

Elimination Using Addition and Subtraction

Use elimination to solve each system of equations. SHOW ALL WORK and box/circle your final answer. (Hint: this should be a coordinate!)

$$\begin{array}{r} 1. \ x - y = 1 \\ - \ x + y = 3 \\ \hline -2y = -2 \\ \frac{-2}{-2} = \frac{-2}{-2} \\ y = 1 \end{array}$$

$$\begin{array}{r} x - (1) = 1 \\ x = 2 \end{array}$$

$(2, 1)$

$$\begin{array}{r} 2. \ -x + y = 1 \\ - \ x + y = 11 \\ \hline -2x = -10 \\ \frac{-2}{-2} = \frac{-10}{-2} \\ x = 5 \end{array}$$

$$\begin{array}{r} -5 + y = 1 \\ +5 \quad +5 \\ \hline y = 6 \end{array}$$

$(5, 6)$

$$\begin{array}{r} 3. \ x + 4y = 11 \\ - \ x - 6y = 11 \\ \hline 10y = 0 \\ \frac{10}{10} = \frac{0}{10} \\ y = 0 \end{array}$$

$$\begin{array}{r} x + 4(0) = 11 \\ x = 11 \end{array}$$

$(11, 0)$

$$\begin{array}{r} 4. \ -x + 3y = 6 \\ - \ x + 3y = 18 \\ \hline -2x = -12 \\ \frac{-2}{-2} = \frac{-12}{-2} \\ x = 6 \end{array}$$

$$\begin{array}{r} -6 + 3y = 6 \\ +6 \quad +6 \\ \hline 3y = 12 \\ \frac{3}{3} = \frac{12}{3} \\ y = 4 \end{array}$$

$(6, 4)$

$$\begin{array}{r} 5. \ 3x + 4y = 19 \\ - \ 3x + 6y = 33 \\ \hline -2y = -14 \\ \frac{-2}{-2} = \frac{-14}{-2} \\ y = 7 \end{array}$$

$$\begin{array}{r} 3x + 4(7) = 19 \\ 3x + 28 = 19 \\ -28 \quad -28 \\ \hline 3x = -9 \\ \frac{3}{3} = \frac{-9}{3} \\ x = -3 \end{array}$$

$(-3, 7)$

$$\begin{array}{r} 6. \ x + 4y = -8 \\ + \ x - 4y = -8 \\ \hline 2x = -16 \\ \frac{2}{2} = \frac{-16}{2} \\ x = -8 \end{array}$$

$$\begin{array}{r} 0 + 4y = -8 \\ \frac{4}{4} = \frac{-8}{4} \\ y = -2 \end{array}$$

$(0, -2)$

$$\begin{array}{r} 7. \ 3x + 4y = 2 \\ + \ 4x - 4y = 12 \\ \hline 7x = 14 \\ \frac{7}{7} = \frac{14}{7} \\ x = 2 \end{array}$$

$$\begin{array}{r} 3(2) + 4y = 2 \\ 6 + 4y = 2 \\ -6 \quad -6 \\ \hline 4y = -4 \\ \frac{4}{4} = \frac{-4}{4} \\ y = -1 \end{array}$$

$(2, -1)$

$$\begin{array}{r} 8. \ 3x - y = -1 \\ + \ -3x - y = 5 \\ \hline -2y = 4 \\ \frac{-2}{-2} = \frac{4}{-2} \\ y = -2 \end{array}$$

$$\begin{array}{r} 3x + 2 = -1 \\ \frac{3}{3} = \frac{-3}{3} \\ x = -1 \end{array}$$

$(-1, -2)$

$$\begin{array}{r} 9. \ 2x - 3y = 9 \\ - \ -5x - 3y = 30 \\ \hline 7x = -21 \\ \frac{7}{7} = \frac{-21}{7} \\ x = -3 \end{array}$$

$(-3, -5)$

$$\begin{array}{r} 10. \ x - y = 4 \\ + \ 2x + y = -4 \\ \hline 3x = 0 \\ \frac{3}{3} = \frac{0}{3} \\ x = 0 \end{array}$$

$(0, -4)$

$$\begin{array}{r} 2(-3) - 3y = 9 \\ -6 - 3y = 9 \\ -3y = 15 \\ \frac{-3}{-3} = \frac{15}{-3} \rightarrow y = -5 \end{array}$$

$$\begin{array}{r} 0 - y = 4 \\ y = -4 \end{array}$$