ASTR450 Homework # 4 – Central Force Motion
Due Thursday, October 5

Reading: Finish reading Danby's Chapter 6. You can skim sections 6.6 & 6.7, and skip sections 6.8-6.13.

1. Danby: Page 136, Problem 2. This is a hard problem. The relationships between ν, E and M will be useful as will the discussion and plot on page 133.

2. Danby: Page 136, Problem 6. For what value of q is the time spent inside 1 AU maximum, and what is the maximum time? Give a physical reason for why this value of q is "reasonable" (draw a picture).

3. Danby: Page 137, Problem 9. The problem is asking for the time average of r.

4. Danby: Page 137, Problem 12. If we increase Earth's orbital eccentricity while leaving its semimajor axis constant, does it receive more sunlight over a year or less?

5. Read the text and the worked example problems for sections 1-6 in the "Building Physical Intuition in Mechanics" handout. Try to do some of the problems for practice! An answer to one of these problems consists of a statement for EACH of the multiple choice possibilities indicating either a) why it cannot be correct or b) that it might be correct. Remember, checking limits, units, and symmetries can rule out wrong answers, but cannot prove correct ones. The techniques that you will learn by doing these problems will help you avoid math mistakes on your homeworks. You can also expect one of these problems on the midterm! For this homework, write up your solution to **problems 9 and 26** (for 26, H and L are the heights when the iceberg is not oscillating).