PHYS 101

Homework # 10
DUE DATE: December 16, 2008

Please do not submit copycat answers from the solutions book or some other solution you have in hand. You should at least show your understanding of the problem. Otherwise, this will be considered as cheating.

1) **)** An artificial satellite travels in an elliptical orbit around the earth, at a large distance from it. When the satellite is at its closest distance R_0 from the center of the earth, the velocity of the satellite is observed to have a magnitude v_0, and a direction perpendicular to the line of sight from the earth to the satellite. A) What is the speed of the satellite when it is at a distance $3R_0$ from the center of the earth? Express your answer in terms of v_0, R_0, and the radius Re of the earth, and the magnitude g of the gravitational acceleration at the surface of the earth. B) At the instant when the satellite is at this distance 3 R_0, from the earth, what is the direction between the satellite's velocity and the line of sight from the earth to the satellite? Express your answer in terms of the satellite`s speed v at this instant and its speed v_0 when it was closest to the earth.

2) Problem 10-60 in the text. Chapter 10.

3) Problem 10-62 in the text. Chapter 10.

4) Problem 10-64 in the text. Chapter 10.

5) Problem 10-74 in the text. Chapter 10.

6) Discussion Question Q10.13 in the text. Chapter 10.

7) Discussion Question Q10.17 in the text. Chapter 10.

8) Discussion Question Q10.20 in the text. Chapter 10.