Name:

## PHY 106 Test 1 June 30, 2005 20 minutes La Salle University Dr. R. DiDio

- 1. The graph displays the stretch of a spring (in cm) as a function of applied weight (N)
  - a) For what range of stretch values would you expect to observe simple harmonic motion (SHM)? Explain!



- b) Use the graph to determine the approximate spring constant for the range of stretch values found in (a).
- c) If a 0.13 kg mass is now attached to the spring, stretched 2.0 cm and released, determine the period and frequency of the ensuing motion.
- d) For the mass in (c), at what time after being released will the mass be at position 1.0 cm?
- e) What fraction of total energy is kinetic when the mass is at the position in (d)?
- 2. A pendulum of length 0.4 m is released at an angle of  $\pi/8$  from equilibrium
  - a) Explain why you would expect to see SHM displayed by the pendulum's mass.
  - b) Calculate the period and frequency of the pendulum
  - c) Determine the total distance traveled by the mass in one period.