Q.1 Solve the following pair of equations in x and y graphically.

$$x + y = 0, \qquad 2x - y + 3 = 0.$$

Solution: $\qquad x + y = 0 \implies y = -x$.

When $x = 0$ then $y = 0$.
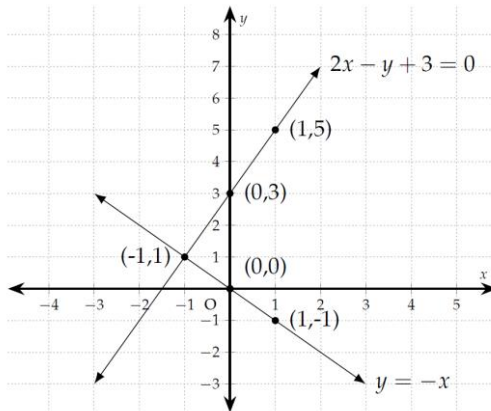
When $x = 1$ then $y = -1$.

So the points $(0,0)$ and $(1,-1)$ lies on the graph of $x + y = 0$.

Take $\qquad 2x - y + 3 = 0 \implies y = 2x + 3$.

When $x = 0$ then $y = 3$.

When $x = 1$ then $y = 5$.

So the points $(0,3)$ and $(1,5)$ lies on the graph of $2x - y + 3 = 0$.

From graph, we see $(-1,1)$ is the common point in both equations.

Q.2 Solve the following pair of equations in x and y graphically.
$$x+y+1=0, \quad x-2y=-1.$$

Solution: $\quad x+y+1=0$

$\Rightarrow \quad y=-x-1.$

When $x=-1$ then $y=0$.

When $x=0$ then $y=-1$.

So the points $(-1,0)$ and $(0,-1)$ lies on the graph of $x+y+1=0$.

Take $\qquad x-2y=-1$
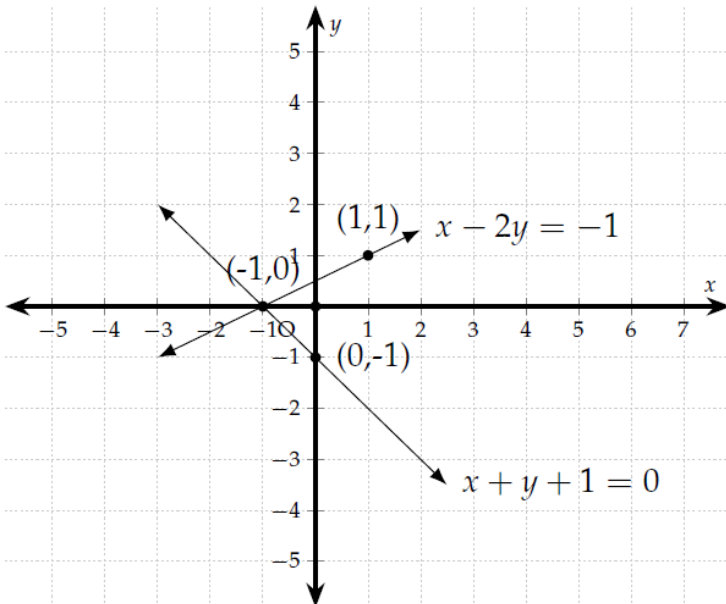
$\Rightarrow \quad y=\dfrac{1}{2}x+\dfrac{1}{2}.$

When $x=-1$ then $y=0$.

When $x=1$ then $y=1$.

So the points $(-1,0)$ and $(1,1)$ lies on the graph of $x-2y=-1$.

From graph, we see $(-1,0)$ is the common point in both equations.

Q. 3 Solve the following pair of equations in x and y graphically.
$$2x + y = 0, \qquad x + 2y = 2.$$

Solution: $\qquad 2x + y = 0$

$\qquad \qquad \Rightarrow \quad y = -2x.$

When $x = 0$ then $y = 0$.

When $x = 1$ then $y = -2$.

So the points $(0,0)$ and $(1,-2)$ lies on the graph of $2x + y = 0$.

Take $\qquad \qquad x + 2y = 2 \implies 2y = 2 - x \implies y = 1 - \dfrac{1}{2}x.$

When $x = 0$ then $y = 1$.

When $x = 2$ then $y = 0$.

