16 [°] 6	10 [°] 24	12 [°] 32	4 [°] 54	27 [°] 32	3 [°] 1	0 [°] 2	8 [°] 22	5 [°] 24	8 [°] 32	7 [°] 28	28 [°] 23	2 [°] 51	F 23
S 24	12 6 4	3 [°] 26'33	0 ^m 16	11 [°] 57	13 [°] 2	5 [°] 41	27 [°] 38	3 [°] 8	0 [°] 1	8 [°] 22	5 [°] 25	8 [°] 31	7 [°] 24	28 [°] 30	2 [°] 52	S 24
S 25	12 10 0	4 [°] 25'49	14 [°] 23	13 [°] 32	13 [°] 31	6 [°] 28	27 [°] 44	3 [°] 15	0 [°] 0	8 [°] 22	5 [°] 25	8 [°] 31	7 [°] 21	28 [°] 36	2 [°] 54	S 25
M 26	12 13 57	5 [°] 25'03	28 [°] 25	15 [°] 8	13 [°] 58	7 [°] 15	27 [°] 50	3 [°] 22	29 ^m 59	8 [°] 21	5 [°] 26	8 [°] 32	7 [°] 18	28 [°] 43	2 [°] 55	M 26
T 27	12 17 54	6 [°] 24'14	12 ^m 22	16 [°] 45	14 [°] 23	8 [°] 2	27 [°] 56	3 [°] 29	29 ^m 58	8 [°] 21	5 [°] 27	8 [°] 32	7 [°] 15	28 [°] 50	2 [°] 57	T 27
W 28	12 21 50	7 [°] 23'22	26 [°] 13	18 [°] 24	14 [°] 47	8 [°] 48	28 [°] 3	3 [°] 36	29 ^m 57	8 [°] 20	5 [°] 28	8 [°] 31	7 [°] 12	28 [°] 56	2 [°] 59	W 28
T 29	12 25 47	8 [°] 22'28	9 ^m 56	20 [°] 4	15 [°] 9	9 [°] 35	28 [°] 9	3 [°] 44	29 ^m 56	8 [°] 19	5 [°] 28	8 [°] 27	7 [°] 9	29 [°] 3	3 [°] 1	T 29
F 30	12 29 43	9 [°] 21'33	23 [°] 29	21 [°] 46	15 [°] 29	10 [°] 22	28 [°] 16	3 [°] 51	29 ^m 54	8 [°] 19	5 [°] 29	8 [°] 20	7 [°] 5	29 [°] 10	3 [°] 3	F 30
S 31	12 33 40	10 [°] 20'34	6 ^m 50	23 [°] 29	15 [°] 46	11 [°] 9	28 [°] 23	3 [°] 58	29 ^m 53	8 [°] 18	5 [°] 30	8 [°] 12	7 [°] 2	29 [°] 16	3 [°] 5	S 31

Delta T = 46.00 sec

Greg. Calendar

APRIL 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day	
S 1	12 37 36	11°19'34	19°58	25°14	16°8	2	11°56	28°30	4°5	29°52	8°17	5°31	8°1	6°59	29°23	3°57	S 1
M 2	12 41 33	12°18'32	20°49	27°0	16°16		12°42	28°37	4°13	29°50	8°17	5°32	7°50	6°56	29°30	3°10	M 2
T 3	12 45 29	13°17'28	15°25	28°47	16°28		13°29	28°44	4°20	29°49	8°16	5°33	7°38	6°53	29°36	3°12	T 3
W 4	12 49 26	14°16'22	27°45	0°36	16°37		14°16	28°52	4°27	29°48	8°15	5°34	7°29	6°50	29°43	3°15	W 4
T 5	12 53 23	15°15'15	9°52	2°26	16°45	15°3	28°59	4°35	29°46	8°14	5°34	7°21	6°46	29°50	3°17	T 5	
F 6	12 57 19	16°14'05	21°49	4°18	16°50	15°49	29°7	4°42	29°45	8°14	5°35	7°16	6°43	29°56	3°20	F 6	
S 7	13 1 16	17°12'54	3°40	6°12	16°52	16°36	29°15	4°50	29°43	8°13	5°36	7°13	6°40	0°3	3°23	S 7	
S 8	13 5 12	18°11'41	15°29	8°7	16°53	17°23	29°23	4°57	29°41	8°12	5°37	7°12	6°37	0°10	3°25	S 8	
M 9	13 9 9	19°10'26	27°23	10°3	16°51	18°10	29°31	5°5	29°40	8°11	5°38	7°12	6°34	0°16	3°28	M 9	
T 10	13 13 5	20°9'10	9°26	12°1	16°46	18°56	29°39	5°12	29°38	8°10	5°39	7°12	6°30	0°23	3°31	T 10	
W 11	13 17 2	21°7'52	21°43	14°0	16°39	19°43	29°48	5°20	29°36	8°9	5°40	7°11	6°27	0°30	3°34	W 11	
T 12	13 20 58	22°6'32	4°20	16°1	16°30	20°29	29°56	5°27	29°35	8°8	5°41	7°8	6°24	0°37	3°37	T 12	
F 13	13 24 55	23°5'10	17°20	18°3	16°18	21°16	0°5	5°35	29°33	8°7	5°42	7°3	6°21	0°43	3°41	F 13	
S 14	13 28 52	24°3'46	0°44	20°7	16°4	22°3	0°14	5°43	29°31	8°6	5°43	6°55	6°18	0°50	3°44	S 14	
S 15	13 32 48	25°2'21	14°32	22°11	15°47	22°49	0°22	5°50	29°29	8°5	5°45	6°45	6°15	0°57	3°47	S 15	
M 16	13 36 45	26°0'54	28°40	24°17	15°28	23°36	0°31	5°58	29°27	8°4	5°46	6°33	6°11	1°3	3°51	M 16	
T 17	13 40 41	26°59'25	13°8	26°24	15°7	24°22	0°40	6°5	29°25	8°3	5°47	6°22	6°8	1°10	3°54	T 17	
W 18	13 44 38	27°57'54	27°38	28°31	14°43	25°8	0°50	6°13	29°23	8°2	5°48	6°11	6°5	1°17	3°58	W 18	
T 19	13 48 34	28°56'21	12°14	0°39	14°18	25°55	0°59	6°21	29°21	8°1	5°49	6°3	6°2	1°23	4°1	T 19	
F 20	13 52 31	29°54'46	26°45	2°48	13°50	26°41	1°8	6°28	29°19	7°59	5°50	5°58	5°59	1°30	4°5	F 20	
S 21	13 56 27	0°53'09	11°57	4°56	13°20	27°28	1°18	6°36	29°17	7°58	5°51	5°55	5°55	1°37	4°9	S 21	
S 22	14 0 24	1°51'29	25°17	7°5	12°49	28°14	1°28	6°44	29°15	7°57	5°52	5°54	5°52	1°43	4°13	S 22	
M 23	14 4 21	2°49'48	9°15	9°13	12°16	29°0	1°37	6°52	29°13	7°56	5°54	5°54	5°49	1°50	4°17	M 23	
T 24	14 8 17	3°48'04	20°3	11°20	11°42	29°46	1°47	6°59	29°11	7°55	5°55	5°53	5°46	1°57	4°21	T 24	
W 25	14 12 14	4°46'18	6°32	13°27	11°6	0°33	1°57	7°7	29°8	7°53	5°56	5°51	5°43	2°3	4°25	W 25	
T 26	14 16 10	5°44'30	19°53	15°32	10°30	1°19	2°7	7°15	29°6	7°52	5°57	5°46	5°40	2°10	4°29	T 26	
F 27	14 20 7	6°42'41	3°3	17°35	9°53	2°5	2°17	7°22	29°4	7°51	5°58	5°39	5°36	2°17	4°33	F 27	
S 28	14 24 3	7°40'49	16°2	19°37	9°15	2°51	2°28	7°30	29°2	7°49	6°0	5°28	5°33	2°23	4°37	S 28	
S 29	14 28 0	8°38'55	28°49	21°36	8°37	3°37	2°38	7°38	29°0	7°48	6°1	5°16	5°30	2°30	4°42	S 29	
M 30	14 31 56	9°37'00	11°25	23°33	7°59	4°23	2°48	7°45	28°57	7°47	6°2	5°13	5°12	2°37	4°46	M 30	

