NCERT solutions for class 9 Maths Linear Equations in Two Variables Ex 4.3

Q1. Draw the graph of each of the following linear equations in two variables:

(i) $x+y=4$

(ii) $x-y=2$

(iii) $y=3x$

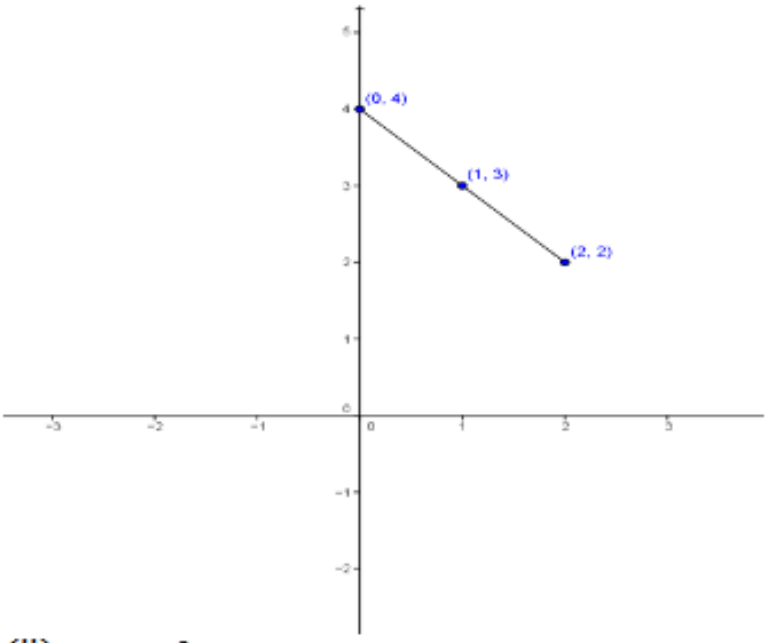
(iv) $3=2x+y$

(i) $x+y=4$

Ans: We can conclude that $x=0, y=4; x=1, y=3$ and $x=2, y=2$ are the solutions of the linear equation $x+y=4$.

We can optionally consider the given below table for plotting the linear equation $x+y=4$ on the graph.

X	0	1	2
y	4	3	2

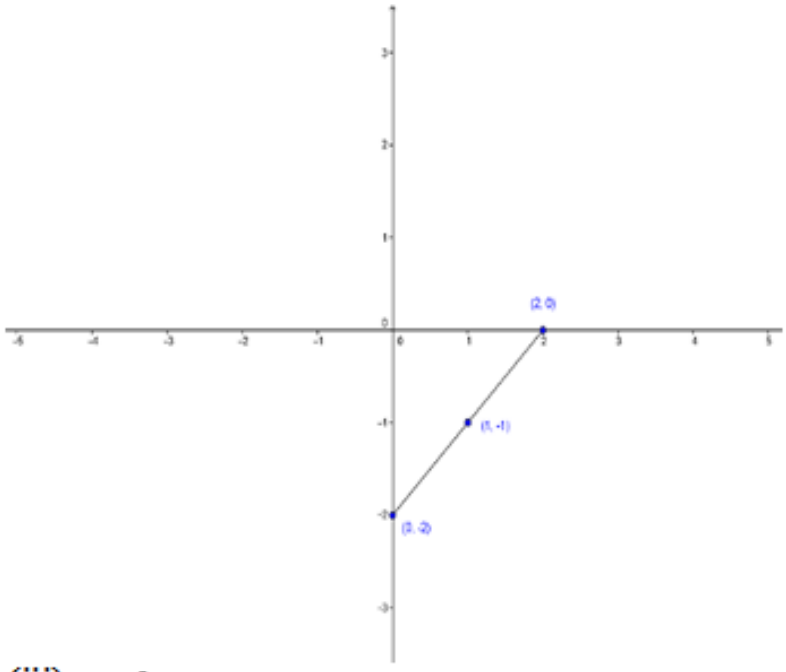


(ii) $x-y=2$

We can conclude that $x=0, y=-2; x=1, y=-1$ and $x=2, y=0$ are the solutions of the linear equation $x-y=2$.

We can optionally consider the given below table for plotting the linear equation $x-y=2$ on the graph.

