Classical Mechanics - PHYS 310 - Fall 2013 HW # 8
Department of Physics, Southern Illinois University
Instructor: Thushari Jayasekera (thushari@siu.edu)
Please return it by the 04th November 2013

- **Problem 1** *Problem 7.37 from text* Use the method of Lagrangean undetermined multiplier method to find the tensions of both string s of the double Atwood machine of example 7.8
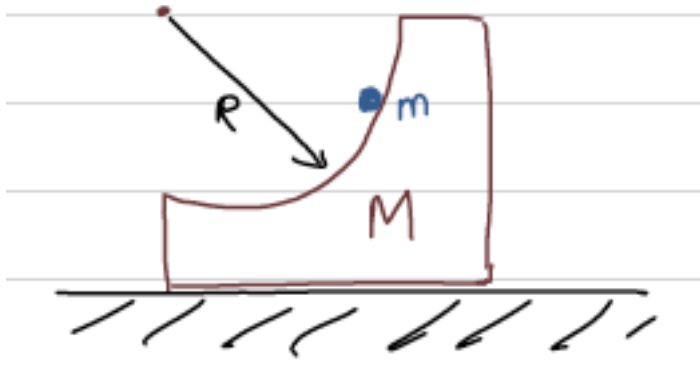
  15 points

- **Problem 2**

  Problem 7.33 from Text Determine the Hamiltonian and Hamilton;s Equation of motion for the Double Atwood machine of Example 7.8

  15 points

- **Problem 3** *Problem 7.34 from Text* A particle of mass m slides down a smooth circular wedge of mass M as shown in the figure. The wedge rests on a smooth horizontal table. Find
  (a) the equations of motion of m and M, and
  (b) the reaction of the wedge on m.

  15 points

- **Problem 4**

  Problem 7.28 from Text A particle of mass m is attracted to force center with the force of magnitude k/r^2. Use the plane polar coordinates and find the Hamiltonian equation of motion.

  15 points

- **Problem 5**

  Problem 7.38 from Text The potential from an anharmonic oscillator is $U = kx^2/2 + bx^4/4$, where k and b are constants. Find the Hamilton's equations of motion.

  15 points