ASTRODIENST EPHEMERIS for the year 1646

geocentric

MAY 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	14 35 53	10♂35'03	23♂48	25♂28	7°R21	5°V 9	2♂59	7♂53	28°R55	7°R45	6♂II 3	4°R49	5♂Ω24	2♂♂43	4♂551	T 1
W 2	14 39 49	11°33'05	6♂♂ 0	27°19	6♂44	5°55	3°10	8° 1	28♂53	7♂44	6° 5	4♂Ω38	5°21	2°50	4°55	W 2
T 3	14 43 46	12°31'05	18° 2	29° 8	6° 8	6°41	3°20	8° 9	28°50	7°42	6° 6	4°28	5°17	2°57	5° 0	T 3
F 4	14 47 43	13°29'03	29°56	0♂II54	5°33	7°27	3°31	8°16	28°48	7°41	6° 7	4°21	5°14	3° 3	5° 4	F 4
S 5	14 51 39	14°27'00	11♂45	2°36	4°58	8°13	3°42	8°24	28°45	7°40	6° 8	4°17	5°11	3°10	5° 9	S 5
S 6	14 55 36	15°24'56	23°33	4°15	4°26	8°59	3°53	8°32	28°43	7°38	6°10	4°15	5° 8	3°17	5°14	S 6
M 7	14 59 32	16°22'51	5♂♂25	5°50	3°55	9°44	4° 4	8°39	28°41	7°37	6°11	4°D15	5° 5	3°23	5°19	M 7
T 8	15 3 29	17°20'44	17°27	7°22	3°25	10°30	4°15	8°47	28°38	7°35	6°12	4°R15	5° 1	3°30	5°23	T 8
W 9	15 7 25	18°18'36	29°44	8°50	2°58	11°16	4°26	8°55	28°36	7°34	6°14	4°14	4°58	3°37	5°28	W 9
T 10	15 11 22	19°16'27	12♂20	10°14	2°32	12° 1	4°37	9° 2	28°33	7°32	6°15	4°12	4°55	3°43	5°33	T 10
F 11	15 15 18	20°14'16	25°21	11°35	2° 9	12°47	4°49	9°10	28°31	7°31	6°16	4° 8	4°52	3°50	5°38	F 11
S 12	15 19 15	21°12'04	8°V49	12°52	1°48	13°33	5° 0	9°18	28°28	7°29	6°18	4° 1	4°49	3°57	5°43	S 12
S 13	15 23 12	22° 9'51	22°45	14° 5	1°29	14°18	5°12	9°25	28°26	7°28	6°19	3°53	4°46	4° 3	5°49	S 13
M14	15 27 8	23° 7'37	7♂ 7	15°15	1°13	15° 4	5°23	9°33	28°23	7°26	6°20	3°42	4°42	4°10	5°54	M14
T 15	15 31 5	24° 5'22	21°49	16°20	0°59	15°49	5°35	9°40	28°21	7°24	6°22	3°32	4°39	4°17	5°59	T 15
W16	15 35 1	25° 3'05	6♂II43	17°21	0°48	16°34	5°47	9°48	28°19	7°23	6°23	3°22	4°36	4°23	6° 4	W16
T 17	15 38 58	26° 0'47	21°42	18°19	0°38	17°20	5°58	9°55	28°16	7°21	6°24	3°15	4°33	4°30	6°10	T 17
F 18	15 42 54	26°58'28	6♂♂35	19°12	0°32	18° 5	6°10	10° 3	28°14	7°20	6°26	3°10	4°30	4°37	6°15	F 18
S 19	15 46 51	27°56'07	21°16	20° 1	0°27	18°50	6°22	10°10	28°11	7°18	6°27	3° 8	4°27	4°43	6°21	S 19
S 20	15 50 47	28°53'45	5♂Ω39	20°45	0°D25	19°35	6°34	10°18	28° 9	7°16	6°28	3°D 7	4°23	4°50	6°26	S 20
M21	15 54 44	29°51'21	19°43	21°25	0°26	20°21	6°46	10°25	28° 6	7°15	6°30	3° 8	4°20	4°57	6°32	M21
T 22	15 58 41	0♂II48'55	3♂♂28	22° 1	0°28	21° 6	6°58	10°33	28° 4	7°13	6°31	3°R 8	4°17	5° 3	6°37	T 22
W23	16 2 37	1°46'28	16°54	22°33	0°33	21°51	7°10	10°40	28° 1	7°12	6°32	3° 7	4°14	5°10	6°43	W23
T 24	16 6 34	2°44'00	0♂♂ 3	22°59	0°40	22°36	7°22	10°47	27°59	7°10	6°34	3° 4	4°11	5°17	6°48	T 24
F 25	16 10 30	3°41'30	12°57	23°21	0°49	23°20	7°35	10°55	27°56	7° 8	6°35	2°58	4° 7	5°23	6°54	F 25
S 26	16 14 27	4°38'59	25°39	23°39	1° 1	24° 5	7°47	11° 2	27°54	7° 7	6°37	2°50	4° 4	5°30	7° 0	S 26
S 27	16 18 23	5°36'27	8♂♂ 9	23°52	1°14	24°50	7°59	11° 9	27°51	7° 5	6°38	2°41	4° 1	5°37	7° 6	S 27
M28	16 22 20	6°33'53	20°28	24° 0	1°30	25°35	8°12	11°17	27°49	7° 4	6°39	2°31	3°58	5°43	7°11	M28
T 29	16 26 16	7°31'19	2♂38	24°R 4	1°47	26°20	8°24	11°24	27°46	7° 2	6°41	2°21	3°55	5°50	7°17	T 29
W30	16 30 13	8°28'43	14°40	24° 3	2° 6	27° 4	8°37	11°31	27°44	7° 0	6°42	2°12	3°52	5°57	7°23	W30
T 31	16 34 10	9♂II26'07	26♂35	23♂II57	2♂♂27	27°V49	8♂♂49	11♂38	27♂41	6♂♂59	6♂II43	2♂Ω 5	3♂Ω48	6♂♂ 3	7♂♂29	T 31

