

Name _____

Date _____

Period _____

Elimination

1.) $(4a + b = 2)$

$4a + 3b = 10$

$-4a - b = -2$

$4a + 3b = 10$

$$\frac{2b = 8}{2} = \frac{8}{2}$$

$b = 4$

$(-\frac{1}{2}, 4)$

$4a + b = 2$

$4a + 4 = 2$
 $-4 - 4$

$4a = -2$
 $\frac{4}{4} \quad \frac{-2}{4}$

$a = -\frac{1}{2}$

2.) $4x + y = 23$

$3x - y = 12$

$7x = 35$

$\frac{7}{7} = \frac{35}{7}$

$x = 5$

$(5, 3)$

$4x + y = 23$

$4(5) + y = 23$

$20 + y = 23$

$-20 \quad -20$

$y = 3$

$3x - y = 12$

$3(5) - y = 12$

$15 - y = 12$

$-15 \quad -15$

$-y = -3$

$\frac{-y}{-1} = \frac{-3}{-1}$

$y = 3$

3.) ~~m + 6n = -8~~

$$m + 6n = -8$$

$$m + 6n = -8$$

$$m = -2n + 8$$

$$\rightarrow (m - 2n = 8)$$

$$\begin{array}{r} -2n \quad -2n \\ \hline m - 2n = 8 \end{array}$$

$$\begin{array}{r} m + 6n = -8 \\ -m + 2n = -8 \\ \hline \end{array}$$

$$m = -2n + 8$$

$$\frac{8n = -16}{8} \quad \frac{-16}{8}$$

$$n = -2$$

$$m = 2(-2) + 8$$

$$m = -4 + 8$$

$$m = 4$$

$$\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ -2 \end{pmatrix} \checkmark$$

$$m + 6n = -8$$

$$m = 2n + 8$$

$$x + 6y = -8$$

$$x = 2y + 8$$

4.) $3x + 2y = -9$

2. $x - y = -13$

$$3x + 2y = -9$$

$$3x + 2y = -9$$

$$3(-7) + 2y = -9$$

$$2x - 2y = -26$$

$$\begin{array}{r} -21 + 2y = -9 \\ +21 \quad +21 \end{array}$$

$$\frac{5x = -35}{5}$$

$$\frac{2y = 12}{2}$$

$$x = -7$$

$$(-7, 6)$$

$$y = 6$$

$$5.) \begin{cases} 3x + 2y = -9 \\ 5x - 3y = 4 \end{cases}$$

$$2(5x - 3y = 4)$$

$$9x + 6y = -27$$

$$10x - 6y = 8$$

$$\frac{19x = -19}{19}$$

$$x = -1$$

$$(-1, -3)$$

$$3x + 2y = -9$$

$$3(-1) + 2y = -9$$

$$\begin{array}{r} -3 + 2y = -9 \\ +3 \quad +3 \hline \end{array}$$

$$\frac{2y = -6}{2}$$

$$y = -3$$

$$6.) \begin{cases} 3x + 4y = 27 \\ 5x - 3y = 16 \end{cases}$$

$$-3(5x - 3y = 16)$$

$$\begin{array}{r} 15x + 20y = 135 \\ -15x + 9y = -48 \hline \end{array}$$

$$\frac{29y = 87}{29}$$

$$y = 3$$

$$(5, 3)$$

$$3x + 4y = 27$$

$$3x + 4(3) = 27$$

$$\begin{array}{r} 3x + 12 = 27 \\ -12 \quad -12 \hline \end{array}$$

$$\frac{3x = 15}{3}$$

$$x = 5$$

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

$$-5(3x + 3y = 9)$$

$$\begin{array}{r} 15x + 6y = -9 \\ -15x - 15y = -45 \\ \hline \end{array}$$

$$\begin{array}{r} -9y = -54 \\ \hline -9 \quad -9 \end{array}$$

$$y = 6$$

$$(-3, 6)$$

$$3x + 3y = 9$$

$$3x + 3(6) = 9$$

$$3x + 18 = 9$$

$$-18 = -18$$

$$\begin{array}{r} 3x = -9 \\ \hline 3 \quad 3 \end{array}$$

$$x = -3$$

$$10) \begin{cases} 3x - 6y = -3 \\ 2x + 4y = 30 \end{cases}$$

$$-3(2x + 4y = 30)$$

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

$$\begin{array}{r} -24y = -96 \\ \hline -24 \quad -24 \end{array}$$

$$y = 4$$

$$(7, 4)$$

$$3x - 6y = -3$$

$$3x - 6(4) = -3$$

$$3x - 24 = -3$$

$$+24 = +24$$

$$\begin{array}{r} 3x = 21 \\ \hline 3 \quad 3 \end{array}$$

$$x = 7$$

$$7.) \begin{cases} 4x + 3y = -2 \end{cases}$$

$$4x + 3y = 3$$

$$\begin{array}{r} -4x + 3y = 2 \\ 4x + 3y = 3 \end{array}$$

$$\hline 0 = 5$$

$$0 = 5$$

No Solution

$$8.) \begin{cases} 3(7x + 2y = 2) \\ 2(2x - 3y = -28) \end{cases}$$

$$21x + 6y = 6$$

$$4x - 6y = -56$$

$$\hline \frac{25x = -50}{25}$$

$$x = -2$$

$(-2, 8)$

$$7x + 2y = 2$$

$$7(-2) + 2y = 2$$

$$-14 + 2y = 2$$

$$+14 \qquad +14$$

$$\hline \frac{2y = 16}{2}$$

$$y = 8$$