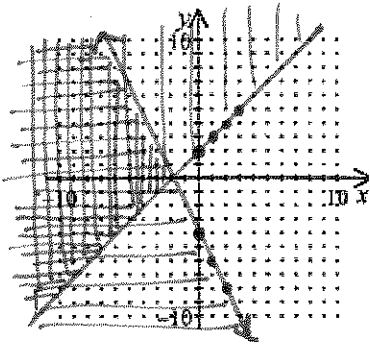


Chapter 3 Practice Test -

Graph the system of inequalities.

1. $y \leq -2x - 4$
 $y \geq x + 2$



Write and solve a matrix equation to solve the system of equations.

2. $x + y + z = 13$
 $-2x - y + z = -4$
 $x - 2y - z = -18$

$$\begin{bmatrix} 1 & 1 & 1 \\ -2 & -1 & 1 \\ 1 & -2 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 13 \\ -4 \\ -18 \end{bmatrix}$$

↑ matrix A

↑ matrix B

$A^{-1} \cdot B$ in home screen... $\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 7 \\ 5 \end{bmatrix}$

Perform the indicated matrix operation, if possible.

3. $5 \begin{bmatrix} 2 & 1 & -5 \\ 6 & -3 & 4 \end{bmatrix} = \begin{bmatrix} 10 & 5 & -25 \\ 30 & -15 & 20 \end{bmatrix}$

Multiply each element by 5.

Find the sum of the matrices.

4. $\begin{bmatrix} -31 & -24 \\ -19 & -11 \end{bmatrix} + \begin{bmatrix} 10 & 19 \\ 39 & 49 \end{bmatrix} = \begin{bmatrix} -21 & -5 \\ 20 & 38 \end{bmatrix}$

Add each pair of corresponding elements.

5. Given $A = \begin{bmatrix} 0 & 2 & -6 \\ 9 & -1 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -6 \\ 0 & -9 \\ -7 & 8 \end{bmatrix}$,

find AB .

$$AB = \begin{bmatrix} 42 & -66 \\ 9 & -45 \end{bmatrix}$$

Use matrices A and B to evaluate the matrix expression.

$A = \begin{bmatrix} 5 & -3 \\ 7 & 2 \end{bmatrix}$ $B = \begin{bmatrix} -2 & 7 \\ -5 & 1 \end{bmatrix}$ $4B = \begin{bmatrix} -8 & 28 \\ -20 & 4 \end{bmatrix}$

6. $A - 4B$

$$\begin{bmatrix} 5 & -3 \\ 7 & 2 \end{bmatrix} - \begin{bmatrix} -8 & 28 \\ -20 & 4 \end{bmatrix} = \begin{bmatrix} 13 & -31 \\ 27 & -2 \end{bmatrix}$$

7. Use an inverse matrix to solve the linear system.

$$16x + 5y = 211$$

$$16x + y = 183$$

$$\begin{bmatrix} 16 & 5 \\ 16 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 211 \\ 183 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 11 \\ 7 \end{bmatrix}$$

8. Student Government and the cheerleaders at a local school are ordering supplies. The supplies they need are listed below.

	Paint	Paper	Tape
Student Government	12	15	5
Cheerleaders	10	14	7

If a bottle of paint costs \$5, a roll of paper costs \$12, and a roll of tape costs \$2, which of the following shows the use of matrices to find the total cost of supplies for each group? Write a cost matrix, then find the total amount of money needed by each group. Write this answer as a matrix. Be sure to label all your matrices.

$$\begin{matrix} \text{St. Gov.} \\ \text{Cheer} \end{matrix} \begin{bmatrix} \text{Paint} & \text{Paper} & \text{Tape} \\ 12 & 15 & 5 \\ 10 & 14 & 7 \end{bmatrix} \bullet \begin{matrix} \text{Paint} \\ \text{Paper} \\ \text{Tape} \end{matrix} \begin{bmatrix} 5 \\ 12 \\ 2 \end{bmatrix}$$

$$= \begin{matrix} \text{St. Gov.} \\ \text{Cheer} \end{matrix} \begin{bmatrix} \text{Total \$} \\ 250 \\ 232 \end{bmatrix}$$

9. Tasty Bakery sells three kinds of muffins: apple muffins at 30 cents each, blueberry muffins at 35 cents each, and cherry muffins at 40 cents each. Charles buys some of each kind and chooses three times as many cherry muffins as apple muffins. He spends \$4.75 on 13 muffins.

