

**29:52 Exploration of the Solar System**  
**Homework Assignment # 8**  
**Assigned: April 7, 2008**  
**Homework Quiz Due: April 14, 2008, 8 AM**

1. Use *Starry Night* (or other sources, if you know them) to find the distance from Earth to Jupiter, and the distance from Earth to Saturn this week. Make sure you know the numbers in astronomical units. Where are Jupiter and Saturn in the sky, and when can you see them?
2. A planet has an escape speed of 12 kilometers per second. According to the ideas presented above, which of the following gases could the planet retain in an atmosphere (or could it retain any of them)? The speeds given are average speeds of the molecules. (1) A:  $V_{av} = 15$  km/sec, (2) B:  $V_{av} = 5$  km/sec, (3) C:  $V_{av} = 1.5$  km/sec. (4) D:  $V_{av} = 0.5$  km/sec.
3. The Earth has a dense  $N_2$  and  $O_2$  atmosphere. Why doesn't it have molecular hydrogen  $H_2$  in the atmosphere? You don't have to calculate with an equation, but the ideas expressed in an equation should be part of your reasoning.
4. Why is it that we expected (and still expect) to find limestone (calcium carbonate) among the rocks on Mars?
5. What was the significance of the discovery of the mineral hematite on the surface of Mars by the spacecraft Opportunity?