Delta T = 45.88 sec

Greg. Calendar

JUNE 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
F 1	16 38 6	10♂II23'30	8♂♂25	23°R47	2♂♂50	28°V33	9♂♂ 2	11♂45	27°R39	6°R57	6♂II45	1°R59	3♂Ω45	6♂♂10	7♂♂35	F 1
S 2	16 42 3	11°20'52	20°13	23♂II34	3°14	29°18	9°14	11°52	27♂♂37	6♂♂55	6°46	1♂Ω57	3°42	6°16	7°41	S 2
S 3	16 45 59	12°18'14	2♂♂ 1	23°16	3°40	0♂♂ 2	9°27	11°59	27°34	6°54	6°48	1°D56	3°39	6°23	7°47	S 3
M 4	16 49 56	13°15'35	13°54	22°55	4° 8	0°47	9°40	12° 6	27°32	6°52	6°49	1°57	3°36	6°30	7°53	M 4
T 5	16 53 52	14°12'55	25°56	22°30	4°37	1°31	9°53	12°13	27°29	6°51	6°50	1°58	3°33	6°36	7°59	T 5
W 6	16 57 49	15°10'15	8♂♂12	22° 3	5° 8	2°15	10° 5	12°20	27°27	6°49	6°52	1°59	3°29	6°43	8° 5	W 6
T 7	17 1 145	16° 7'34	20°47	21°33	5°40	2°59	10°18	12°27	27°25	6°47	6°53	1°R59	3°26	6°50	8°11	T 7
F 8	17 5 42	17° 4'53	3°V45	21° 1	6°13	3°43	10°31	12°34	27°22	6°46	6°54	1°58	3°23	6°56	8°17	F 8
S 9	17 9 39	18° 2'11	17°10	20°28	6°48	4°28	10°44	12°41	27°20	6°44	6°56	1°54	3°20	7° 3	8°24	S 9
S 10	17 13 35	18°59'30	1♂♂ 3	19°55	7°24	5°12	10°57	12°48	27°18	6°43	6°57	1°50	3°17	7°10	8°30	S 10
M11	17 17 32	19°56'47	15°25	19°21	8° 1	5°56	11°10	12°54	27°16	6°41	6°58	1°44	3°13	7°16	8°36	M11
T 12	17 21 28	20°54'05	0♂II10	18°47	8°40	6°39	11°23	13° 1	27°13	6°39	7° 0	1°38	3°10	7°23	8°42	T 12
W13	17 25 25	21°51'22	15°13	18°14	9°19	7°23	11°36	13° 8	27°11	6°38	7° 1	1°32	3° 7	7°30	8°48	W13
T 14	17 29 21	22°48'39	0♂♂23	17°43	9°59	8° 7	11°49	13°14	27° 9	6°36	7° 2	1°28	3° 4	7°36	8°55	T 14
F 15	17 33 18	23°45'55	15°32	17°14	10°41	8°51	12° 2	13°21	27° 7	6°35	7° 4	1°25	3° 1	7°43	9° 1	F 15
S 16	17 37 15	24°43'11	0♂Ω30	16°47	11°23	9°34	12°15	13°27	27° 5	6°33	7° 5	1°D24	2°58	7°50	9° 7	S 16
S 17	17 41 11	25°40'26	15° 9	16°24	12° 7	10°18	12°28	13°34	27° 3	6°32	7° 6	1°25	2°54	7°56	9°14	S 17
M18	17 45 8	26°37'40	29°26	16° 4	12°51	11° 1	12°42	13°40	27° 1	6°30	7° 8	1°26	2°51	8° 3	9°20	M18
T 19	17 49 4	27°34'53	13♂♂19	15°47	13°36	11°45	12°55	13°46	26°59	6°29	7° 9	1°28	2°48	8°10	9°27	T 19
W20	17 53 1	28°32'06	26°48	15°35	14°22	12°28	13° 8	13°53	26°57	6°27	7°10	1°R28	2°45	8°16	9°33	W20
T 21	17 56 57	29°29'19	9♂♂55	15°26	15° 9	13°12	13°21	13°59	26°55	6°26	7°12	1°28	2°42	8°23	9°39	T 21
F 22	18 0 54	0♂♂26'31	22°42	15°D23	15°56	13°55	13°35	14° 5	26°53	6°24	7°13	1°26	2°39	8°30	9°46	F 22
S 23	18 4 50	1°23'42	5♂♂14	15°24	16°45	14°38	13°48	14°11	26°51	6°23	7°14	1°23	2°35	8°36	9°52	S 23
S 24	18 8 47	2°20'53	17°32	15°29	17°34	15°21	14° 1	14°17	26°49	6°22	7°16	1°19	2°32	8°43	9°59	S 24
M25	18 12 44	3°18'04	29°40	15°40	18°23	16° 4	14°14	14°23	26°47	6°20	7°17	1°14	2°29	8°50	10° 5	M25
T 26	18 16 40	4°15'14	11♂♂39	15°55	19°14	16°47	14°28	14°29	26°45	6°19	7°18	1° 9	2°26	8°56	10°12	T 26
W27	18 20 37	5°12'25	23°33	16°16	20° 5	17°30	14°41	14°35	26°43	6°17	7°19	1° 5	2°23	9° 3	10°18	W27
T 28	18 24 33	6° 9'35	5♂♂23	16°41	20°57	18°13	14°54	14°41	26°42	6°16	7°20	1° 2	2°19	9°10	10°25	T 28
F 29	18 28 30	7° 6'45	17°12	17°11	21°49	18°55	15° 8	14°46	26°40	6°15	7°22	1° 0	2°16	9°16	10°31	F 29
S 30	18 32 26	8♂♂ 3'56	29♂♂ 0	17♂II46	22♂♂42	19♂♂38	15♂♂21	14♂♂52	26♂♂38	6♂♂13	7♂II23	1°D 0	2♂Ω13	9♂♂23	10♂♂38	S 30

