

Instructor: Prof. A. Suci

Name: _____

MTH 1101

Applications of Algebra

Fall 2002

QUIZ 3

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.

- (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

$$F = -2x + 4y$$

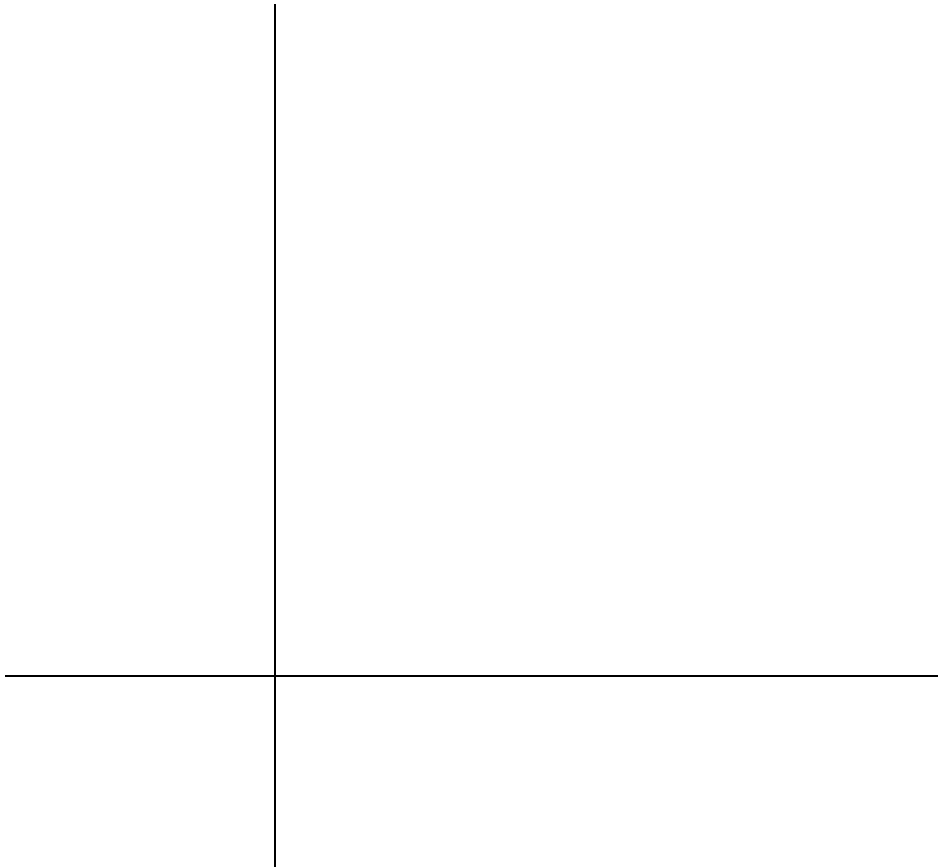
subject to the constraints

$$-x + y \geq 2,$$

$$x + y \leq 5,$$

$$x \geq 0,$$

$$y \geq 0.$$



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) Evaluate:

$$2 \begin{bmatrix} -8 & 0 \\ 7 & 2 \\ 14 & -6 \\ 0 & -3 \end{bmatrix} - \begin{bmatrix} 1 & 5 \\ 4 & 2 \\ 9 & -5 \\ -7 & 1 \end{bmatrix} =$$

(3) Evaluate:

$$\begin{bmatrix} 2 & 1 & 0 \\ -3 & 4 & 2 \\ 0 & 2 & -1 \end{bmatrix} \cdot \begin{bmatrix} 1 & 4 \\ 3 & -2 \\ 5 & -1 \end{bmatrix} =$$

(4) Find the values of the variables x , y , and z for which the following matrix equality holds:

$$\begin{bmatrix} -2 & 3x - 5 & 1 \\ 8 & 0 & -z \\ 4y & 5 & -9 \end{bmatrix} = \begin{bmatrix} -2 & 5x + 1 & 1 \\ 8 & 0 & 5z \\ 6 & 5 & -9 \end{bmatrix}$$