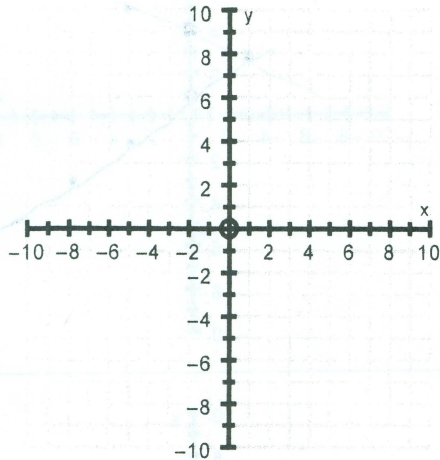


Solving Systems of Equations – Substitution Method

Solve the following system by graphing:

$$y = x - 1$$

$$y = 6x - 6$$



Graphing is not always a practical method when solving systems of equations. Note that both equations are rearranged for the y -variable. Set the two equations equal to each other and solve for x . What happens? Why does this work? How will you find the value of y ?

$$x - 1 = 6x - 6$$

$$-1 + 6 = 5x$$

$$+5 = 5x$$

$$\boxed{+1 = x}$$

$$y = x - 1$$

$$y = 1 - 1$$

$$\boxed{y = 0}$$

Solve each of the following systems of equations without graphing:

(a) $y = 8x + 17$
 $y = -2x - 13$

$$8x + 17 = -2x - 13$$

$$10x = -30$$

$$\boxed{x = -3}$$

$$\boxed{y = -7}$$

(b) $y = -5x + 19$
 $y = -2x + 10$

$$-5x + 19 = -2x + 10$$

$$-3x = -9$$

$$\boxed{x = 3}$$

$$\boxed{y = 4}$$

(c) $y = -6x + 22$
 $y = 4x - 8$

$$-6x + 22 = 4x - 8$$

$$30 = 10x$$

$$\boxed{x = 3}$$

$$\boxed{y = 4}$$

(d) $y = -2x - 1$
 $y = 5x + 6$

$$-2x - 1 = 5x + 6$$

$$-7 = 7x$$

$$\boxed{x = -1}$$

$$\boxed{y = 1}$$

(e) $y = 8x - 1$
 $y = 4x + 3$

$$8x - 1 = 4x + 3$$

$$4x = 4$$

$$\boxed{x = 1}$$

$$\boxed{y = 7}$$

(f) $y = 4x - 18$
 $-6x + 3y = -18$

$$y = 2x - 6$$

$$4x - 18 = 2x - 6$$

$$2x = 12$$

$$\boxed{x = 6}$$

$$\boxed{y = 6}$$

(g) $-8x + 6y = -14$
 $y = -8x - 21$

$$-8x + 6(-8x - 21) = -14$$

$$-8x - 48x - 126 = -14$$

$$-56x = 112$$

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

$$\boxed{y = -5}$$

(h) $-3x + 2y = -12$
 $y = 2x - 8$

$$-3x + 2(2x - 8) = -12$$

$$-3x + 4x - 16 = -12$$

$$\boxed{x = 4}$$

$$\boxed{y = 0}$$

(i) $y = -3x + 17$
 $4x + 2y = 24$

$$4x + 2(-3x + 17) = 24$$

$$4x - 6x + 34 = 24$$

$$-2x = -10$$

$$\boxed{x = 5}$$

$$\boxed{y = 2}$$