Weekly assignment 3: Tides, gravity and parallax
Due: October 17, 2005 at 6:00 p.m.

Using your borrowed textbook or a Web source (you do not have to cite your source) paraphrase (I’m trusting you to reword stuff you find into your own words):

1. A word description (no mathematical symbols) of the physics concept of the conservation of angular momentum.

2. The concept of a Lagrange point in a planetary orbit.

3. The concept of orbital resonance, especially with regards to the “Kirkwood gaps” in the asteroid belt.

4. The concept of parallax, and how it is used to measure the distance to various celestial objects, and how does the word “parallax” relate to the distance unit “parsec”?
Short answer:

5. Read the description of tidal evolution/tidal lock in the middle of page 74 in Bad Astronomy. What solar system bodies (they occur in pairs) are in tidal lock with each other right now?

6. Read the description of tidal heating on pages 74–75 of Bad Astronomy. Name a solar system body besides Io and Europa that undergoes tidal heating.

7. Sketch the Moon as best as you can. Determine the compass direction you are looking at the moon. Finally, give the date and time of the sketch.

8. Some students really messed up finding Mars in an earlier assignment; they thought they saw Mars towards the western horizon after sunset. Go out some night this week just after sunset and find a red-colored object in the direction of the setting sun. Sketch that object and Venus with respect to the horizon. Estimate the angular separation between the two objects (remember: fist at arm’s length is roughly 10 degrees). Determine the compass direction at which you are looking. Give the date and time of the sketch (don’t forget to label Venus!). Finally, correctly identify the red object.