Delta T = 45.82 sec

Greg. Calendar

ASTRODIENST EPHEMERIS for the year 1646
geocentric

JULY 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
S 1	18 36 23	9°58'17	10°52'39	18°11'26	23°35'35	20°8'21	15°35'35	14°8'58	26°R37	6°R12	7°II24	1°R 0	2°R10	9°30'30	10°54'44	S 1
M 2	18 40 19	10°55'27	11°52'39	19°11'00	24°29'21	21°3'00	15°48'15	15°3'30	26°M35	6°R11	7°25	1°1'00	2°7'00	9°36'10	10°51'51	M 2
T 3	18 44 16	11°52'39	12°52'39	20°0'00	25°24'21	21°46'16	16°1'15	15°9'30	26°34	6°9'00	7°27	1°2'00	2°4'00	9°43'10	10°57'10	T 3
W 4	18 48 13	12°49'50	13°47'02	20°55'26	26°19'22	22°28'16	16°15'15	15°14'30	26°32	6°8'00	7°28	1°4'00	2°0'00	9°50'11	11°4'00	W 4
T 5	18 52 9	13°47'02	14°44'15	21°53'27	27°14'23	23°10'16	16°28'15	15°19'26	26°31	6°7'00	7°29	1°5'00	1°57'00	9°56'11	11°10'10	T 5
F 6	18 56 6	14°44'15	15°41'28	22°57'28	28°10'23	23°53'16	16°42'15	15°25'26	26°29	6°6'00	7°30	1°R 5	1°54'00	10°3'11	11°17'10	F 6
S 7	19 0 2	15°41'28	16°38'42	24°0'00	29°7'24	24°35'16	16°55'15	15°30'26	26°28	6°5'00	7°31	1°5'00	1°51'00	10°10'11	11°23'10	S 7
S 8	19 3 59	16°38'42	17°35'56	25°17'00	30°II 4	25°17'17	17°9'15	15°35'26	26°26	6°3'00	7°32	1°4'00	1°48'00	10°16'11	11°30'10	S 8
M 9	19 7 55	17°35'56	18°33'11	26°34'1°	31°1'25	25°59'17	17°22'15	15°40'26	26°25	6°2'00	7°33	1°3'00	1°45'00	10°23'11	11°36'10	M 9
T 10	19 11 52	18°33'11	19°30'27	27°55'26	32°II 42	26°41'17	17°35'15	15°45'26	26°24	6°1'00	7°34	1°1'00	1°41'00	10°30'11	11°43'10	T 10
W 11	19 15 48	19°30'27	20°27'43	29°20'2°	33°5'27	27°23'17	17°49'15	15°50'26	26°23	6°0'00	7°36	1°0'00	1°38'00	10°36'11	11°49'10	W 11
T 12	19 19 45	20°27'43	21°25'00	30°58'00	34°5'35	28°4'18	18°2'15	15°55'26	26°21	5°59'00	7°37	0°58'00	1°35'00	10°43'11	11°56'10	T 12
F 13	19 23 42	21°25'00	22°22'16	31°58'11	35°5'9	28°46'18	18°16'15	15°59'26	26°20	5°58'00	7°38	0°D58	1°32'00	10°49'12	12°2'10	F 13
S 14	19 27 38	22°22'16	23°19'34	32°58'21	36°5'54	29°28'18	18°29'16	16°4'15	26°19	5°57'00	7°39	0°58'00	1°29'00	10°56'12	12°9'10	S 14
S 15	19 31 35	23°19'34	24°16'51	33°58'21	37°5'54	30°II 9	18°43'16	16°9'26	26°18	5°56'00	7°40	0°58'00	1°25'00	11°3'12	12°15'10	S 15
M 16	19 35 31	24°16'51	25°14'09	34°58'11	38°5'54	31°32'19	18°56'16	16°13'26	26°17	5°55'00	7°41	0°59'00	1°22'00	11°9'12	12°22'10	M 16
T 17	19 39 28	25°14'09	26°11'27	35°58'11	39°5'54	32°13'19	19°23'16	16°22'26	26°15	5°53'00	7°43	1°0'00	1°16'00	11°23'12	12°35'10	T 17
W 18	19 43 24	26°11'27	27°8'45	36°58'11	40°5'54	32°54'19	19°36'16	16°26'26	26°14	5°52'00	7°44	1°0'00	1°13'00	11°29'12	12°41'10	W 18
T 19	19 47 21	27°8'45	28°6'04	37°58'11	41°5'54	33°36'19	19°50'16	16°30'26	26°14	5°51'00	7°45	1°R 0	1°10'00	11°36'12	12°47'10	T 19
F 20	19 51 17	28°6'04	29°3'24	38°58'11	42°5'54	34°17'20	20°3'16	16°34'26	26°13	5°50'00	7°46	1°0'00	1°6'00	11°43'12	12°54'10	F 20
S 21	19 55 14	29°3'24	30°3'24	39°58'11	43°5'54	34°58'20	20°16'16	16°38'26	26°12	5°50'00	7°47	1°0'00	1°3'00	11°49'13	13°0'10	S 21
S 22	19 59 11	30°3'24	31°3'24	40°58'11	44°5'54	35°38'20	20°30'16	16°42'26	26°12	5°49'00	7°48	1°0'00	1°0'00	11°56'13	13°7'10	S 22
M 23	20 3 7	31°3'24	32°3'24	41°58'11	45°5'54	36°19'20	20°43'16	16°46'26	26°11	5°48'00	7°49	1°D 0	0°57'00	12°3'13	13°13'10	M 23
T 24	20 7 4	32°3'24	33°3'24	42°58'11	46°5'54	37°0'20	20°56'16	16°50'26	26°10	5°47'00	7°50	1°0'00	0°54'00	12°9'13	13°19'10	T 24
W 25	20 11 0	33°3'24	34°3'24	43°58'11	47°5'54	37°40'21	21°9'16	16°53'26	26°10	5°47'00	7°51	1°0'00	0°51'00	12°16'13	13°26'10	W 25
T 26	20 14 57	34°3'24	35°3'24	44°58'11	48°5'54	38°21'21	21°23'16	16°57'26	26°9	5°46'00	7°52	1°R 0	0°47'00	12°23'13	13°32'10	T 26
F 27	20 18 53	35°3'24	36°3'24	45°58'11	49°5'54	39°1'21	21°36'16	17°0'26	26°9	5°45'00	7°53	1°0'00	0°44'00	12°29'13	13°38'10	F 27
S 28	20 22 50	36°3'24	37°3'24	46°58'11	50°5'54	39°42'21	21°49'17	17°4'26	26°8	5°44'00	7°54	1°0'00	0°41'00	12°36'13	13°45'10	S 28
S 29	20 26 46	37°3'24	38°3'24	47°58'11	51°5'54	40°22'22	22°2'17	17°7'26	26°8	5°44'00	7°55	0°59'00	0°38'00	12°43'13	13°51'10	S 29
M 30	20 30 43	38°3'24	39°3'24	48°58'11	52°5'54	41°11'22	22°16'17	17°10'26	26°8	5°44'00	7°56	0°59'00	0°38'00	12°43'13	13°51'10	M 30
T 31	20 34 40	39°3'24	40°3'24	49°58'11	53°5'54	42°22'22	22°30'17	17°13'26	26°8	5°44'00	7°57	0°59'00	0°38'00	12°43'13	13°51'10	T 31

