

Period and Speed of Orbiting Objects Math Help

$$v_t = \sqrt{G \frac{m}{r}} \qquad T = 2\pi \sqrt{\frac{r^3}{Gm}}$$

Earth's moon orbits Earth at a mean distance of 3.84×10^8 m and has an orbital period of 27.4 days. Use this data to calculate Earth's mass.

$$T = 2\pi \sqrt{\frac{r^3}{Gm}}$$

The asteroid Ceres orbits the sun with an orbital period of 4.61 Earth years. A) What is the mean radius of Ceres' orbit? ($m_s = 1.99 \times 10^{30}$ kg) B) What is the orbital speed of the asteroid Ceres

$$T = 2\pi \sqrt{\frac{r^3}{Gm}}$$

$$v_t = \sqrt{G \frac{m}{r}}$$