Astronomical and Physical Constants

Astronomical unit (au)	1.4960×10^{11} m
Light year (ly)	9.4605×10^{15} m = 63 240 au
Parsec (pc)	3.0860×10^{16} m = 206 265 au
Jansky (Jy)	10^{-26} W m^{-2} Hz^{-1}
1 Sidereal year	365.2564 solar days
1 Tropical year	365.2422 solar days
1 Calendar year	365.2425 solar days
1 Sidereal day	$23^h\,56^m\,04^s.091$
1 Solar day	$24^h\,03^m\,56^s.555$ units of sidereal time
Mass of Earth	5.9736×10^{24} kg
Mean radius of Earth	6.371×10^{6} m
Equatorial radius of Earth	6.378×10^{6} m
Mean velocity of Earth on its orbit	29.783 km s^{-1}
Mass of Moon	7.3490×10^{22} kg
Radius of Moon	1.737×10^{6} m
Mean Earth – Moon distance	3.844×10^{8} m
Mass of Sun	1.98892×10^{30} kg
Radius of Sun	6.96×10^{8} m
Effective temperature of the Sun	5780 K
Luminosity of the Sun	3.96×10^{26} J s^{-1}
Solar constant	1366 W m^{-2}
Brightness of the Sun in V-band	−26.8 mag.
Absolute brightness of the Sun in V-band	4.75 mag.
Absolute bolometric brightness of Sun	4.72 mag.
Angular diameter of the Sun	30′
Speed of light in vacuum (c)	2.9979×10^{8} m s^{-1}
Gravitational constant (G)	6.6738×10^{-11} N m^{2} kg^{-2}
Boltzmann constant (k)	1.381×10^{-23} m kg s^{-2} K^{-1}
Stefan–Boltzmann constant (σ)	5.6704×10^{-8} kg s^{-3} K^{-4}
Planck constant (h)	6.6261×10^{-34} J s
Wien's constant (b)	2.8978×10^{-3} m K
Hubble constant (H_0)	70 km s^{-1} Mpc^{-1}
electron charge (e)	1.602×10^{-19} C
Current inclination of the ecliptic (ε)	23º 26.3′
Coordinates of the northern ecliptic pole for epoch 2000.0 (α_E, δ_E)	$18^h\,00^m\,00^s$, + 66º 33.6′
Coordinates of the northern galactic pole for epoch 2000.0 (α_G, δ_G)	$12^h\,51^m$, + 27º 08′

You can try to solve an equation $x = f(x)$ using iteration: $x_{n+1} = f(x_n)$.

Basic equations of spherical trigonometry

$$\sin a \sin B = \sin b \sin A$$
$$\sin a \cos B = \cos b \sin c - \sin b \cos c \cos A,$$
$$\cos a = \cos b \cos c + \sin b \sin c \cos A.$$