

MTH 162
Quiz 1
Spring 2017

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

A graphing calculator is allowed (e.g., TI-84). No calculator with a Computer Algebra System (CAS) is allowed (e.g., TI-89, TI-Nspire).

The following formulas may or may not be useful:

$$y - y_1 = m(x - x_1)$$
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \quad x = \frac{-b}{2a}$$

1. (5 pts.) Rewrite the expression so that only positive exponents remain, and simplify.

$$\left(\frac{3y^{-1}}{w^{-4}} \right)^2$$

2. (5 pts.) If $f(x) = 4x - x^2$, find $\frac{f(x+h) - f(x)}{h}$ and simplify.

3. (5 pts.) Find the market equilibrium point for the following demand and supply functions.

$$\text{Demand: } 3p = -q + 68$$

$$\text{Supply: } 7p - q = 42$$

4. (5 pts.) The profit function for a certain commodity is $P(x) = 130x - 900 - x^2$. Find the level of production that yields maximum profit, and find the maximum profit.