

**MTH 162**  
**Quiz 5**  
**Spring 2011**

Show all work in a neat and organized fashion. Clearly indicate your answers.  
10 points possible.

The following formulas may or may not be useful:

$$\log(xy) = \log x + \log y, \quad \log\left(\frac{x}{y}\right) = \log x - \log y, \quad \log(x^N) = N \log x$$

$$\log_a b = \frac{\ln b}{\ln a} = \frac{\log_c b}{\log_c a}$$

$$I = Prt, \quad S = P + I$$

1. (4 pts.) The demand function for a certain commodity is given by  $p = 300e^{-q/2}$ .

(a) At what price per unit will the quantity demanded equal 8 units?

(b) If the price is \$3.58 per unit, how many units will be demanded (round to 3 decimal places, and assume it is reasonable to round to 3 decimal places for this type of unit).

**2.** (2 pts.) How many times more severe is an earthquake that measures 9.0 on the Richter scale, in comparison to one that measured 6.8?

(The formula is  $R = \log(I/I_0)$ , but I would do it a different way, without using this formula.)

**3.** (4 pts.) If you lend \$4500 to a friend for 21 months at 6% annual simple interest, find the future value of the loan.