

Solving Systems of Equations by Elimination

Date _____

Period _____

Solve each system by elimination.

$$\begin{array}{r}
 1) \quad -4x - 2y = -12 \\
 \quad \quad 4x + 8y = -24 \\
 \hline
 \quad \quad 6y = -36 \\
 \quad \quad y = -6 \\
 \quad \quad \quad (6, -6)
 \end{array}$$

$$\begin{array}{r}
 2) \quad 4x + 8y = 20 \\
 \quad \quad -4x + 2y = -30 \\
 \hline
 \quad \quad 10y = -10 \\
 \quad \quad y = -1 \\
 \quad \quad \quad (7, -1)
 \end{array}$$

$$\begin{array}{r}
 3) \quad x - y = 11 \\
 \quad \quad 2x + y = 19 \\
 \hline
 \quad \quad 3x = 30 \\
 \quad \quad x = 10 \\
 \quad \quad \quad (10, -1)
 \end{array}$$

$$\begin{array}{r}
 4) \quad -6x + 5y = 1 \\
 \quad \quad 6x + 4y = -10 \\
 \hline
 \quad \quad 9y = -9 \\
 \quad \quad y = -1 \\
 \quad \quad \quad (-1, -1)
 \end{array}$$

$$\begin{array}{r}
 5) \quad -2x - 9y = -25 \\
 -1(-4x - 9y = -23) \\
 \hline
 \quad \quad 4x + 9y = 23 \\
 \quad \quad \quad 2x = -2 \\
 \quad \quad \quad x = -1 \\
 \quad \quad \quad (-1, 3)
 \end{array}$$

$$\begin{array}{r}
 6) \quad 8x + y = -16 \\
 -1(-3x + y = -5) \\
 \hline
 \quad \quad 3x - y = 5 \\
 \quad \quad \quad 11x = -11 \\
 \quad \quad \quad x = -1 \\
 \quad \quad \quad (-1, -8)
 \end{array}$$

$$\begin{array}{r}
 7) \quad -6x + 6y = 6 \\
 -1(-6x + 3y = -12) \\
 \hline
 \quad \quad 6x - 3y = 12 \\
 \quad \quad \quad 3y = 18 \\
 \quad \quad \quad y = 6 \\
 \quad \quad \quad (5, 6)
 \end{array}$$

$$\begin{array}{r}
 8) \quad (7x + 2y = 24) - 1 \\
 \quad \quad 8x + 2y = 30 \\
 \quad \quad -7x - 2y = -24 \\
 \hline
 \quad \quad x = 6 \\
 \quad \quad \quad (6, -9)
 \end{array}$$

$$\begin{array}{r}
 9) \quad (5x + y = 9) \cdot 2 \\
 \quad \quad 10x - 7y = -18 \\
 \hline
 \quad \quad -10x - 2y = -18 \\
 \quad \quad \quad -9y = -36 \\
 \quad \quad \quad y = 4 \\
 \quad \quad \quad (1, 4)
 \end{array}$$

$$\begin{array}{r}
 10) \quad -4x + 9y = 9 \\
 \quad \quad (x - 3y = -6) \cdot 3 \\
 \hline
 \quad \quad 3x - 9y = -18 \\
 \quad \quad \quad -x = -9 \\
 \quad \quad \quad x = 9 \\
 \quad \quad \quad (9, 5)
 \end{array}$$

$$\begin{array}{r}
 11) \quad (-3x + 7y = -16) \cdot 3 \\
 \quad \quad -9x + 5y = 16 \\
 \quad \quad 9x - 21y = 48 \\
 \hline
 \quad \quad -16y = 64 \\
 \quad \quad y = -4 \\
 \quad \quad \quad (-4, -4)
 \end{array}$$

$$\begin{array}{r}
 12) \quad (-7x + y = -19) \cdot 3 \\
 \quad \quad -2x + 3y = -19 \\
 \quad \quad 21x - 3y = 57 \\
 \hline
 \quad \quad 19x = 38 \\
 \quad \quad x = 2 \\
 \quad \quad \quad (2, -5)
 \end{array}$$

