Astr 1010
Problem Set #6
To be turned in 10/22/02 !

1. Use the data from *Foundation of Astronomy* (p. 619, "Orbital Properties"; use a in AU and P in years) to verify that Kepler's law holds (more or less!) for the planets Venus, Jupiter, Uranus and Pluto.

2. What would be the period of an asteroid whose average distance from the sun is 4.58 AU?

3. What is the semi–major axis of the recently–discovered mini-planet Quaoar, whose period is 288 years?

4. An asteroid orbiting the sun has a minimum distance of 0.95 AU and a maximum distance of 3.64 AU. Find the period of its orbit.

5. If we drop a rock from a high place (on Earth), how far does it fall in 4.2 sec? What is its speed at that time? How long does it take to fall 200 m? What will its speed be at that time?

6. On the planet Ẕf̃f̃tïyŕr̄r̄gh it takes a rock 3.0 s to fall 50 m. What is the value of g on the planet Ẕf̃f̃tïyŕr̄r̄gh ? What is the speed of a rock which has fallen for 5.0 s on this planet?

$$P_{\rm yr}^2 = a_{\rm AU}^3$$

Object falling from rest: $\quad d = \frac{1}{2}gt^2 \qquad v = gt \qquad g_{\rm Earth} = 9.8 \frac{\rm m}{\rm s^2}$