

Use elimination to solve each system of equations.

$$1. \begin{cases} x + y = -9 \\ 5x - 2y = 32 \end{cases} \times 2$$

$$(2, -11)$$

$$\begin{array}{r} 2x + 2y = -18 \\ + \quad 5x - 2y = 32 \\ \hline 7x = 14 \\ \frac{7x}{7} = \frac{14}{7} \\ x = 2 \end{array}$$

$$\begin{array}{r} x + y = -9 \\ (2) + y = -9 \\ \quad -2 \quad -2 \\ \hline y = -11 \end{array}$$

$$2. \begin{cases} 3x + 2y = -9 \\ x - y = -13 \end{cases} \times 2$$

$$(-7, 6)$$

$$\begin{array}{r} 3x + 2y = -9 \\ + \quad 2x - 2y = -26 \\ \hline 5x = -35 \\ \frac{5x}{5} = \frac{-35}{5} \\ x = -7 \end{array}$$

$$\begin{array}{r} x - y = -13 \\ -7 - y = -13 \\ +7 \quad +7 \\ \hline -y = -6 \\ \frac{-y}{-1} = \frac{-6}{-1} \\ y = 6 \end{array}$$

$$3. \begin{cases} 2x + 5y = 3 \\ -x + 3y = -7 \end{cases} \times 2$$

$$(4, -1)$$

$$\begin{array}{r} 2x + 5y = 3 \\ + \quad -2x + 6y = -14 \\ \hline 11y = -11 \\ \frac{11y}{11} = \frac{-11}{11} \\ y = -1 \end{array}$$

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

$$4. \begin{cases} 2x + y = 3 \\ -4x - 4y = -8 \end{cases} \times 2$$

$$(1, 1)$$

$$\begin{array}{r} 4x + 2y = 6 \\ + \quad -4x - 4y = -8 \\ \hline -2y = -2 \\ \frac{-2y}{-2} = \frac{-2}{-2} \\ y = 1 \end{array}$$

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

$$5. \begin{cases} 4x - 2y = -14 \\ 3x - y = -8 \end{cases}$$

$$\underline{(-1, 5)}$$

$$\begin{array}{r} 4x - 2y = -14 \\ + \quad -6x + 2y = 16 \\ \hline -2x = 2 \\ \frac{-2}{-2} \quad \frac{2}{-2} \\ x = -1 \end{array}$$

$$\begin{array}{r} 3x - y = -8 \\ 3(-1) - y = -8 \\ -3 - y = -8 \\ +3 \quad \quad +3 \\ \hline -y = -5 \\ \frac{-y}{-1} = \frac{-5}{-1} \\ y = 5 \end{array}$$

$$7. \begin{cases} 5x + 3y = -10 \\ 3x + 5y = -6 \end{cases}$$

$$\underline{(-2, 0)}$$

$$\begin{array}{r} 15x + 9y = -30 \\ - \quad 15x + 25y = -30 \\ \hline -16y = 0 \\ \frac{-16y}{-16} = \frac{0}{-16} \\ y = 0 \end{array}$$

$$\begin{array}{r} 5x + 3y = -10 \\ 5x + 3(0) = -10 \\ 5x = -10 \\ \frac{5x}{5} = \frac{-10}{5} \\ x = -2 \end{array}$$

$$6. \begin{cases} 2x + y = 0 \\ 5x + 3y = 2 \end{cases}$$

$$\underline{(-2, 4)}$$

$$\begin{array}{r} 6x + 3y = 0 \\ - \quad 5x + 3y = 2 \\ \hline x = -2 \end{array}$$

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

$$8. \begin{cases} 2x + 3y = 14 \\ 3x - 4y = 4 \end{cases}$$

$$\underline{(4, 2)}$$

$$\begin{array}{r} 6x + 9y = 42 \\ - \quad 6x - 8y = 8 \\ \hline 17y = 34 \\ \frac{17y}{17} = \frac{34}{17} \\ y = 2 \end{array}$$

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

$$9. \begin{cases} 2x - 3y = 21 \\ 5x - 2y = 25 \end{cases} \begin{matrix} 2 \\ -3 \end{matrix}$$

$$(3, -5)$$

$$+ \begin{array}{r} 4x - 6y = 42 \\ -15x + 6y = -75 \\ \hline -11x = -33 \\ \frac{-11x}{-11} = \frac{-33}{-11} \\ x = 3 \end{array}$$

$$\begin{array}{r} 2x - 3y = 21 \\ 2(3) - 3y = 21 \\ 6 - 3y = 21 \\ -6 \quad -6 \\ \hline -3y = 15 \\ \frac{-3y}{-3} = \frac{15}{-3} \\ y = -5 \end{array}$$

$$11. \begin{cases} 3x - 6y = -6 \\ 2x + 4y = 30 \end{cases} \begin{matrix} 2 \\ 3 \end{matrix}$$

$$(7, 4)$$

$$+ \begin{array}{r} 6x - 12y = -6 \\ 6x + 12y = 90 \\ \hline 12x = 84 \\ \frac{12x}{12} = \frac{84}{12} \\ x = 7 \end{array}$$

$$\begin{array}{r} 6x + 12y = 90 \\ 6(7) + 12y = 90 \\ 42 + 12y = 90 \\ -42 \quad -42 \\ \hline 12y = 48 \\ \frac{12y}{12} = \frac{48}{12} \\ y = 4 \end{array}$$

$$10. \begin{cases} 3x + 2y = -26 \\ 4x - 5y = -4 \end{cases} \begin{matrix} 4 \\ 3 \end{matrix}$$

$$(-6, -4)$$

$$- \begin{array}{r} 12x + 8y = -104 \\ 12x - 15y = -12 \\ \hline 23y = -92 \\ \frac{23y}{23} = \frac{-92}{23} \\ y = -4 \end{array}$$

$$\begin{array}{r} 4x - 5y = -4 \\ 4x - 5(-4) = -4 \\ 4x + 20 = -4 \\ -20 \quad -20 \\ \hline 4x = -24 \\ \frac{4x}{4} = \frac{-24}{4} \\ x = -6 \end{array}$$

$$12. \begin{cases} 5x + 2y = -3 \\ 3x + 3y = 9 \end{cases} \begin{matrix} 3 \\ 2 \end{matrix}$$

$$(-3, 6)$$

$$- \begin{array}{r} 15x + 6y = -9 \\ 6x + 6y = 18 \\ \hline 9x = -27 \\ \frac{9x}{9} = \frac{-27}{9} \\ x = -3 \end{array}$$

$$\begin{array}{r} 5x + 2y = -3 \\ 5(-3) + 2y = -3 \\ -15 + 2y = -3 \\ +15 \quad +15 \\ \hline 2y = 12 \\ \frac{2y}{2} = \frac{12}{2} \\ y = 6 \end{array}$$