

3.1 Systems of Equations
Honors Algebra 2

Solve the system using the elimination method.

$$\begin{aligned} 1) \quad & 2x + 3y = 9 \\ & -3x + y = 25 \end{aligned}$$

$$\begin{array}{r} 2x + 3y = 9 \\ 9x - 3y = -75 \\ \hline 11x = -66 \end{array}$$

$$\boxed{x = -6}$$

$$\begin{aligned} 2(-6) + 3y &= 9 \\ 3y &= 21 \\ \boxed{y} &= 7 \end{aligned}$$

$$\begin{aligned} 2) \quad & (3x + 5y = 5) \cdot 3 \\ & (2x - 3y = 16) \cdot 5 \end{aligned}$$

$$\begin{array}{r} 9x + 15y = 15 \\ 10x - 15y = 80 \\ \hline 19x = 95 \end{array}$$

$$\boxed{x = 5}$$

$$\begin{aligned} 3(5) + 5y &= 5 \\ 5y &= -10 \\ \boxed{y} &= -2 \end{aligned}$$

Solve the system using the substitution method:

$$\begin{aligned} 3) \quad & y = 2x - 10 \\ & y = -4x + 8 \end{aligned}$$

$$2x - 10 = -4x + 8$$

$$6x = 18$$

$$\boxed{x = 3}$$

$$y = 2(3) - 10$$

$$\boxed{y = -4}$$

$$\begin{aligned} 4) \quad & x + 5y = 3 \\ & 2x = -10y + 9 \end{aligned}$$

$$x = -5y + 3$$

$$2(-5y + 3) = -10y + 9$$

$$-10y + 6 = -10y + 9$$

$$6 = 9$$

$$\boxed{\text{No Solution}}$$

*parallel lines