So the points $(0,1)$ and $(2,0)$ lies on the graph of $x + 2y = 2$.
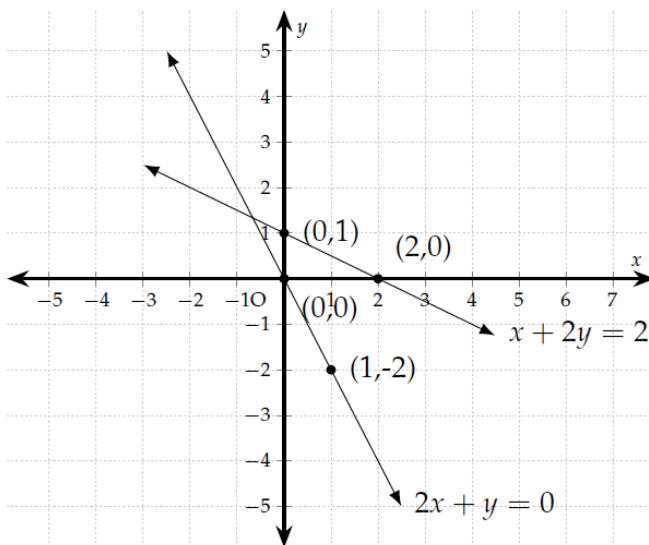
From graph, we see $(-0.7, 1.3)$ is the common point in both equations.

Q. 4 Solve the following pair of equations in x and y graphically.
$$x+y-1=0, \quad x-y+1=0.$$

Solution: $x+y-1=0$

         $\Rightarrow \ y=-x+1.$

When $x=-1$ then $y=2$.

When $x=0$ then $y=1$.

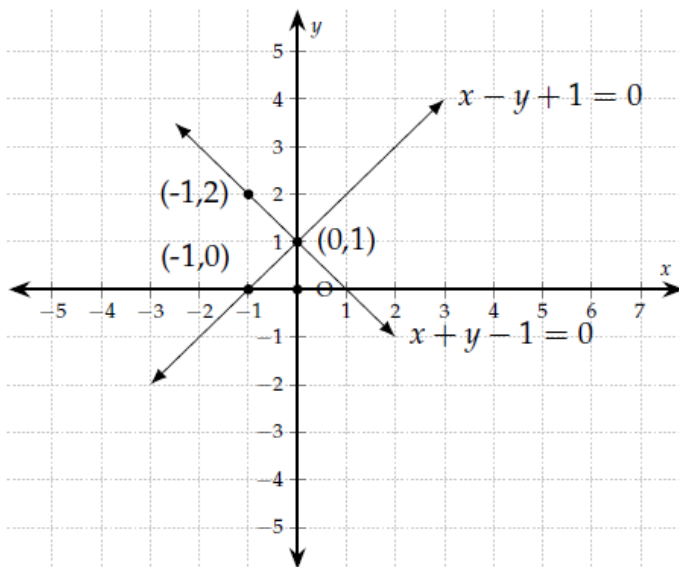So the points $(-1,2)$ and $(0,1)$ lies on the graph of $x+y-1=0$.

Take $x-y+1=0$

         $\Rightarrow \ y=x+1.$

When $x=-1$ then $y=0$.

When $x=0$ then $y=1$.

So the points $(-1,0)$ and $(0,1)$ lies on the graph of $x-y+1=0$.

From graph, we see $(0,1)$ is the common point in both equations.

Q.5 Solve the following pair of equations in x and y graphically.
$$2x + y - 1 = 0, \qquad x = -y.$$

Solution: $\quad 2x + y - 1 = 0 \;\Rightarrow\; y = 1 - 2x.$
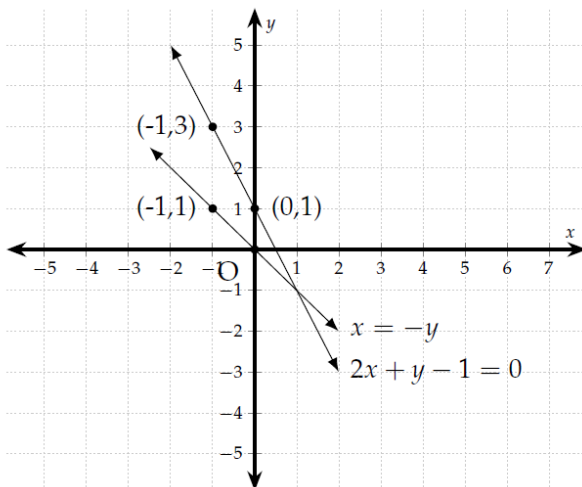
When $x = -1$ then $y = 3$.

When $x = 0$ then $y = 1$.

So the points $(-1, 3)$ and $(0, 1)$ lies on the graph of $2x + y - 1 = 0$.

Take $\qquad\qquad y = -x$

When $x = -1$ then $y = 1$.

When $x = 0$ then $y = 0$.

So the points $(-1, 1)$ and $(0, 0)$ lies on the graph of $x = -y$.

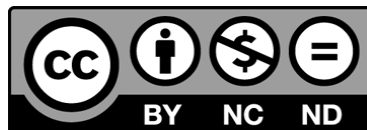From graph, we see $(1, -1)$ is the common point in both equations.

Exercise 8.3 (Solutions): Ver: 1.0
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