PROBLEM SET #2
ASTR 1030

Note: You will need an atlas or globe of the Earth to do this problem set.

1) You are alone on a yacht in the ocean. You have set your clock to Greenwich Mean Time (UT), and it is reading 2pm. Your compass tells you North, so you can measure that the Sun is on the meridian. The date is March 22, and the Sun is 20 degrees South of overhead.
    a. What are your approximate latitude and longitude?
    b. Where are you?
    c. In which direction do you sail to reach the nearest port?

2) You have a waxing quarter moon 30 degrees past the merdian. What time is it?

3) The Sun is at 0 Hours Right Ascension on March 22. What is its Right Ascension on June 22?

4) It is 9am Monday in Boulder. What time is it in Beijing? Explain using the longitude of Beijing.

5) It is midnight, June 22. The Sun is touching the horizon due North. What is your Latitude?

6) Your FedEx plane has just crashed in the South Pacific and you have washed up on a desert island. Your watch is still working on Los Angeles time. You remember that Betelgeuse has a Right Ascension of 6Hours and that Orion's Belt is on the celestial equator. The date is November 10, 2006. You find due South using the Southern Cross and measure that Orions Belt is 72 degrees above the Northern Horizon. You notice that Betelgeuse crosses the meridian at 5am according to your watch. What are your latititude and longitude? What is the nearest major island?

7) Calculate the maximum duration of a total eclipse of the Moon. Do not look this up. Show your logic and calculations.