Math 181 Name _____
Spring 2010

Homework #3
Due Tuesday, March 9
No late papers accepted! No excuses!

1. Find the area of the surface formed by revolving the graph of $f(x) = x^2$ on the interval $\left[0, \sqrt{2}\right]$ about the y-axis.

2. Find the arc length of the graph of $y = \ln(\cos x)$ on the interval $\left[0, \frac{\pi}{3}\right]$.

3. Eighteen foot-pounds of work is required to stretch a spring 4 inches from its natural length. Find the work required to stretch the spring an additional 3 inches.

4. A cylindrical water tank 4 meters high with a radius of 2 meters is buried so that the top of the tank is 1 meter below ground level. How much work is done in pumping a full tank of water up to ground level. The water weighs 9800 newtons per cubic meter.