1 Planetary Constants

1.1 Kepler's Laws

Kepler's 1 Law: Planetary orbits are elliptical

Kepler's 2 Law: The radial line between a central object and an object in

1.2 Constants

Key Terms

- Aphelion - Farthest from sun
- Perihelion - Closest approach to sun

Astronomical Symbols

- $\oplus$ ←earth
- $\odot$ ←sun
- $\leftmoon$ ←moon

$$\begin{aligned} R_{P_\oplus} &= 147 \times 10^6 \,\mathrm{km} \\ R_{A_\oplus} &= 152 \times 10^6 \,\mathrm{km} \\ V_{P_\oplus} &= 30.29 \,\mathrm{km\,s^{-1}} \end{aligned}$$

What is $V_{A_\oplus}$?

$$\begin{aligned} \mathbf{L}_A &= \mathbf{L}_P \\ R_{A_\oplus} M_\oplus V_{A_\oplus} &= R_{P_\oplus} M_\oplus V_{P_\oplus} \\ V_{A_\oplus} &= \frac{R_{P_\oplus}}{R_{A_\oplus}} v_{P_\oplus} = 29.29 \,\mathrm{km\,s^{-1}} \end{aligned}$$