Delta T = 45.76 sec

Greg. Calendar

AUGUST 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
W 1	20 38 36	8♌37'17	26♋50	9♌41	24♐33	11♐42	22♌29	17♍13	26°R 8	5°R43	7♐55	0°R58	0♌31	12♌56	14♌3	W 1
T 2	20 42 33	9°34'46	9♍34	11°43	25°37	12°22	22°42	17°16	26♐ 8	5♌42	7°56	0♌57	0°28	13° 3	14° 9	T 2
F 3	20 46 29	10°32'16	22°35	13°45	26°42	13° 2	22°55	17°19	26° 8	5°42	7°57	0°56	0°25	13° 9	14°15	F 3
S 4	20 50 26	11°29'48	5♌54	15°45	27°47	13°42	23° 8	17°22	26° 7	5°42	7°57	0°D55	0°22	13°16	14°22	S 4
S 5	20 54 22	12°27'20	19°34	17°44	28°52	14°22	23°21	17°25	26°D 7	5°41	7°58	0°56	0°19	13°22	14°28	S 5
M 6	20 58 19	13°24'55	3♐34	19°42	29°58	15° 1	23°34	17°27	26° 8	5°41	7°59	0°56	0°16	13°29	14°34	M 6
T 7	21 2 15	14°22'31	17°55	21°38	1♌4	15°41	23°47	17°30	26° 8	5°40	7°59	0°57	0°12	13°36	14°40	T 7
W 8	21 6 12	15°20'08	2♌33	23°33	2° 9	16°20	24° 0	17°32	26° 8	5°40	8° 0	0°58	0° 9	13°42	14°46	W 8
T 9	21 10 9	16°17'47	17°24	25°26	3°16	16°59	24°13	17°35	26° 8	5°40	8° 1	0°59	0° 6	13°49	14°52	T 9
F 10	21 14 5	17°15'28	2°22	27°18	4°22	17°39	24°26	17°37	26° 8	5°40	8° 1	0°R59	0° 3	13°56	14°58	F 10
S 11	21 18 2	18°13'09	17°18	29° 9	5°28	18°18	24°38	17°39	26° 9	5°39	8° 2	0°59	29♌59	14° 2	15° 3	S 11
S 12	21 21 58	19°10'52	2♐ 5	0♐58	6°35	18°57	24°51	17°41	26° 9	5°39	8° 2	0°57	29°56	14° 9	15° 9	S 12
M 13	21 25 55	20° 8'37	16°35	2°46	7°41	19°36	25° 4	17°43	26° 9	5°39	8° 3	0°55	29°53	14°16	15°15	M 13
T 14	21 29 51	21° 6'22	0♌43	4°32	8°48	20°14	25°17	17°45	26°10	5°39	8° 3	0°52	29°50	14°22	15°21	T 14
W 15	21 33 48	22° 4'08	14°26	6°17	9°55	20°53	25°29	17°46	26°10	5°39	8° 4	0°50	29°47	14°29	15°27	W 15
T 16	21 37 44	23° 1'56	27°42	8° 0	11° 3	21°32	25°42	17°48	26°11	5°39	8° 4	0°47	29°44	14°36	15°32	T 16
F 17	21 41 41	23°59'45	10♐34	9°42	12°10	22°10	25°55	17°50	26°11	5°39	8° 5	0°46	29°41	14°42	15°38	F 17
S 18	21 45 38	24°57'35	23° 4	11°22	13°18	22°49	26° 7	17°51	26°12	5°D39	8° 5	0°D45	29°37	14°49	15°44	S 18
S 19	21 49 34	25°55'26	5♌16	13° 2	14°25	23°27	26°20	17°52	26°13	5°39	8° 6	0°45	29°34	14°56	15°49	S 19
M 20	21 53 31	26°53'19	17°16	14°40	15°33	24° 5	26°32	17°53	26°14	5°39	8° 6	0°46	29°31	15° 2	15°55	M 20
T 21	21 57 27	27°51'13	29° 7	16°16	16°41	24°43	26°44	17°54	26°14	5°39	8° 6	0°48	29°28	15° 9	16° 0	T 21
W 22	22 1 24	28°49'08	10♌56	17°51	17°49	25°21	26°57	17°55	26°15	5°39	8° 7	0°50	29°25	15°16	16° 6	W 22
T 23	22 5 20	29°47'05	22°45	19°25	18°58	25°59	27° 9	17°56	26°16	5°39	8° 7	0°51	29°22	15°22	16°11	T 23
F 24	22 9 17	0♐45'03	4♌38	20°58	20° 6	26°37	27°21	17°57	26°17	5°39	8° 7	0°R51	29°18	15°29	16°16	F 24
S 25	22 13 13	1°43'02	16°39	22°29	21°15	27°14	27°33	17°58	26°18	5°40	8° 8	0°50	29°15	15°36	16°22	S 25
S 26	22 17 10	2°41'03	28°50	23°59	22°24	27°52	27°45	17°58	26°19	5°40	8° 8	0°47	29°12	15°42	16°27	S 26
M 27	22 21 7	3°39'06	11♌12	25°27	23°32	28°29	27°57	17°59	26°20	5°40	8° 8	0°43	29° 9	15°49	16°32	M 27
T 28	22 25 3	4°37'10	23°46	26°55	24°41	29° 6	28° 9	17°59	26°22	5°40	8° 9	0°38	29° 6	15°55	16°37	T 28
W 29	22 29 0	5°35'16	6♍34	28°20	25°51	29°43	28°21	17°59	26°23	5°41	8° 9	0°32	29° 2	16° 2	16°42	W 29
T 30	22 32 56	6°33'24	19°35	29°45	27° 0	0♌20	28°33	17°59	26°24	5°41	8° 9	0°26	28°59	16° 9	16°47	T 30
F 31	22 36 53	7♐31'34	2♌50	1♌ 8	28♌ 9	0♌57	28♌45	17°R59	26♐25	5♌42	8♐ 9	0♌21	28♌56	16♌15	16♌52	F 31

