The University of Alabama at Birmingham (UAB)
Department of Physics

PH 462/562 – Classical Mechanics II – Spring 2006

Assignment # 2 Due: **Thursday, Jan. 12**
(Turn in for credit!)

1. Textbook Problem 3.5

2. Consider a rocket with initial mass m_0 taking off vertically (from rest) in a constant gravitational field g. The rocket ejects spent fuel at a constant rate $\dot{m} = -k$ with an exhaust speed u relative to the rocket (k is a positive constant).

    a. Assuming that gravity is the only external force acting on the rocket, derive the differential equation for its motion.

    b. Solve the differential equation and determine how the height of the rocket changes as a function of time.