Astronomy 110

HOMEWORK #10

Use a calculator whenever necessary.

*For full credit, always show your work and explain how you got your answer. Be careful about units!*

Please CIRCLE or put a box around your final answer if it is numerical.

If you wish, you may discuss the questions with friends, but please turn in your own handwritten solutions, with questions answered in your own way.

1) List 4 reasons why we know the Earth is a sphere and explain why they are proofs.

2) Pythagoras
   
   a) Draw and label Pythagoras’ cosmos
b) How would Pythagoras explain the stars annual motion?

c) How would Pythagoras explain the sun’s annual motion?

3) Aristotle was one of the first individuals to give proofs (some incorrectly) as to the shape and lack of movement of the Earth

a) Explain Aristotle’s proof of the Earth being a sphere.

b) Explain how Aristotle would prove the Earth was not rotating.

c) Explain how Aristotle would prove the Earth was not revolving.

4) Aristarchus was one of the first to suggest a heliocentric universe but could not prove it because of a lack of stellar parallax. Explain, perhaps with the use of diagram, what stellar parallax is.
5) Explain how Eratosthenes measured the size of the Earth. Be sure to include all assumptions and draw a diagram.

6) The Earth’s coordinate system
   a) Describe how one measures longitude.
   b) Describe how one measure latitude.
   c) What is the importance of the International Date Line?
   d) Where on earth must you be if the NCP has an altitude of 53°?
   e) What stars are circumpolar at 61° N latitude?
   f) Where on earth must you be if the meridian altitude of the celestial equator is 42°?