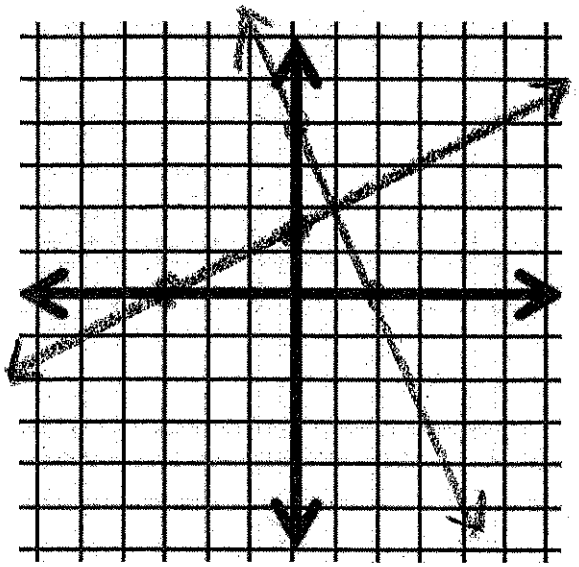
ng Systems
g
Equations

raphing

Example 1:

Solve the linear system by graphing. $\begin{cases} -x + 2y = 3 \\ 2x + y = 4 \end{cases}$



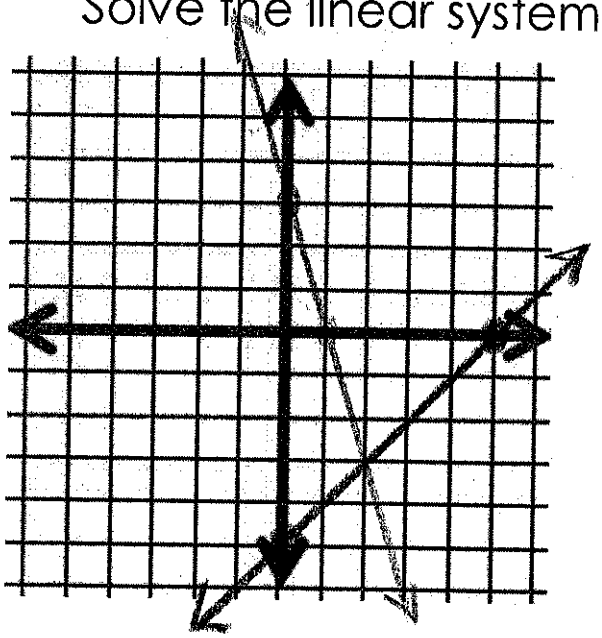
$(-3, 0)$ $(0, \frac{3}{2})$

$(2, 0)$ $(0, 4)$

$(1, 2)$

Example 2:

Solve the linear system by graphing. $\begin{cases} x - y = 5 \\ 3x + y = 3 \end{cases}$



$(5, 0)$ $(0, -5)$

$(1, 0)$ $(0, 3)$

$(2, -3)$

Graphing

Substitution

Elimination

Example 3:

Solve the linear system using the substitution method.

$$\begin{cases} y = (2x + 5) \\ 3x + (y) = 10 \end{cases}$$

$3x + (2x + 5) = 10$

$5x + 5 = 10$

$-5 \quad -5$

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

$x = 1$

$y = 2x + 5$

$y = 2(1) + 5$

$y = 2 + 5$

$y = 7$

$3x + y = 10$

$3(1) + (7) = 10$

$3 + 7 = 10$

$10 = 10$ ✓

$(1, 7)$

Example 4:

Solve the linear system using the substitution method.

$x - y = 3$

$+y \quad +y$

$x = (y + 3)$

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

$y + 3 + 2y = -6$

$3y + 3 = -6$

$-3 \quad -3$

$\frac{3y}{3} = \frac{-9}{3}$

$y = -3$

$x - y = 3$

$x - (-3) = 3$

$x + 3 = 3$

$-3 \quad -3$

$x = 0$

$x + 2y = -6$

$(0) + 2(-3) = -6$

$-6 = -6$ ✓

$(0, -3)$

Substitution

Example 5:

Solve the linear system using the elimination method.

$$\begin{cases} 4x - 3y = 5 \\ +\ -2x + 3y = -7 \end{cases}$$

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

$$x = -1$$

$$4x - 3y = 5$$
$$4(-1) - 3y = 5$$
$$-4 - 3y = 5$$
$$+4 \quad +4$$
$$-3y = 9$$
$$y = -3$$

$$-2x + 3y = -7$$
$$-2(-1) + 3(-3) = -7$$
$$2 - 9 = -7$$
$$-7 \stackrel{\checkmark}{=} -7$$

$(-1, -3)$

Example 6:

Solve the linear system using the elimination method.

$$\begin{cases} 7x - 2y = 5 \\ -7x + 3y = -4 \end{cases}$$

$$y = 1$$

$$7x - 2y = 5$$
$$7x - 2(1) = 5$$
$$7x - 2 = 5$$
$$+2 \quad +2$$
$$7x = 7$$
$$x = 1$$

$$7x - 3y = 4$$
$$7(1) - 3(1) = 4$$
$$7 - 3 = 4$$
$$4 \stackrel{\checkmark}{=} 4$$

$(1, 1)$

Example 7:

Solve the linear system using the elimination method.

$$\begin{cases} 4x + 3y = 8 \\ -4(x - 2y = 13) \end{cases}$$

$$4x + 3y = 8$$
$$-4x + 8y = -52$$

$$\frac{11y}{11} = \frac{-44}{11}$$

$$y = -4$$

$$4x + 3y = 8$$
$$4(5) + 3(-4) = 8$$
$$20 - 12 = 8$$
$$8 \stackrel{\checkmark}{=} 8$$

$$x - 2y = 13$$
$$x - 2(-4) = 13$$
$$x + 8 = 13$$
$$-8 \quad -8$$
$$x = 5$$

$(5, -4)$