# PHY180F 2004 ASSIGNMENT 6

Due: Thursday, November 4

1.   A bullet of mass **m** and initial speed **v** passes completely
     through a pendulum bob of mass **M**. The bullet emerges
     with a speed ½ **v**. The pendulum bob is suspended by a stiff
     rod of length **L** and negligible mass. What is the minimum
     value of **v** such that the pendulum bob will barely swing
     through a complete vertical circle? State clearly the
     justification for any statements you make or equations that
     you write down.
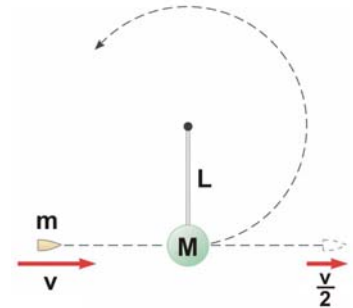
 This is a problem from last year's final examination.
   a) Solve this problem using the concepts of conservation of linear momentum and
      potential energy. (This is the easy part!)
   b) Now solve the problem again **without using** explicitly either the concept of
      conservation of linear momentum or the concept of potential energy.

2.   Chapter 8, Number 54

3.   Chapter 8, Number 69

4.   Chapter 8, Number 74