ASTRODIENST EPHEMERIS for the year 1646

geocentric

SEPTEMBER 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
S 1	22 40 49	8 ^m 29'46	16 ^h 17	2 ^h 30	29 ^h 19	1 ^h 34	28 ^h 57	17 ^h R59	26 ^h 27	5 ^h 42	8 ^h II 9	0 ^h R18	28 ^h 53	16 ^h 22	16 ^h 57	S 1
S 2	22 44 46	9°28'00	29°58	3°50	0 ^h 29	2°11	29° 8	17 ^h 59	26°28	5°43	8° 9	0 ^h 216	28°50	16°29	17° 2	S 2
M 3	22 48 42	10°26'16	13 ^h II53	5° 8	1°38	2°47	29°20	17°59	26°30	5°43	8° 9	0°D15	28°47	16°35	17° 7	M 3
T 4	22 52 39	11°24'34	28° 0	6°25	2°48	3°24	29°32	17°58	26°31	5°44	8°10	0°16	28°43	16°42	17°12	T 4
W 5	22 56 35	12°22'54	12 ^h 219	7°41	3°58	4° 0	29°43	17°58	26°33	5°44	8°10	0°18	28°40	16°49	17°16	W 5
T 6	23 0 32	13°21'17	26°48	8°55	5° 9	4°36	29°54	17°57	26°34	5°45	8°10	0°R18	28°37	16°55	17°21	T 6
F 7	23 4 29	14°19'41	11 ^h 22	10° 7	6°19	5°12	0 ^h 26	17°56	26°36	5°45	8°10	0°18	28°34	17° 2	17°26	F 7
S 8	23 8 25	15°18'08	25°58	11°17	7°29	5°48	0°17	17°56	26°38	5°46	8°R10	0°16	28°31	17° 9	17°30	S 8
S 9	23 12 22	16°16'36	10 ^h 28	12°25	8°40	6°24	0°28	17°55	26°40	5°47	8°10	0°11	28°28	17°15	17°35	S 9
M10	23 16 18	17°15'07	24°48	13°32	9°50	6°59	0°39	17°53	26°41	5°48	8°10	0° 5	28°24	17°22	17°39	M10
T 11	23 20 15	18°13'39	8 ^h 49	14°36	11° 1	7°35	0°50	17°52	26°43	5°48	8°10	29 ^h 57	28°21	17°29	17°43	T 11
W12	23 24 11	19°12'13	22°30	15°37	12°12	8°10	1° 1	17°51	26°45	5°49	8° 9	29°49	28°18	17°35	17°47	W12
T 13	23 28 8	20°10'49	5 ^h 47	16°37	13°23	8°45	1°12	17°50	26°47	5°50	8° 9	29°41	28°15	17°42	17°52	T 13
F 14	23 32 4	21° 9'26	18°40	17°33	14°34	9°20	1°23	17°48	26°49	5°51	8° 9	29°35	28°12	17°48	17°56	F 14
S 15	23 36 1	22° 8'05	1 ^h 11	18°27	15°45	9°55	1°33	17°47	26°51	5°52	8° 9	29°30	28° 8	17°55	18° 0	S 15
S 16	23 39 58	23° 6'46	13°25	19°18	16°56	10°29	1°44	17°45	26°53	5°53	8° 9	29°28	28° 5	18° 2	18° 4	S 16
M17	23 43 54	24° 5'29	25°24	20° 5	18° 8	11° 4	1°54	17°43	26°55	5°54	8° 9	29°D27	28° 2	18° 8	18° 8	M17
T 18	23 47 51	25° 4'14	7 ^h 316	20°49	19°19	11°38	2° 5	17°41	26°57	5°55	8° 9	29°28	27°59	18°15	18°11	T 18
W19	23 51 47	26° 3'00	19° 4	21°29	20°31	12°13	2°15	17°39	27° 0	5°56	8° 8	29°29	27°56	18°22	18°15	W19
T 20	23 55 44	27° 1'48	0 ^h 54	22° 5	21°42	12°47	2°25	17°37	27° 2	5°57	8° 8	29°R30	27°53	18°28	18°19	T 20
F 21	23 59 40	28° 0'37	12°51	22°36	22°54	13°21	2°35	17°35	27° 4	5°58	8° 8	29°29	27°49	18°35	18°23	F 21
S 22	0 3 37	28°59'29	24°59	23° 3	24° 6	13°54	2°45	17°33	27° 6	5°59	8° 7	29°25	27°46	18°42	18°26	S 22
S 23	0 7 33	29°58'22	7 ^h 21	23°24	25°18	14°28	2°55	17°30	27° 9	6° 0	8° 7	29°20	27°43	18°48	18°30	S 23
M24	0 11 30	0 ^h 57'17	19°59	23°39	26°30	15° 1	3° 5	17°28	27°11	6° 1	8° 7	29°12	27°40	18°55	18°33	M24
T 25	0 15 27	1°56'15	2 ^h Y53	23°49	27°42	15°34	3°14	17°25	27°14	6° 2	8° 6	29° 2	27°37	19° 2	18°36	T 25
W26	0 19 23	2°55'14	16° 4	23°R52	28°54	16° 8	3°24	17°22	27°16	6° 4	8° 6	28°51	27°33	19° 8	18°39	W26
T 27	0 23 20	3°54'15	29°28	23°47	0 ^h 26	16°40	3°33	17°20	27°19	6° 5	8° 6	28°40	27°30	19°15	18°43	T 27
F 28	0 27 16	4°53'19	13 ^h 8	23°36	1°19	17°13	3°43	17°17	27°21	6° 6	8° 5	28°30	27°27	19°21	18°46	F 28
S 29	0 31 13	5°52'24	26°51	23°17	2°31	17°46	3°52	17°14	27°24	6° 8	8° 5	28°22	27°24	19°28	18°49	S 29
S 30	0 35 9	6 ^h 51'33	10 ^h II45	22 ^h 50	3 ^h 43	18 ^h 18	4 ^h 21	17 ^h 8	27 ^h 27	6 ^h 8	8 ^h II 4	28 ^h 17	27 ^h 21	19 ^h 35	18 ^h 51	S 30

Delta T = 45.64 sec

Greg. Calendar

OCTOBER 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
M 1	0 39 6	7♂50'43	24♂44	22°R15	4♂56	18♂50	4♂10	17°R 8	27♂29	6♂10	8°R 4	28°R15	27♂18	19♂41	18♂54	M 1
T 2	0 43 2	8°49'56	8♂47	21♂32	6° 9	19°22	4°19	17♂ 5	27°32	6°12	8♂ 3	28°D14	27°14	19°48	18°57	T 2
W 3	0 46 59	9°49'11	22°54	20°42	7°22	19°54	4°28	17° 1	27°35	6°13	8° 3	28°R14	27°11	19°55	19° 0	W 3
T 4	0 50 56	10°48'29	7♂ 4	19°45	8°34	20°25	4°37	16°58	27°37	6°14	8° 2	28♂14	27° 8	20° 1	19° 2	T 4
F 5	0 54 52	11°47'49	21°15	18°42	9°47	20°57	4°45	16°54	27°40	6°16	8° 2	28°12	27° 5	20° 8	19° 5	F 5
S 6	0 58 49	12°47'11	5♂25	17°34	11° 0	21°28	4°54	16°51	27°43	6°17	8° 1	28° 8	27° 2	20°15	19° 7	S 6
S 7	1 2 45	13°46'35	19°30	16°24	12°13	21°59	5° 2	16°47	27°46	6°19	8° 1	28° 1	26°59	20°21	19° 9	S 7
M 8	1 6 42	14°46'02	3♂27	15°11	13°27	22°30	5°10	16°44	27°49	6°21	8° 0	27°51	26°55	20°28	19°12	M 8
T 9	1 10 38	15°45'31	17°11	13°59	14°40	23° 0	5°18	16°40	27°52	6°22	7°59	27°39	26°52	20°35	19°14	T 9
W10	1 14 35	16°45'01	0♂38	12°50	15°53	23°30	5°26	16°36	27°55	6°24	7°59	27°26	26°49	20°41	19°16	W10
T 11	1 18 31	17°44'34	13°47	11°46	17° 6	24° 0	5°34	16°32	27°58	6°25	7°58	27°14	26°46	20°48	19°18	T 11
F 12	1 22 28	18°44'09	26°35	10°48	18°20	24°30	5°41	16°28	28° 1	6°27	7°57	27° 3	26°43	20°55	19°20	F 12
S 13	1 26 24	19°43'45	9♂ 4	9°58	19°33	25° 0	5°49	16°24	28° 4	6°29	7°57	26°55	26°39	21° 1	19°21	S 13
S 14	1 30 21	20°43'24	21°17	9°18	20°47	25°29	5°56	16°20	28° 7	6°30	7°56	26°49	26°36	21° 8	19°23	S 14
M15	1 34 18	21°43'04	3♂16	8°49	22° 0	25°58	6° 3	16°16	28°10	6°32	7°55	26°46	26°33	21°14	19°25	M15
T 16	1 38 14	22°42'46	15° 7	8°30	23°14	26°27	6°10	16°12	28°13	6°34	7°54	26°45	26°30	21°21	19°26	T 16
W17	1 42 11	23°42'29	26°54	8°D23	24°28	26°56	6°17	16° 7	28°17	6°36	7°54	26°45	26°27	21°28	19°28	W17
T 18	1 46 7	24°42'15	8♂45	8°27	25°41	27°24	6°24	16° 3	28°20	6°37	7°53	26°45	26°24	21°34	19°29	T 18
F 19	1 50 4	25°42'02	20°43	8°42	26°55	27°52	6°31	15°59	28°23	6°39	7°52	26°43	26°20	21°41	19°30	F 19
S 20	1 54 0	26°41'51	2♂54	9° 7	28° 9	28°20	6°37	15°54	28°26	6°41	7°51	26°40	26°17	21°48	19°31	S 20
S 21	1 57 57	27°41'41	15°23	9°42	29°23	28°47	6°44	15°50	28°30	6°43	7°51	26°33	26°14	21°54	19°32	S 21
M22	2 1 53	28°41'33	28°12	10°25	0♂37	29°15	6°50	15°45	28°33	6°45	7°50	26°24	26°11	22° 1	19°33	M22
T 23	2 5 50	29°41'27	11°Y22	11°16	1°51	29°42	6°56	15°41	28°36	6°47	7°49	26°13	26° 8	22° 8	19°34	T 23
W24	2 9 47	0♂41'23	24°54	12°15	3° 5	0♂ 8	7° 2	15°36	28°40	6°48	7°48	26° 0	26° 4	22°14	19°35	W24
T 25	2 13 43	1°41'21	8♂43	13°19	4°19	0°35	7° 7	15°31	28°43	6°50	7°47	25°47	26° 1	22°21	19°35	T 25
F 26	2 17 40	2°41'21	22°47	14°29	5°33	1° 1	7°13	15°27	28°46	6°52	7°46	25°36	25°58	22°28	19°36	F 26
S 27	2 21 36	3°41'23	6♂59	15°44	6°48	1°27	7°18	15°22	28°50	6°54	7°45	25°27	25°55	22°34	19°36	S 27
S 28	2 25 33	4°41'27	21°16	17° 2	8° 2	1°52	7°24	15°17	28°53	6°56	7°44	25°21	25°52	22°41	19°37	S 28
M29	2 29 29	5°41'33	5♂32	18°24	9°16	2°17	7°29	15°13	28°57	6°58	7°43	25°17	25°49	22°47	19°37	M29
T 30	2 33 26	6°41'41	19°45	19°49	10°31	2°42	7°33	15° 8	29° 0	7° 0	7°42	25°D16	25°45	22°54	19°37	T 30
W31	2 37 22	7♂41'51	3♂53	21♂16	11♂45	3♂ 7	7♂38	15♂ 3	29♂ 4	7♂ 2	7♂41	25°R16	25♂42	23♂ 1	19°R37	W31

