

Atmospheric Sciences 301  
Homework  
Due November 29, 2016

Name \_\_\_\_\_

1. A blackbody warms from 250K to 300K and the amount of radiation it emits changes. What is the ratio of the amount of radiation emitted at these two temperatures? (radiation at 300K/radiation at 250K)
  
2. If Jupiter's upper cloud deck has a temperature of 173K and the temperature of Mercury's surface is 533K, what is the wavelength of peak emission for each body? To what part of the electromagnetic spectrum does each of these two wavelengths belong?
  
3. If mankind added some gas to the atmosphere that got rid of the "IR window" between 8 and 12 microns, how would the earth's climate change?
  
4. One day you notice that you can see objects very far away, far beyond the usual horizon and some objects seem much higher than normal. What can you deduce about the vertical temperature structure in the lower atmosphere? Explain your answer.
  
5. Would the day be longer or shorter if there was no atmosphere? Why?