

Solving Systems Worksheet

Date _____ Period _____

Solve each system by substitution.

$$\begin{aligned} 1) \quad y &= x - 2 \\ y &= 3x - 14 \end{aligned}$$

$$\begin{array}{r} x - 2 = 3x - 14 \\ -x \quad -x \\ -2 = 2x - 14 \\ +14 \quad +14 \\ 12 = 2x \end{array}$$

$$x = 6$$

$$y = 6 - 2$$

$$y = 4$$

$$(6, 4)$$

$$\begin{aligned} 3) \quad 4x - 5y &= 1 \\ y &= -8x - 9 \end{aligned}$$

$$\begin{array}{r} 4x - 5(-8x - 9) = 1 \\ 4x + 40x + 45 = 1 \\ -45 \quad -45 \\ 44x = -44 \\ \frac{44x}{44} = \frac{-44}{44} \\ x = -1 \end{array}$$

$$x = -1$$

$$y = -8(-1) - 9$$

$$y = 8 - 9$$

$$y = -1$$

$$(-1, -1)$$

$$\begin{aligned} 5) \quad -x + 2y &= -3 \\ y &= -3x + 23 \end{aligned}$$

$$\begin{array}{r} -x + 2(-3x + 23) = -3 \\ -x - 6x + 46 = -3 \\ -7x + 46 = -3 \\ -46 \quad -46 \\ -7x = -49 \end{array}$$

$$-7x = -49$$

$$x = 7$$

$$y = -3(7) + 23$$

$$y = -21 + 23$$

$$y = 2$$

$$(7, 2)$$

$$\begin{aligned} 2) \quad y &= -5x - 23 \\ y &= x + 7 \end{aligned}$$

$$\begin{array}{r} -5x - 23 = x + 7 \\ +5x \quad +5x \\ -23 = 6x + 7 \\ -7 \quad -7 \\ -30 = 6x \end{array}$$

$$\frac{-30}{6} = \frac{6x}{6}$$

$$x = -5$$

$$y = -5 + 7$$

$$y = 2$$

$$(-5, 2)$$

$$\begin{aligned} 4) \quad y &= -4x + 9 \\ -4x - 3y &= -11 \end{aligned}$$

$$\begin{array}{r} -4x - 3(-4x + 9) = -11 \\ -4x + 12x - 27 = -11 \\ +27 \quad +27 \\ 8x = 16 \end{array}$$

$$\frac{8x}{8} = \frac{16}{8}$$

$$x = 2$$

$$y = -4(2) + 9$$

$$y = -8 + 9$$

$$y = 1$$

$$(2, 1)$$

$$\begin{aligned} 6) \quad y &= -7x + 9 \\ 4x - y &= 2 \end{aligned}$$

$$\begin{array}{r} 4x - (-7x + 9) = 2 \\ 4x + 7x - 9 = 2 \\ +9 \quad +9 \\ 11x = 11 \end{array}$$

$$11x = 11$$

$$x = 1$$

$$y = -7(1) + 9$$

$$y = -7 + 9$$

$$y = 2$$

$$(1, 2)$$

Solve each system by elimination.

$$\begin{aligned} 7) \quad 4x - 4y &= 4 \\ -12x - 6y &= -12 \\ 12x + 12y &= 12 \end{aligned}$$

$$6y = 0$$

$$y = 0$$

$$4x - 4(0) = 4$$

$$4x = 4$$

$$x = 1$$

$$(1, 0)$$

$$\begin{aligned} 8) \quad -6x - 3y &= 0 \\ -12x - 7y &= 8 \\ 12x + 6y &= 0 \end{aligned}$$

$$-y = 8$$

$$y = -8$$

$$(4, -8)$$

$$\begin{array}{r} -6x - 3(-8) = 0 \\ -6x + 24 = 0 \\ -24 \quad -24 \\ -6x = -24 \end{array}$$

$$\frac{-6x}{-6} = \frac{-24}{-6}$$

$$x = 4$$

$$\begin{aligned} 9) \quad (x + y = 11) - 2 \\ 2x - 4y &= 4 \\ -2x - 2y &= -22 \end{aligned}$$

$$-6y = -18$$

$$-6y = -18$$

$$y = 3$$

$$x + 3 = 11$$

$$-3 \quad -3$$

$$x = 8$$

$$(8, 3)$$

$$\begin{aligned} 10) \quad (-7x - 3y = 13) - 2 \\ 10x - 6y &= 2 \\ +14x + 6y &= -26 \end{aligned}$$

$$24x = -24$$

$$x = -1$$

$$(-1, -2)$$

$$-7(-1) - 3y = 13$$

$$7 - 3y = 13$$

$$-7 \quad -7$$

$$-3y = 6$$

$$\frac{-3y}{-3} = \frac{6}{-3}$$

$$y = -2$$