HW 4 (due March 21)

1. By definition, list the right ascension and declination of the Sun when it is at the vernal equinox, the summer solstice, the autumnal equinox, and the winter solstice.

2. (a) Please estimate the solid angle spanned by the main island of Taiwan by using it's range of the longitude and latitude. Hint: you should look up the google map and directly estimate it.

   (b) Given that the radius of the earth is about 6400 km, what is the approximated area of the main island of Taiwan? Hint: Use the result of 2(a).

   (c) Calculate the total surface area of the earth. What is the fraction of the area of Taiwan's main island with respect to the total surface of the earth?

3. Why do we always see the same side of the moon? (why is the period of the moon's spin equal to that of it's orbiting about the earth?) Please explain.