Astronomy 10: Introduction to General Astronomy  
Instructor: Tony Piro, tpiro@astro.berkeley.edu  

Homework #2: Due Wednesday, June 10th

For full credit, put your name, and the homework number in the upper right-hand corner of your solutions. Staple multiple sheets together so nothing gets lost. Always show your work and explain how you got your answer, and be careful about units. Please put a box around your final answer if it is numerical. Unless otherwise stated, all page numbers and questions refer to *The Cosmos, by Pasachoff & Filippenko, THIRD EDITION.*

Every question is worth 4 points, so the total homework is out of 88 points.

**Chapter 4**

(1) page 88, question 3

(2) page 88, question 6

(3) page 88, question 14

(4) Suppose you see a quarter Moon overhead at 6:00 pm. What time did the Moon rise that day?

(5) Draw a diagram of Venus going around the Sun, and place Earth at a fixed position exterior to Venus’ orbit. Describe what phases of Venus are seen from Earth over the course of Venus’ orbit.

(6) The celestial sphere:
   (a) At what location on the Earth is the north celestial pole on the horizon? Explain you answer with a diagram.
   (b) The galaxy Andromeda passes nearly overhead during the autumn nights in Berkeley. Would you ever be able to see Andromeda from the south celestial pole?

(7) A common misconception is that the seasons are due to the changing distance between the Earth and Sun caused by the Earth’s elliptical orbit. One counter argument to this is that it doesn’t explain why the seasons are reversed in the southern hemisphere. What is another convincing and easily understandable argument for why this is not the correct explanation? In other words, what easily observable effect is *not* explained by a changing distance?

**Chapter 5**

(8) page 108, question 2

(9) page 108, question 7, Give your answer in units of AU. You may use a calculator if you wish.

(10) page 108, question 10

(11) page 108, question 17

(12) page 109, question 28, Even though it is multiple choice, be sure to show your work

**Chapter 6**

(13) page 149, question 3

(14) Draw a diagram showing the positions of the Earth, Moon, and Sun when there is the smallest difference between high and low tide.
Chapter 7

(15) page 150, question 9

(16) page 150, question 25

(17) page 150, question 32

(18) page 179, question 6

(19) page 179, question 7

(20) page 179, question 11

(21) page 179, question 14

(22) page 179, question 17