

PROBLEM SET #5

ASTR 1030

Think each problem through, and present your logic.

1. Why do the craters cover a larger fraction of the surface area on the far side of the Moon?
2. What is a continent? Which bodies of the inner solar system show continent-like features?
3. What is continental drift? Which bodies of the inner solar system show evidence of ongoing continental drift?
4. Where do atmospheres come from? Which planet has the most unusual atmosphere and why?
5. Earth currently has a temperature of 300K at the equator. When the solar system was younger the Sun was 20% lower luminosity. What would be the temperature? Would this freeze the oceans? (I'll do this one for you -- $T=300 \times \text{fourth root of } 0.8$)
6. If the Earth were to be enveloped in ice, then the absorption efficiency would drop to 0.3 from its current value of 0.7. Would the Earth remain covered in ice?
7. What is the frost line? How does it affect the formation of the solar system?