Math 2260 Quiz 5 (Take Home)

Due at 11:15am on Wednesday the 1st of February

Name _____

Points will be deducted for untidy or disorganized answers

1. (3 points) A force of 2 N will stretch a rubber band 0.02 m. Assuming that Hooke's Law applies, how far will a 4 N force stretch the rubber band? How much work does it take to to stretch the rubber band this far?

2. (4 points) To design the interior surface of a huge stainless-steel tank, you revolve the curve $y = x^2$, $0 \le x \le 4$, about the y-axis. The container, with dimensions in meters, is to be filled with seawater, a cubic meter of which weighs 10,000 N. How much work will it take to empty the tank by pumping the water to the tank's top?

3. (3 points) A cable that weighs 2 lb/ft is used to lift 800 lb of coal up a vertical mineshaft 500 ft deep. Find the work done.