Physics 205 – Homework 12 (due Tuesday, April 10) – Spring 2012

(1) A block has mass 1.5 Kg and velocity 4m/s. It slides rightward along a surface with an opposing constant frictional force of 2N.

(a) Solve for the time it takes to come to rest, both by the impulse-momentum theorem and by using the equations of motion.

(b) Solve for the distance it travels until it comes to rest, both by the work-energy theorem and by using the equations of motion.

(2) In Chapter 6, do Exercises 2, 6, 8, 9, and 12. Some of these relate to the inverse square law.

(3) In Chapter 6, do Problems 1, 2, and 3 (where you will need G, given on p.108).

(4) To prepare for this problem, read Sect. 6.4. This problem is about weight W vs acceleration a for a person in a moving elevator. Take a > 0 to be acceleration upward. Show that \( W = ma + m\). Explain why free fall corresponds to \( a = -g \). Plot W vs a for both positive a (motion upward) and for negative a (motion downward). What is the weight for \( a = -g \)?

(5) Read Sect. 6.9 and then do Exercise 49.

Physics 205 – Homework 13 (due Thursday, April 12) – Spring 2012

(1) In Chapter 7, do all the even Review Questions from 2 to 32.

(2) In Chapter 7, do Exercises 3, 4, and 38.

(3) In Chapter 7, read Exercise 21. Don’t do it; I just want you to read it, so I can discuss it in class.

(4) In Chapter 7, do Problems 1 (show that 49 N/cm\(^2\) = \(49 \times 10^3\) N/m\(^2\)), 2, 6, 8, 10, and 12.

(5) If a gas in a chamber with a piston is under a pressure of 2 atmosphere and has a volume of 3 liters, find its volume if the pressure becomes 3 atmospheres.