PHYS 101

**Homework # 5**
DUE DATE: October 28, 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) A ball is held at rest at position A by two light strings. The horizontal string is cut, and the ball starts swinging as a pendulum. Point B is the `farthest to the right the ball goes as it swings back and forth. What is the ratio of the tension in the supporting string in position B to its value at A before the horizontal sting was cut?
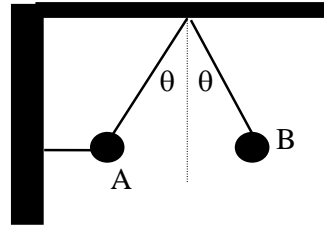
2) Design a carnival ride on which standing passengers are pressed against the inside curved wall of a rotating cylinder. It is to turn at most 1.25 revolution per second. Assuming a minimum coefficient of 0.30 between clothing and wall, what diameter should the ride have if we can safely make the floor drop away when it reaches running speed.

3) Discussion Questions 5.6, 5.30, 5.26, 5.33 in the text. Chapter 5.

4) Problem 5-63 in the text. Chapter 5.

5) Problem 5-86 in the text. Chapter 5.

6) Problem 5-114 in the text. Chapter 5.

7) Problem 5-118 in the text. Chapter 5.

8) Figure shows a heavy cart, of mass m, which rolls down along the top surface of ramp of mass M. This top surface is inclined at angle θ relative to the bottom surface of the ramp which lies on the horizontal floor. All friction forces are negligible. What then is the acceleration of the ramp relative to the floor?