

Homework 2 - Elimination Method

Solve each system by elimination.

$$1. \begin{cases} 3x - 10y = -25 \text{ (mult. 4)} \\ 4x + 40y = 20 \end{cases}$$

$$\begin{cases} 12x - 40y = -100 \\ + \{ 4x + 40y = 20 \end{cases}$$

$$16x = -80$$

$$x = -5$$

$$4(-5) + 40y = 20$$

$$-20 + 40y = 20$$

$$40y = 40$$

$$y = 1$$

$(-5, 1)$

$$4. \begin{cases} 24x + 2y = 52 \\ 6x + \frac{1}{2}y = 13 \text{ (mult. -4)} \end{cases}$$

$$\begin{cases} 24x + 2y = 52 \\ + \{ -24x - 2y = -52 \end{cases}$$

$$0 = 0$$

All pts. on the line

$\{(x,y) \mid 24x + 2y = 52\}$

$$2. \begin{cases} -7x + 21y = 32 \\ x - 3y - 20 = 0 \end{cases} \text{ must rewrite}$$

$$\begin{cases} -7x + 21y = 32 \\ + \{ x - 3y = 20 \text{ (mult. 7)} \end{cases}$$

$$\begin{cases} -7x + 21y = 32 \\ + \{ 7x - 21y = 140 \end{cases}$$

$$0 = 172$$

\emptyset

No solution

$$5. \begin{cases} 88x - 5y = 39 \\ -8x + 3y = -1 \text{ (mult. 11)} \end{cases}$$

$$\begin{cases} 88x - 5y = 39 \\ + \{ -88x + 33y = -11 \end{cases}$$

$$28y = 28$$

$$y = 1$$

$$88x - 5(1) = 39$$

$$88x = 44$$

$$x = \frac{1}{2}$$

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

$$3. \begin{cases} x - 8y = 18 \text{ (mult. 2)} \\ -16x + 16y = -8 \end{cases}$$

$$\begin{cases} 2x - 16y = 36 \\ + \{ -16x + 16y = -8 \end{cases}$$

$$-14x = 28$$

$$x = -2$$

$$(-2) - 8y = 18$$

$$-8y = 20$$

$$y = -\frac{5}{2}$$

$(-2, -\frac{5}{2})$

$$6. \begin{cases} 2x + 4y = 8 \\ 5x = -y - 7 \text{ (mult. -1)} \end{cases} \text{ must rewrite}$$

$$\begin{cases} 2x + 4y = 8 \\ + \{ 5x + y = -7 \text{ (mult. -2)} \end{cases}$$

$$\begin{cases} 2x + 4y = 8 \\ + \{ -20x - 4y = 28 \end{cases}$$

$$-18x = 36$$

$$x = -2$$

$$2(-2) + 4y = 8$$

$$-4 + 4y = 8$$

$$4y = 12$$

$$y = 3$$

$(-2, 3)$

Solve - Choose Any Method!

Solve each system by using substitution, elimination, or by graphing.

1. $\begin{cases} 7x + 3y = 10 \\ y = -7x - 2 \end{cases}$

$(-\frac{8}{7}, 6)$

2. $\begin{cases} -y = 4x \\ 12x + 3y = -5 \end{cases}$

no solution

\emptyset

3. $\begin{cases} 5x - 3y = 12 \\ 2x + 1.5y = 3 \end{cases}$

$(2, -\frac{2}{3})$

4. $\begin{cases} y = 2x \\ y = x - 1 \end{cases}$

$(-1, -2)$

5. $\begin{cases} 3x - 2y = 7 \\ 5x + 7y = 84 \end{cases}$

$(7, 7)$

6. $\begin{cases} x + y = 12 \\ 5x + 6y = 60 \end{cases}$

$(12, 0)$

7. $\begin{cases} 9x - 3y = 3 \\ -3x + y + 1 = 0 \end{cases}$

all pts. on the line
 $\{(x, y) \mid 9x - 3y = 3\}$

8. $\begin{cases} -x + 12y = 16 \\ 4x - 3y = 26 \end{cases}$

$(8, 2)$