Delta T = 45.59 sec

Greg. Calendar

ASTRODIENST EPHEMERIS for the year 1646
geocentric

NOVEMBER 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
T 1	2 41 19	8♉42°03	17♊55	22♋46	12♌59	3♍31	7♎43	14°R58	29♏ 7	7♐ 4	7°R40	25°R16	25♑39	23♒ 7	19°R37	T 1
F 2	2 45 16	9°42'18	1♈50	24°17	14°14	3°55	7°47	14♌53	29°11	7° 6	7♉40	25♑14	25°36	23°14	19♑37	F 2
S 3	2 49 12	10°42'34	15°38	25°49	15°28	4°18	7°51	14°48	29°14	7° 8	7°39	25°10	25°33	23°21	19°37	S 3
S 4	2 53 9	11°42'53	29°18	27°22	16°43	4°41	7°55	14°44	29°18	7°10	7°38	25° 3	25°30	23°27	19°36	S 4
M 5	2 57 5	12°43'13	12♋49	28°56	17°58	5° 4	7°59	14°39	29°21	7°12	7°36	24°53	25°26	23°34	19°36	M 5
T 6	3 1 2	13°43'35	26° 9	0♉31	19°12	5°26	8° 3	14°34	29°25	7°15	7°35	24°42	25°23	23°41	19°36	T 6
W 7	3 4 58	14°43'59	9♉15	2° 6	20°27	5°48	8° 6	14°29	29°29	7°17	7°34	24°29	25°20	23°47	19°35	W 7
T 8	3 8 55	15°44'25	22° 7	3°41	21°42	6°10	8°10	14°24	29°32	7°19	7°33	24°17	25°17	23°54	19°34	T 8
F 9	3 12 51	16°44'52	4♊44	5°17	22°56	6°31	8°13	14°19	29°36	7°21	7°32	24° 6	25°14	24° 1	19°33	F 9
S 10	3 16 48	17°45'21	17° 5	6°53	24°11	6°52	8°16	14°14	29°39	7°23	7°31	23°58	25°10	24° 7	19°32	S 10
S 11	3 20 45	18°45'52	29°12	8°29	25°26	7°12	8°19	14° 9	29°43	7°25	7°30	23°52	25° 7	24°14	19°32	S 11
M12	3 24 41	19°46'24	11♊ 9	10° 5	26°41	7°32	8°21	14° 5	29°47	7°27	7°29	23°49	25° 4	24°20	19°30	M12
T 13	3 28 38	20°46'57	22°58	11°41	27°56	7°51	8°23	14° 0	29°50	7°30	7°28	23°D48	25° 1	24°27	19°29	T 13
W14	3 32 34	21°47'32	4♋45	13°17	29°11	8°10	8°26	13°55	29°54	7°32	7°27	23°48	24°58	24°34	19°28	W14
T 15	3 36 31	22°48'07	16°34	14°53	0♉26	8°29	8°28	13°50	29°58	7°34	7°26	23°49	24°55	24°40	19°27	T 15
F 16	3 40 27	23°48'44	28°31	16°28	1°41	8°47	8°29	13°45	0♊ 1	7°36	7°25	23°R49	24°51	24°47	19°25	F 16
S 17	3 44 24	24°49'22	10♈41	18° 4	2°56	9° 4	8°31	13°41	0° 5	7°38	7°24	23°48	24°48	24°54	19°24	S 17
S 18	3 48 20	25°50'02	23°10	19°39	4°11	9°22	8°33	13°36	0° 9	7°41	7°22	23°44	24°45	25° 0	19°22	S 18
M19	3 52 17	26°50'42	6♍ 1	21°14	5°26	9°38	8°34	13°31	0°12	7°43	7°21	23°38	24°42	25° 7	19°20	M19
T 20	3 56 14	27°51'23	19°17	22°50	6°41	9°54	8°35	13°27	0°16	7°45	7°20	23°30	24°39	25°14	19°18	T 20
W21	4 0 10	28°52'06	2♊59	24°24	7°56	10°10	8°36	13°22	0°20	7°47	7°19	23°21	24°36	25°20	19°16	W21
T 22	4 4 7	29°52'50	17° 5	25°59	9°11	10°25	8°36	13°17	0°24	7°50	7°18	23°12	24°32	25°27	19°14	T 22
F 23	4 8 3	0♊53'35	1♈31	27°34	10°26	10°40	8°37	13°13	0°27	7°52	7°17	23° 3	24°29	25°34	19°12	F 23
S 24	4 12 0	1°54'22	16° 9	29° 9	11°41	10°54	8°37	13° 8	0°31	7°54	7°16	22°57	24°26	25°40	19°10	S 24
S 25	4 15 56	2°55'10	0♑53	0♊43	12°56	11° 7	8°R37	13° 4	0°35	7°56	7°15	22°52	24°23	25°47	19° 8	S 25
M26	4 19 53	3°55'59	15°35	2°18	14°11	11°20	8°37	12°59	0°38	7°59	7°13	22°50	24°20	25°54	19° 6	M26
T 27	4 23 49	4°56'49	0♉10	3°52	15°26	11°32	8°37	12°55	0°42	8° 1	7°12	22°D50	24°16	26° 0	19° 3	T 27
W28	4 27 46	5°57'41	14°33	5°26	16°42	11°44	8°36	12°51	0°46	8° 3	7°11	22°51	24°13	26° 7	19° 1	W28
T 29	4 31 43	6°58'35	28°41	7° 1	17°57	11°55	8°35	12°47	0°49	8° 5	7°10	22°52	24°10	26°13	18°58	T 29
F 30	4 35 39	7♊59'29	12♈34	8♊35	19♉12	12♊ 5	8♊34	12♊42	0♊53	8♊ 8	7♉ 9	22°R53	24♑ 7	26♒20	18♑56	F 30

