

HW 7.3/7.4 Systems of Equations (Elimination)

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Solve each system by elimination.

1)
$$\begin{array}{r} -4x - 4y = 8 \\ -x + 4y = 12 \\ \hline -5x = 20 \\ x = -4 \end{array}$$

$$\begin{array}{r} -x + 4y = 12 \\ -(-4) + 4y = 12 \\ -4 \quad -4 \\ \hline 4y = 8 \\ y = 2 \end{array}$$

$(-4, 2)$

2)
$$\begin{array}{r} 3x + 2y = -3 \\ -3x + y = 12 \\ \hline 3y = 9 \\ y = 3 \end{array}$$

$$\begin{array}{r} -3x + y = 12 \\ -3x + 3 = 12 \\ -3x = 9 \\ x = -3 \end{array}$$

$(-3, 3)$

3)
$$\begin{array}{r} x - 2y = -9 \\ -4x - 2y = -4 \\ -x + 2y = 9 \\ \hline -5x = 5 \\ x = -1 \end{array}$$

$$\begin{array}{r} x - 2y = -9 \\ -1 - 2y = -9 \\ -2y = -8 \\ y = 4 \end{array}$$

$(-1, 4)$

4)
$$\begin{array}{r} -2x + y = 4 \\ -2x + 2y = 0 \\ 2x - y = -4 \\ \hline y = -4 \end{array}$$

$$\begin{array}{r} -2x + y = 4 \\ -2x + (-4) = 4 \\ -2x = 8 \\ x = -4 \end{array}$$

$(-4, -4)$

5)
$$\begin{array}{r} -4x - y = 8 \\ -12x + 3y = -24 \\ -12x - 3y = 24 \\ \hline -24x = 0 \\ x = 0 \end{array}$$

$$\begin{array}{r} 4x - y = 8 \\ 4(0) - y = 8 \\ -y = 8 \\ y = -8 \end{array}$$

$(0, -8)$

6)
$$\begin{array}{r} -x + 4y = -1 \\ -2x - 8y = 14 \\ -2x + 8y = -2 \\ \hline -4x = 12 \\ x = -3 \end{array}$$

$$\begin{array}{r} -x + 4y = -1 \\ 3 + 4y = -1 \\ 4y = -4 \\ y = -1 \end{array}$$

$(-3, -1)$

$$\begin{array}{l} 5 \downarrow \\ 7) [-6x + 3y = 3] \\ 6) [5x - 8y = -8] \end{array}$$

$$\begin{array}{r} -36x + 15y = 15 \\ 30x - 48y = -48 \\ \hline -33y = -33 \\ y = 1 \end{array} \quad \begin{array}{r} -6x + 3y = 3 \\ -6x + 3 = 3 \\ -6x = 0 \\ x = 0 \end{array}$$

$(0, 1)$

$$\begin{array}{l} 2 \downarrow \\ 8) [4x - 3y = -16] \\ 3) [5x + 2y = 3] \end{array}$$

$$\begin{array}{r} 8x - 6y = -32 \\ 15x + 6y = 9 \\ \hline 23x = -23 \\ x = -1 \end{array}$$

$(-1, 4)$

$$\begin{array}{r} 4x - 3y = -16 \\ 4(-1) - 3y = -16 \\ -4 - 3y = -16 \\ +4 \quad +4 \\ \hline -3y = -12 \\ y = 4 \end{array}$$

$$\begin{array}{l} -4 \downarrow \\ 9) [3x + 2y = 10] \\ 3) [4x + 5y = 18] \end{array}$$

$$\begin{array}{r} -12x - 8y = -40 \\ 12x + 15y = 54 \\ \hline 7y = 14 \\ y = 2 \end{array} \quad \begin{array}{r} 3x + 2y = 10 \\ 3x + 2(2) = 10 \\ 3x = 6 \\ x = 2 \end{array}$$

$(2, 2)$

$$\begin{array}{l} 2 \downarrow \\ 10) [-5x - 6y = -3] \\ 3) [2x + 4y = 6] \end{array}$$

$$\begin{array}{r} -10x - 12y = -6 \\ 6x + 12y = 18 \\ \hline -4x = 12 \\ x = -3 \end{array}$$

$(-3, 3)$

$$\begin{array}{r} 2x + 4y = 6 \\ 2(-3) + 4y = 6 \\ -6 + 4y = 6 \\ 4y = 12 \\ y = 3 \end{array}$$

11) Is the point $(0, 0)$ a solution of the system of linear equations below?

$$\begin{array}{l} 2x + y = 2 \\ 4x - 2y = 2 \end{array}$$

$$\begin{array}{l} 2(0) + 0 = 2 \\ 0 = 2? \end{array}$$

No!

12) Is the point $(\frac{5}{4}, 7)$ a solution of the system of linear equations below?

$$\begin{array}{l} 4x + y = 12 \\ -4x + 3y = 16 \end{array}$$

$$\begin{array}{l} 4(\frac{5}{4}) + 7 = 12 \\ 5 + 7 = 12 \\ 12 = 12 \end{array}$$

$$\begin{array}{l} -4(\frac{5}{4}) + 3(7) = 16 \\ -5 + 21 = 16 \\ 16 = 16 \end{array}$$

yes!