Homework #7, ASTR 314, Spring 2013

Due Thursday, Mar 7, during class

Please turn in answers to the following problems. To receive full credit you must show all your work. Remember that while you may discuss how to solve problems with your classmates, the work you submit must be your own and never copied. Work that is copied will receive zero credit.

1. Use the equation of hydrostatic equilibrium and the assumption of constant density to compute the central pressures for each of the following types of stars.
   (a) a K0 V dwarf star \((M = 0.8 \, M_\odot, \, R = 0.85 \, R_\odot)\)
   (b) a K0 III giant star \((M = 0.4 \, M_\odot, \, R = 16 \, R_\odot)\)
   (b) a K0 I supergiant star \((M = 0.13 \, M_\odot, \, R = 200 \, R_\odot)\)

2. In terms of mass (kilograms), at what rate is the Sun currently converting hydrogen into helium? Give your answer in kilograms per second.

3. Carroll & Ostlie 10.3

4. Carroll & Ostlie 10.10

5. Carroll & Ostlie 10.12