Hand in your solutions by 6pm on Friday, December 14. You should put them in the lower box outside my office.

Here are a few guidelines for this – and every – homework assignment:

Use a symbolic approach (often aided by sketches and careful definition of variables) – using variables to denote relevant quantities and then, only at the end, when you’ve derived an expression that solves the problem at hand, plug in numbers.

Use units; don’t go crazy with significant figures. Remember – you can never justify more significant figures in your answer than the least significant of the inputs to the problem.

Please show your work, write neatly – be organized. Explain what you are doing. Use sketches when you think they’d be helpful.

For full credit, you must show a reasonable amount of work and explain what you’re doing.

Problem 1

Ryden & Peterson problem 20.2 (p. 487). Answer all three parts and show your work.

Problem 2

Ryden & Peterson problem 20.7 (p. 488). You should be reading some values off of Fig. 20.9.

Problem 3

(a) Ryden & Peterson problem 18.1 (p. 431). Note that there is information about the Sun’s rotation on p. 189 of the textbook. And further, you may assume that the Sun remains spherical and has the same radial density distribution after it shrinks as it did beforehand.

(b) Could this smaller, faster-rotating Sun hold itself together with its own gravity, given the large centrifugal force associated with its rapid rotation? Justify your answer with a calculation.

(c) How would the length of the Earth year change if the Sun suddenly shrunk in size (but retained all of its mass)?