Homework #3 Due Sept. 27

1. Problem 4.1 in the textbook. Make the graph by hand on graph paper using a calculator.

2. Problem 4.2 in the textbook. Also, find approximate values of a, b, c, and the eccentricity e for the following ellipses:



3. Suppose that the ellipses above correspond to the oribits of a planet about a sun. For each oribit, show one of the two possible positions of the sun. Now, suppose that we divide the "year" for each of the planets into 12 "months." Choosing an arbitrary starting position for the planet, show its position at each month using Kepler's second law.

4. Consider life on a planet with a very eccentric orbit. What would the seasons be like? How long would they last? You can use the second orbit in problem 3 above as an example.

5. Use Table 2.1 in your text and Kepler's third law to find the orbital period (in earth years) of each of the planets. (Use the modern values for the distances, since they are closer to Kepler's values.) Compare your values to the modern values (get them from the web or elsewhere).