Physics 10154 - Exam #7B

Answer the following two questions. Be sure to clearly indicate your answer with a circle or box. Show all work. If I cannot see how you arrived at an answer, I will deduct points!

1. A pendulum bob of mass 2.5 kg is attached to a 3.0 meter long massless string. At the bottom of its motion, the bob is moving at a speed of 6.0 m/s.

a) What is the tension in the string at this point?

b) When the string makes an angle of 25° with respect to the vertical, what is the tension in the string? Do not assume the bob has stopped moving at this point!

2. A satellite moves in a circular orbit around the Earth with a speed of 3400 m/s.

a) Find the satellite's altitude above Earth's surface, in miles.

b) Find the orbital period of the satellite, in hours.