

Name: _____

Math 162 Analysis for the Business and Social Sciences – Crawford

Quiz 1

28 September 2016

Books and notes (in any form) are not allowed. You may use a calculator. *Show all work for full credit.* Good Luck!

CALCULATOR NUMBER: _____

1. (5 pts) Solve the following inequality. Write your answer in interval notation AND sketch it on the number line.

$$3(x - 2) > 4(x - 1) + 6$$

2. (5 pts) A company produces two types of drones, which are assembled on 2 different assembly lines. Line 1 can assemble 25 units of the Basic Model and 40 units of the Advanced Model per hour. Line 2 can assemble 150 units of the Basic Model and 75 units of the Advanced Model per hour. The company needs to produce at least 800 units of the Basic Model and 240 units of the Advanced Model to fill an order.

Let x be the number of hours that assembly Line 1 operates.

Let y be the number of hours that assembly Line 2 operates.

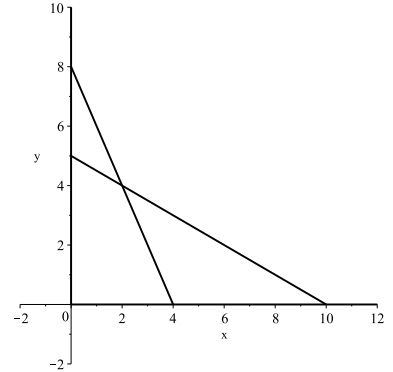
Write two inequalities that describe the production constraints on the number each type of drone.

[If you find it helpful, use a table. But clearly write the final inequalities separately. **Do NOT attempt to solve nor graph the inequalities.**]

3. (10 pts) Given the Linear Programming Problem,

Minimize $f = 3x + 2y$

$$\text{subject to } \begin{cases} x + 2y \geq 10 \\ 2x + y \geq 8 \\ x \geq 0 \\ y \geq 0 \end{cases}$$



(a). Label each line with the correct line from the system of equations.

(b). Shade the feasible region.

(c). Find all of the corners of the feasible region. **You must show work.**

(d). Determine the solution that minimizes the objective $f = 3x + 2y$.