Math 1b. Applications to Physics and Engineering (Work)

Spring 2006

1. *Hooke's Law* tells us that the force created by a spring when it is stretched or compressed is proportional to the distance the spring is stretched or compressed,

$$F(x) = kx.$$

If a spring stretched 1 foot beyond its natural length requires 10 lbs of force, how much work is done stretching the spring?

2. Is it more work to raise a 70 lb bucket from a 50 ft well or a 50 lb bucket from a 70 ft well if the rope weighs 0.25 lb per foot?

3. A circular swimming pool has a diameter of 24 ft, the sides are 5 ft high, and the depth of the water is 4 ft. If the density of water is 62.5 lb/ft^3, how much work is required to pump all of the water out over the side?