

Name:

Astronomy 3 - Problem Set 6

1. The atmosphere of the Earth has lost most of its hydrogen content through thermal escape. How did it acquire most of the gas molecules? How did it avoid losing its nitrogen and oxygen content?
2. The Earth and the Moon are at the same distance from the Sun. Why is the Earth able to retain its atmosphere whereas the Moon did not?
3. We observe the size of the Martian north polar cap changes periodically over the time scale of 2 years. What process causes these changes? What happens to the southern polar cap? How is the planet-wide dust storm related to these changes?
4. Briefly describe what is the Greenhouse effect. Why is it more severe on Venus than it is on Earth? Describe one supporting piece of evidence that it is on the rise on Earth.
5. Why do hurricanes always circulate in one direction in the northern hemisphere and in the opposite direction in the southern hemisphere? If each day is shortened to 12 hours, what will happen to the circulation pattern?
6. Cite two pieces of evidence which suggest that Mars once had a much more liquid water on its surface than today. Where did the water go? How is this process linked to the red color of Mars? How did the Earth avoid this loss of water?