

29:52 Exploration of the Solar System
Homework Assignment #3
Assigned: February 18, 2008
Quiz Due: February 25, 2008

1. Use *Starry Night* to find the Right Ascension and Declination of Saturn for this week. Plot its position on your SC1 star chart. Is Saturn closest to opposition, conjunction, or quadrature?
2. Look in your textbook at Figure 4.13. What is the eccentricity of ellipse C?
Hint: a plastic ruler would come in handy. When you have obtained your result, you can consider that most comets move on orbits with eccentricities greater than 0.99.
3. The semimajor axis of the Earth's orbit around the Sun is 1.000 astronomical units. How close is the Earth to the Sun at *perihelion*? How close is it at *aphelion*? To answer this question, you need some data from the appendices.
4. You go outside in the early evening and see the first quarter Moon. You consult your SC1 star chart and plot the position of the Moon relative to the stars. You see that it is exactly 5 degrees above the ecliptic. Based on this, will there be a lunar eclipse in two weeks? Be sure you understand why or why not.
5. Use *Starry Night* to find the positions of Mars on February 10, 17, and 24 of this month. Is the motion of Mars *prograde* or *retrograde* at this time?