29:52 Exploration of the Solar System
Homework Assignment # 6
Quiz must be completed on ICON by 8 AM, Monday, March 15

1. Where in the sky, and at what time of day will you see Venus right now?
   (a) due east, just above the horizon at dawn
   (b) on the meridian at midnight
   (c) low in the southwest, right after sunset
   (d) on the meridian at sunset
   (e) low in the southeast at approximately 10PM

2. Which of the following is a major difference between the planets Earth and Venus?
   (a) The atmosphere of Earth is mostly clear, but Venus is totally overcast
   (b) Venus has a much larger diameter than the Earth
   (c) Venus has a smaller mass by about a factor of 10
   (d) Venus has no features which correspond to the continents and ocean floors of Earth
   (e) Venus is in the outer solar system, with a semimajor axis of 7 astronomical units

3. Here's one which involves a simple calculation. The Sun radiates like a "blackbody" (Kirchoff's 1st Law). It is brightest at a wavelength of 500 nanometers. Given this information, what is the surface temperature of the Sun?
   (a) 273 K (degrees Kelvin)
   (b) 837 K
   (c) 5800 K
   (d) 250,000 K
   (e) 1.8×10^8 K

4. Carbon dioxide molecules in the Earth's atmosphere absorb radiation emitted by the Earth at two wavelengths around 10 microns (10^{-5} meters). This fact is an illustration of which of the following laws of physics?
   (a) Kirchoff's 1st Law
   (b) Kirchoff's 2nd Law
   (c) Kirchoff's 3rd Law
   (d) Wien's Law
   (e) Lenz's Law

5. The distance between the Earth and Mars varies a lot between one opposition and another. Which of the following properties of Mars orbit is responsible for

this effect?
(a) orbital period
(b) obliquity of the ecliptic
(c) semimajor axis
(d) eccentricity
(e) inclination to the plane of the ecliptic

6. Use your textbook to answer this question. Consider the continent-like feature called Ishtar Terra. Where on Venus is it located?
(a) north pole
(b) south pole
(c) approximately on the equator
(d) at about longitude 91 degrees and latitude 41 degrees

7. Which of the following is a major difference between the atmospheres of the Earth and Venus
(a) the atmosphere of Venus is in a liquid rather than gaseous state. The atmosphere of Earth is gaseous
(b) the atmosphere of Venus is composed of ammonia and methane, while the primary constituent of the Earth's atmosphere is carbon dioxide
(c) the gravitational field of Venus is not strong enough to hold on to atmosphere. It only had an atmosphere early in the history of the solar system
(d) the atmosphere of Venus is primarily carbon dioxide, that of the Earth is mainly nitrogen and oxygen

8. Although the surface of Venus is hot enough to be destructive to all forms of life, if you went high enough above the atmosphere, there is a location where the temperature would be comfortable. How high would you have to go? (Hint:) you will have to consult your textbook on this one.
(a) about 50 kilometers
(b) about 300 meters
(c) about 4 kilometers
(d) about 50,000 kilometers
(e) approximately 0.075 astronomical units