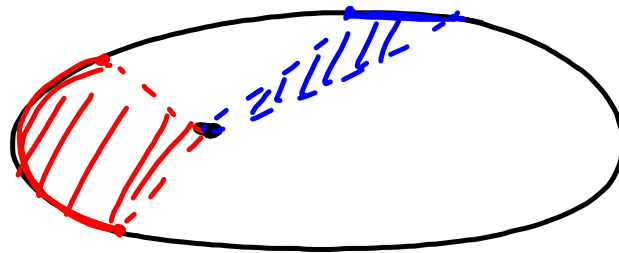
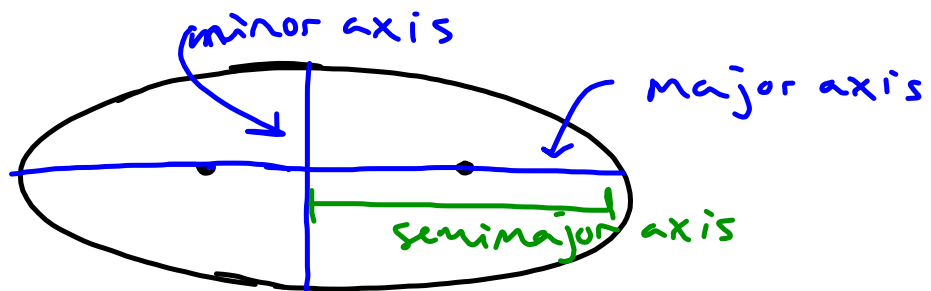


KEPLER'S LAWS

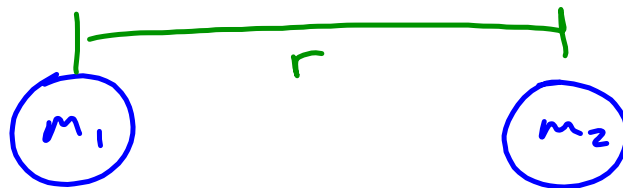
1. Planets move in elliptical orbits, and the sun is at one focus.
2. A line drawn between the sun and the planet sweeps out equal areas during equal intervals of time.
3. The square of a planet's orbital period is proportional to the cube of the semimajor axis length.



Equal areas
during equal
time intervals

Newton's Law of Universal Gravitation

$$F_{1 \text{ on } 2} = \frac{G M_1 M_2}{r^2}$$



$$G = 6.67E-11 \text{ N} \cdot \text{m}^2/\text{kg}^2$$

At the surface of a large mass

$$g = \frac{GM}{R^2}$$

$M \rightarrow$ mass

$R \rightarrow$ radius

GRAVITATIONAL POTENTIAL ENERGY CURVE

