ASTRONOMY 340 – Fall 2009
Midterm Review

Orbits:

1. Given a plot like the ones in slides 8 & 9 of lecture 2, can you calculate the perihelion?
2. Know Kepler’s Laws
3. Know the equation for an orbit relating r, a, e, f.

Detection Methods for Extrasolar Planets

1. What are the 5 main techniques for finding extrasolar planets? Why do they work? What are the limitations on each technique? Be quantitative where you can (i.e. we can only detect something like 1-2 m/s in radial velocity variations)
2. Given a plot of the radial velocity variation of a star, what is the mass of the orbiting planet? Given the orbital properties of a planet, what would the radial velocity curve look like?
3. What would the transit caused by Jupiter look like when observed from afar?

Spectroscopy

1. How can we get a spectrum of an extrasolar planet? What have we learned about exoplanets from these spectra?
2. Why are most spectra obtained in the infrared part of the spectrum?

Planets

1. Calculate the interior temperature of a planet of a given mass. What is responsible for this temperature?
2. Compare and contrast the atmospheres of Venus and Jupiter. This would be qualitative.
3. Compare and contrast Io, Titan, and Europa
4. What is the significance of the crater density? Calculate the energy of an impact.