

4.2

Solve by Substitution

① $y = x - 3$

$7x - 4y = 27$

$7x - 4(x - 3) = 27$

$7x - 4x + 12 = 27$

$3x + 12 = 27$

$-12 \quad -12$

$3x = 15$

$\frac{3}{3} \quad \frac{15}{3}$

$x = 5$

$x = 5$

$y = x - 3$

$y = 5 - 3$

$y = 2$

 $(5, 2)$

② $x - y = -4$

$3x + 5y = 36$

$x - y = -4$

$+y \quad +y$

$x = y - 4$

$3(y - 4) + 5y = 36$

$3y - 12 + 5y = 36$

$8y - 12 = 36$

$+12 \quad +12$

$8y = 48$

$\frac{8}{8} \quad \frac{48}{8}$

$y = 6$

$y = 6$

$x = y - 4$

$x = 6 - 4$

$x = 2$

 $(2, 6)$

$$\textcircled{3} \quad \begin{array}{l} -2x + y = 3 \\ 8x - 4y = 10 \end{array} \quad \begin{array}{l} -2x + y = 3 \\ +2x \quad +2x \\ \hline y = 3 + 2x \end{array}$$

$$8x - 4(3 + 2x) = 10$$

$$8x - 12 - 8x = 10$$

$$-12 = 10$$

Not true

No Solution
Parr. lines

Inconsistent

$$\textcircled{4} \quad \begin{array}{l} 5x - 3y = 17 \\ 2x + 4y = -14 \end{array} \quad \begin{array}{l} 2x + 4y = -14 \\ -4y \quad -4y \\ \hline 2x = -14 - 4y \\ \frac{2x}{2} = \frac{-14 - 4y}{2} \\ x = -7 - 2y \end{array}$$

$$5(-7 - 2y) - 3y = 17$$

$$-35 - 10y - 3y = 17$$

$$-13y - 35 = 17$$

$$\frac{-13y}{-13} = \frac{52}{-13}$$

$$y = -4$$

$$y = -4$$

$$x = -7 - 2y$$

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

$$x = -7 + 8$$

$$x = 1$$

$$(1, -4)$$

(5)

$$\begin{aligned} X - by &= 4 \\ 3X - 18y &= 12 \end{aligned}$$

$$\begin{aligned} X - by &= 4 \\ +by &+by \end{aligned}$$

$$X = 4 + by$$

$$3(4 + by) - 18y = 12$$

$$12 + \cancel{18y} - \cancel{18y} = 12$$

$$12 = 12 \text{ true}$$

Infinite number of Solutions
Same Line

dependent