

MTH 162
Quiz 1, Form A
Fall 2015

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

No TI-89s.

The following formulas may or may not be useful:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \quad x = \frac{-b}{2a}$$

1. (6 pts.) The profit function for a certain commodity is $P(x) = -3x^2 + 150x - 500$. Find the level of production that yields maximum profit, and find the maximum profit.

2. (7 pts.) Perform the indicated operation and simplify.

$$\frac{x^2 + 6x + 5}{x^2 - 5x + 6} \div \frac{x^2 + 8x + 15}{x^2 - 9}$$

3. (7 pts.) For the following linear programming problems,

- (a) graph the feasible region,
- (b) find all corner points of the feasible region, and
- (c) maximize or minimize the function as directed.

Maximize $f = 5x + 2y$ subject to

$$\begin{aligned} 4x + 5y &\leq 62 \\ 6x + y &\geq 54 \\ x &\geq 0 \\ y &\geq 0 \end{aligned}$$

MTH 162
Quiz 1, Form B
Fall 2015

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

No TI-89s.

The following formulas may or may not be useful:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \quad x = \frac{-b}{2a}$$

1. (6 pts.) The profit function for a certain commodity is $P(x) = -6x^2 + 180x - 500$. Find the level of production that yields maximum profit, and find the maximum profit.

2. (7 pts.) Perform the indicated operation and simplify.

$$\frac{x^2 + 8x + 15}{x^2 - 9} \div \frac{x^2 + 6x + 5}{x^2 - 5x + 6}$$

3. (7 pts.) For the following linear programming problems,

- (a) graph the feasible region,
- (b) find all corner points of the feasible region, and
- (c) maximize or minimize the function as directed.

Maximize $f = 5x + 2y$ subject to

$$\begin{aligned} 5x + 4y &\leq 62 \\ x + 6y &\geq 54 \\ x &\geq 0 \\ y &\geq 0 \end{aligned}$$