

Instructor: Prof. A. Suci

Name: _____

MTH 1101

Applications of Algebra

Spring 2000

QUIZ 2

Instructions: Put your name in the blanks above. Put your final answers to each question in the designated spaces on these pages. Show your work—if there is not enough room, use another sheet.

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- (1) **SOLVE** the following linear programming problem. Be sure to shade in the feasible set, and mark down its corners. Find the maximum and minimum values of $F = 6x + 9y$, subject to the constraints

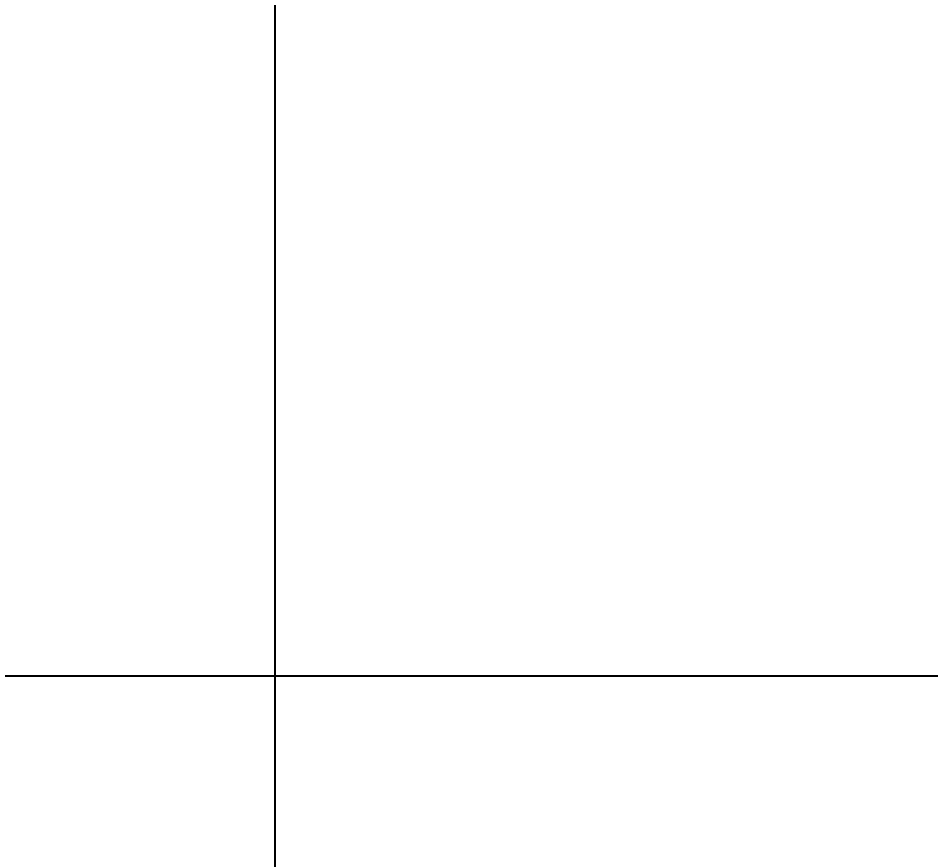
$$x + y \leq 4,$$

$$3x + y \geq 3,$$

$$-x + y \geq 0,$$

$$x \geq 0,$$

$$y \geq 0.$$



Answer:

- The maximum value of F equals _____, and it occurs at the point (____, ____).
- The minimum value of F equals _____, and it occurs at the point (____, ____).

- (2) **SET UP** a linear program to solve the following problem. Be sure to identify the action variables, **ALL** the constraints, and the objective function. **DO NOT SOLVE**.

A car company sells two types of cars: Compact and Luxury. Every Compact car takes 20 hours and 6 workers to assemble, while every Luxury car takes 45 hours and 10 workers to assemble. There are at most 3,000 hours available in this production cycle, and at least 50 workers must be working at all times, in order to keep the assembly line running. A minimum of 25 Compact cars must be made in order to fill the orders. The profit on each Luxury car is \$2,000 and the profit on each Compact car is \$1,500. How many of each type of car must be sold in order to maximize profit?

- Variables:

- Constraints:

- Objective: