

NAME: _____

Math 103L: Solving Systems of Equations (Sections 4.1-3)

Solve using substitution or elimination.

1. Solve this system of linear equations:

$$\begin{aligned}4x + 3y &= 37 \\ -3x + 2y &= -32.\end{aligned}$$

2. Solve this system of linear equations:

$$\begin{aligned}4x + 3y &= -30 \\ -8x - 6y &= 0.\end{aligned}$$

3. Find the coordinates (x, y) of the point of intersection for the lines with the equations:

$$x + 2y = -4$$

$$3x + 4y = -2$$

4. Find the coordinates (x, y) of the point of intersection for the lines with the equations:

$$\begin{aligned}x + 2y &= 7 \\3x + 6y &= 21\end{aligned}$$

5. (Worked Example: READ IT!) The supply and demand equations for a product are given below:

$$\begin{array}{rcl} \text{supply} & q - 3p & = -1 \\ \text{demand} & q + 2p & = 4. \end{array}$$

- (a) Find an augmented matrix that corresponds to this system of equations.

Answer:

The augmented matrix for the system is

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

- (b) Put the matrix from part (a) in row reduced echelon form.

Answer:

The row reduced echelon form is

$$R = \begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 1 \end{bmatrix}.$$

(Student should show reduction steps.)

- (c) How many solutions does the system have?

Answer:

There is only one solution.

6. The supply and demand equations for a product are given below:

$$\begin{array}{rcl} \text{supply} & q - 3p & = -5 \\ \text{demand} & 5q + 2p & = 60. \end{array}$$

- (a) Find an augmented matrix that corresponds to this system of equations.

- (b) Put the matrix from part (a) in row reduced echelon form.

- (c) How many solutions does the system have?

7. Repeat 1-4 using augmented matrices.