$$13) 16x - 10y = 10$$

$$2(-8x - 6y = 6)$$

$$-16x - 12y = 12$$

$$-22y = 22$$

$$y = -1$$

$$-8x - 6(-1) = 6$$

$$-8x + 6 = 6$$

$$-8x = 0$$

$$x = 0$$

$$(0, -1)$$

$$15) -4x - 15y = -17$$

$$-4(-x + 5y = -13)$$

$$4x - 20y = 52$$

$$-35y = 35$$

$$y = -1$$

$$-x + 5(-1) = -13$$

$$-x - 5 = -13$$

$$-x = -8$$

$$x = 8$$

$$(8, -1)$$

$$17) \begin{cases} -7x - 8y = 9 \\ -4x + 9y = -22 \end{cases}$$

$$-28x - 32y = 36$$

$$28x - 63y = 154$$

$$-95y = 190$$

$$y = -2$$

$$-4x + 9(-2) = -22$$

$$-4x + 18 = -22$$

$$-4x = -4$$

$$x = 1$$

$$(1, -2)$$

$$19) \begin{cases} -4x - 2y = 14 \\ -10x + 7y = -25 \end{cases}$$

$$20x + 10y = -70$$

$$-20x + 14y = -50$$

$$24y = -120$$

$$y = -5$$

$$-4x - 2(-5) = 14$$

$$-4x + 10 = 14$$

$$-4x = 4$$

$$x = -1$$

$$(1, -5)$$

$$21) \begin{cases} 5x + 4y = -14 \\ 3x + 6y = 6 \end{cases}$$

$$15x + 12y = -42$$

$$-6x - 12y = -12$$

$$9x = -54$$

$$x = -6$$

$$3(-6) + 6y = 6$$

$$-18 + 6y = 6$$

$$6y = 24$$

$$y = 4$$

$$(-6, 4)$$

$$23) -14 = -20y - 7x$$

$$10y + 4 = 2x$$

$$-14 = -20y - 7x$$

$$(4 = -10y + 2x) \cdot 2$$

$$-14 = -20y - 7x$$

$$-8 = 20y - 4x$$

$$-22 = -11x$$

$$2 = x$$

$$10y + 4 = 2(2)$$

$$10y + 4 = 4$$

$$10y = 0$$

$$y = 0$$

$$(2, 0)$$

$$14) 8x + 14y = 4$$

$$2(-6x - 7y = -10)$$

$$-12x - 14y = -20$$

$$-4x = -16$$

$$x = 4$$

$$-6(4) - 7y = -10$$

$$-24 - 7y = -10$$

$$-7y = 14$$

$$y = -2$$

$$(4, -2)$$

$$16) \begin{cases} x - 7y = 14 \\ -4x - 14y = 28 \end{cases}$$

$$-4x - 14y = 28$$

$$4x + 28y = -56$$

$$14y = -28$$

$$y = -2$$

$$-x - 7(-2) = 14$$

$$-x + 14 = 14$$

$$-x = 0$$

$$x = 0$$

$$(0, -2)$$

$$18) \begin{cases} 5x + 4y = -30 \\ 3x - 9y = -18 \end{cases}$$

$$45x + 36y = -270$$

$$12x - 36y = -72$$

$$3(-6) - 9y = -18$$

$$-18 - 9y = -18$$

$$-9y = 0$$

$$y = 0$$

$$57x = -342$$

$$x = -6$$

$$(-6, 0)$$

$$20) \begin{cases} 3x - 2y = 2 \\ 5x - 5y = 10 \end{cases}$$

$$-15x + 10y = -10$$

$$10x - 10y = 20$$

$$-5x = 10$$

$$x = -2$$

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

$$-6 - 2y = 2$$

$$-2y = 8$$

$$y = -4$$

$$(-2, -4)$$

$$* 22) \begin{cases} 2x + 8y = 6 \\ -5x - 20y = -15 \end{cases}$$

$$10x + 40y = 30$$

$$-10x - 40y = -30$$

$$0 = 0$$

Infinite Solns

$$24) 3 + 2x - y = 0$$

$$-3 - 7y = 10x$$

$$(2x - y = -3)^5$$

$$-10x - 7y = 3$$

$$10x - 5y = -15$$

$$-10x - 7y = 3$$

$$-12y = -12$$

$$y = 1$$

$$3 + 2x - 1 = 0$$

$$2x + 2 = 0$$

$$2x = -2$$

$$x = -1$$

$$(-1, 1)$$