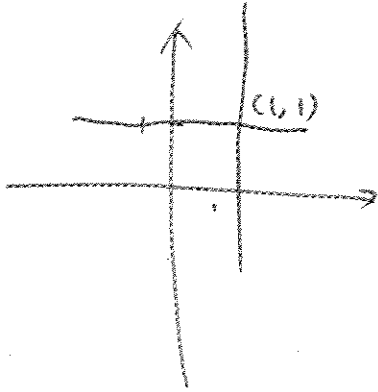


Show all appropriate work.

1. Graph each equation in the following system and estimate the solution of the system; you can verify your answer using your calculator. $\begin{cases} x + y = x + 1 \\ y - x = y - 1 \end{cases} \quad (1, 1)$

$$\begin{cases} y = 1 \\ x = 1 \end{cases}$$



$$\therefore (1, 1)$$

2. Use substitution method to solve the following system of equations. $\begin{cases} 3y = 2x \\ y = 6x + 16 \end{cases} \quad (-3, -2)$

$$3(6x + 16) = 2x$$

$$18x + 48 = 2x$$

$$16x = -48$$

$$x = -3$$

$$\therefore y = 6(-3) + 16$$

$$y = -2$$

$$\therefore (-3, -2)$$

3. Use substitution method to solve the following system of equations. $\begin{cases} x - y = -9 \\ y - 2x = 14 \end{cases} \quad (-5, 4)$

$$x = y - 9$$

$$y - 2(y - 9) = 14$$

$$y - 2y + 18 = 14$$

$$-y = -4$$

$$y = 4$$

$$x = 4 - 9 = -5$$

$$\therefore (-5, 4)$$

4. Use addition method to solve the following system of equations. $\begin{cases} x - 3y = -6 \text{ (1)} \\ -x + 7y = 22 \text{ (2)} \end{cases} \quad (6, 4)$

$$\text{(1)} + \text{(2)}$$

$$4y = 16$$

$$y = 4$$

$$\therefore x - 3(4) = -6$$

$$x - 12 = -6$$

$$x = 6$$

$$\therefore (6, 4)$$

5. Use addition method to solve the following system of equations. $\begin{cases} 2x - 7y = 4 & \textcircled{1} \\ 3x + 2y = -19 & \textcircled{2} \end{cases} (-5, -2)$

$$\textcircled{1} \times 3 - \textcircled{2} \times 2$$

$$6x - 21y = 12$$

$$- \quad 6x + 4y = -38$$

$$-25y = 50$$

$$y = -2$$

$$2x - 7(-2) = 4$$

$$2x + 14 = 4$$

$$2x = -10$$

$$x = -5$$

$$\therefore (-5, -2)$$

6. Solve the following system of equations. $\begin{cases} 5x + 2y = 11 & \textcircled{1} \\ 2x - 3y = 12 & \textcircled{2} \end{cases} (3, -2)$

$$\textcircled{1} \times 3 + \textcircled{2} \times 2$$

$$15x + 6y = 33$$

$$+ \quad 4x - 6y = 24$$

$$19x = 57$$

$$x = 3$$

$$2(3) - 3y = 12$$

$$6 - 3y = 12$$

$$-3y = 6$$

$$y = -2$$

$$\therefore (3, -2)$$

7. Solve the following system of equations. $\begin{cases} 2x + 3y = 11 \\ -(x + 1) = 5y \end{cases}$

$$\left(\frac{58}{7}, \frac{-13}{7}\right)$$

See Final Practice

8. Setup the matrix for the following system of equations, and solve it.

$$\begin{cases} 2x - y + 2z = 1 & \textcircled{1} \\ -x + 2y - z = 0 & \textcircled{2} \\ x + y + z = -1 & \textcircled{3} \end{cases}$$

$$\textcircled{2} + \textcircled{3}$$

$$3y = -1$$

$$y = -\frac{1}{3}$$

$$\textcircled{1} + \textcircled{2} \times (-2)$$

$$2x - y + 2z = 1$$

$$-2x - 2y - 2z = 2$$

$$\hline -3y = 3$$

$$y = -1$$

$$y = -\frac{1}{3}, \quad y = -1$$

conflict!!!

\therefore No solution.

$$\begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

No solution

9. Solve the following system of equations by hand. $\begin{cases} x + 2y + z = 2 & \textcircled{1} \\ 2x + y + 2z = 1 & \textcircled{2} \\ x + y + z = 3 & \textcircled{3} \end{cases} \emptyset$

$$\textcircled{1} - \textcircled{3}$$

$$y = -1$$

$$\textcircled{1} + \textcircled{3} \times (-2)$$

$$\cancel{2x} + y + \cancel{2z} = 1$$

$$\cancel{-2x} - \cancel{2y} - \cancel{2z} = -6$$

$$-y = -5$$

$$y = 5$$

$$y = -1, \quad y = 5$$

conflict

\therefore No solution.

10. Graph the solution set of the following system of inequalities. $\begin{cases} x - y \geq 6 \\ x + y \leq 0 \\ x \geq 0 \\ y \leq 0 \end{cases}$