Delta T = 45.53 sec

Greg. Calendar

DECEMBER 1646 GC

00:00 UT

Day	Sid.t	☉	☽	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	Day
S 1	4 39 36	9♊ 0'25	26♈12	10♊ 9	20♉27	12♊15	8°R33	12°R38	0♊57	8♊10	7°R 8	22°R51	24♑ 4	26♒27	18°R53	S 1
S 2	4 43 32	10° 1'22	9♋36	11°43	21°42	12°25	8♊32	12♊34	1° 0	8°12	7♉ 7	22♑48	24° 1	26°33	18♑50	S 2
M 3	4 47 29	11° 2'21	22°45	13°17	22°58	12°33	8°30	12°30	1° 4	8°14	7° 5	22°42	23°57	26°40	18°47	M 3
T 4	4 51 25	12° 3'20	5♉42	14°52	24°13	12°41	8°29	12°26	1° 8	8°17	7° 4	22°35	23°54	26°47	18°44	T 4
W 5	4 55 22	13° 4'21	18°26	16°26	25°28	12°48	8°27	12°22	1°11	8°19	7° 3	22°28	23°51	26°53	18°41	W 5
T 6	4 59 18	14° 5'23	0♊58	18° 0	26°44	12°55	8°25	12°19	1°15	8°21	7° 2	22°21	23°48	27° 0	18°38	T 6
F 7	5 3 15	15° 6'26	13°19	19°35	27°59	13° 0	8°22	12°15	1°19	8°23	7° 1	22°14	23°45	27° 7	18°35	F 7
S 8	5 7 12	16° 7'29	25°28	21° 9	29°14	13° 5	8°20	12°11	1°22	8°26	7° 0	22° 9	23°42	27°13	18°32	S 8
S 9	5 11 8	17° 8'33	7♊28	22°44	0♊30	13°10	8°17	12° 8	1°26	8°28	6°59	22° 6	23°38	27°20	18°28	S 9
M10	5 15 5	18° 9'38	19°21	24°19	1°45	13°13	8°14	12° 4	1°29	8°30	6°57	22°D 5	23°35	27°27	18°25	M10
T 11	5 19 1	19°10'44	1♋ 8	25°54	3° 0	13°16	8°11	12° 1	1°33	8°32	6°56	22° 5	23°32	27°33	18°21	T 11
W12	5 22 58	20°11'49	12°54	27°29	4°16	13°18	8° 8	11°58	1°37	8°35	6°55	22° 7	23°29	27°40	18°18	W12
T 13	5 26 54	21°12'56	24°43	29° 4	5°31	13°20	8° 4	11°54	1°40	8°37	6°54	22° 9	23°26	27°47	18°14	T 13
F 14	5 30 51	22°14'02	6♈38	0♊39	6°47	13°R20	8° 1	11°51	1°44	8°39	6°53	22°10	23°22	27°53	18°11	F 14
S 15	5 34 47	23°15'09	18°46	2°14	8° 2	13°20	7°57	11°48	1°47	8°41	6°52	22°R11	23°19	28° 0	18° 7	S 15
S 16	5 38 44	24°16'16	1°V10	3°49	9°17	13°19	7°53	11°45	1°51	8°44	6°51	22°11	23°16	28° 6	18° 3	S 16
M17	5 42 41	25°17'23	13°57	5°25	10°33	13°17	7°49	11°43	1°54	8°46	6°50	22°10	23°13	28°13	18° 0	M17
T 18	5 46 37	26°18'31	27° 8	7° 0	11°48	13°15	7°44	11°40	1°58	8°48	6°49	22° 7	23°10	28°20	17°56	T 18
W19	5 50 34	27°19'38	10♊48	8°35	13° 3	13°11	7°40	11°37	2° 1	8°50	6°48	22° 4	23° 7	28°26	17°52	W19
T 20	5 54 30	28°20'46	24°55	10°11	14°19	13° 7	7°35	11°35	2° 4	8°52	6°46	22° 0	23° 3	28°33	17°48	T 20
F 21	5 58 27	29°21'54	9♉27	11°46	15°34	13° 2	7°30	11°32	2° 8	8°54	6°45	21°57	23° 0	28°40	17°44	F 21
S 22	6 2 23	0♊23'02	24°18	13°21	16°50	12°56	7°25	11°30	2°11	8°57	6°44	21°54	22°57	28°46	17°40	S 22
S 23	6 6 20	1°24'10	9♑22	14°56	18° 5	12°49	7°20	11°27	2°15	8°59	6°43	21°53	22°54	28°53	17°36	S 23
M24	6 10 17	2°25'19	24°27	16°30	19°20	12°42	7°15	11°25	2°18	9° 1	6°42	21°D53	22°51	29° 0	17°32	M24
T 25	6 14 13	3°26'28	9♊27	18° 4	20°36	12°34	7° 9	11°23	2°21	9° 3	6°41	21°53	22°48	29° 6	17°28	T 25
W26	6 18 10	4°27'37	24°13	19°37	21°51	12°24	7° 4	11°21	2°25	9° 5	6°40	21°54	22°44	29°13	17°24	W26
T 27	6 22 6	5°28'46	8♈40	21°10	23° 7	12°14	6°58	11°19	2°28	9° 7	6°39	21°56	22°41	29°20	17°19	T 27
F 28	6 26 3	6°29'56	22°44	22°41	24°22	12° 4	6°52	11°18	2°31	9° 9	6°38	21°57	22°38	29°26	17°15	F 28
S 29	6 29 59	7°31'06	6♋26	24°11	25°37	11°52	6°46	11°16	2°34	9°11	6°37	21°R57	22°35	29°33	17°11	S 29
S 30	6 33 56	8°32'16	19°46	25°40	26°53	11°40	6°40	11°14	2°37	9°13	6°36	21°57	22°32	29°39	17° 7	S 30
M31	6 37 52	9♊33'27	2♉45	27♊ 6	28♊ 8	11♊26	6♊33	11♊13	2♊41	9♊15	6♉35	21♑56	22♑28	29♒46	17♑ 3	M31

Delta T = 45.47 sec

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