

Math 2260 HW #5
Due 10:10 AM Friday, February 10

Reading: Hass §6.5 & 7.2

Problems: Do the assignment “HW5” on WebWork. In addition, write up solutions to the following problems and hand in your solutions in class on Friday.

1. A spring has a natural length of 10 in. An 800-lb force stretches the spring to 14 in.
 - (a) Find the force constant.
 - (b) How much work is done in stretching the spring from 10 in. to 12 in.?
 - (c) How far beyond its natural length will a 1600-lb force stretch the spring?
2. A cylindrical tank (with circular base and vertical sides) is 5 ft. high and has a diameter of 4 ft. If the tank is filled with kerosene weighing 51.2 pounds per cubic foot, how much work does it take to pump all of the kerosene out of the top of the tank?
3. Solve the differential equation

$$xy + \frac{dy}{dx} = 100x.$$