Let a = # apple muffins

b = # blueberry muffins

c = # cherry muffins

- a. Write three equations to represent the information given in the problem.

$$a + b + c = 13$$

$$.30a + .35b + .40c = 4.75$$

$$3a = c$$

$$\leftarrow 3a - c = 0$$

- b. Set up and solve a matrix equation to find the number of each type of muffin that Charles bought.

$$\begin{bmatrix} 1 & 1 & 1 \\ .30 & .35 & .40 \\ 3 & 0 & -1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 13 \\ 4.75 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 2 \\ 5 \\ 6 \end{bmatrix}$$

10. Are the matrices $\begin{bmatrix} 1 & -3 \\ 0 & 2 \end{bmatrix}$ and $\begin{bmatrix} 4 & 0 \\ 1 & 1 \end{bmatrix}$ inverses?

Explain why or why not.

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

No. The product is not the identity matrix.

11. Solve the matrix equation.

$$\begin{bmatrix} 4 & 6 \\ 5 & 8 \end{bmatrix} X = \begin{bmatrix} 4 & 2 \\ 1 & 5 \end{bmatrix}$$

$$A \cdot X = B$$

$$X = A^{-1} \cdot B$$

$$X = \begin{bmatrix} 13 & -7 \\ -8 & 5 \end{bmatrix}$$

Chapter 3 Practice Test - No graphing calculator allowed on this part of the test.

Solve the linear system. Show all your work.

1. $3x + y = 17$
 $-4x - y = -21$

$-x = -4$
 $x = 4$

$\rightarrow 3(4) + y = 17$
 $12 + y = 17$
 $y = 5$

2. $y = -4x + 4$
 $y = -x - 5$

$-4x + 4 = -x - 5$
 $9 = 3x$
 $3 = x$

$(4, 5)$

$y = -4(3) + 4$
 $= -12 + 4$
 $= -8$

$(3, -8)$

3. Find $A + B$.

$A = \begin{bmatrix} -8 & -8 & -2 \\ 2 & -3 & 9 \end{bmatrix}$ $B = \begin{bmatrix} 5 & 8 & -4 \\ 0 & 1 & -9 \end{bmatrix}$

$A + B = \begin{bmatrix} -3 & 0 & -6 \\ 2 & -2 & 0 \end{bmatrix}$

Find the product.

4. $\begin{bmatrix} 6 & 9 \end{bmatrix} \begin{bmatrix} 6 & 7 \\ 4 & 3 \end{bmatrix}$

$1 \times 2 \times 2 \times 2$ Answer = 1×2

$[72 \ 69]$

5. If $A = \begin{bmatrix} -3 & -8 \\ -7 & 4 \end{bmatrix}$, find $-2A$

$-2A = \begin{bmatrix} 6 & 16 \\ 14 & -8 \end{bmatrix}$

Solve the matrix equation for x and y .

6. $3 \begin{bmatrix} 4 & x \\ -1 & 3 \end{bmatrix} - 2 \begin{bmatrix} 1 & 3 \\ y & 0 \end{bmatrix} = \begin{bmatrix} 10 & 6 \\ -7 & 9 \end{bmatrix}$

$3x - 6 = 6$
 $3x = 12$
 $x = 4$

$-3 - 2y = -7$
 $-2y = -4$
 $y = 2$