X	0	1	2
y	-2	-1	0

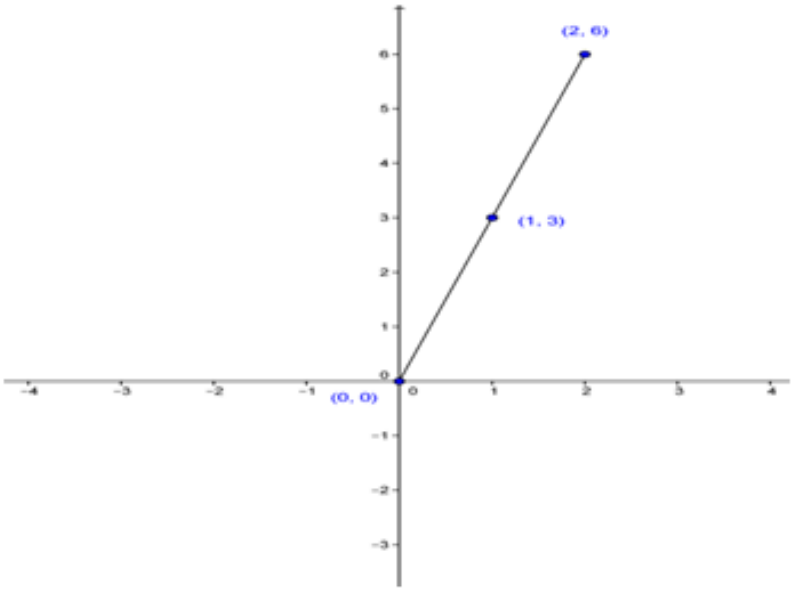


(iii) $y = 3x$

We can conclude that $x = 0, y = 0; x = 1, y = 3$ and $x = 2, y = 6$ are the solutions of the linear equation $y = 3x$.

We can optionally consider the given below table for plotting the linear equation $y = 3x$ on the graph.

X	0	1	2
y	0	3	6

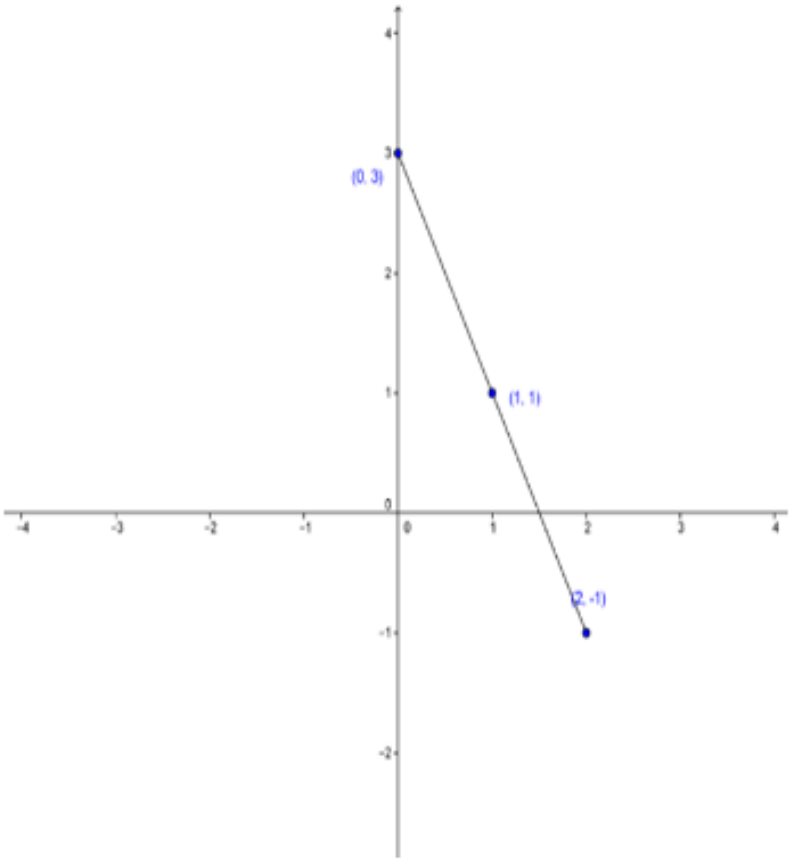


(iv) $3 = 2x + y$

We can conclude that $x = 0, y = 3; x = 1, y = 1$ and $x = 2, y = -1$ are the solutions of the linear equation $3 = 2x + y$.

We can optionally consider the given below table for plotting the linear equation $3 = 2x + y$ on the graph.

X	0	1	2
y	3	1	-1



Q2. Give the equations of two lines passing through (2, 14). How many more such lines are there, and why?

Ans: We need to give the two equations of the line that passes through the point $(2,14)$.

We know that infinite number of lines can pass through any given point.

We can consider the linear equations $7x-y=0$ and $2x+y=18$.

We can conclude that on putting the values $x=2$ and $y=14$ in the above mentioned linear equations, we get LHS=RHS.

Therefore, we can conclude that the line of the linear equations $7x-y=0$ and $28x-4y=0$ will pass through the point $(2,14)$.

Q3. If the point (3, 4) lies on the graph of the equation $3y=ax+7$, find the value of a.

Ans: We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

We can conclude that $(3,4)$ is a solution of the linear equation $3y=ax+7$.

We need to substitute $x=3$ and $y=4$ in the linear equation $3y=ax+7$, to get

$3(4)=a(3)+7 \Rightarrow 12=3a+7$

$$\Rightarrow 3a = 12 - 7 \quad \Rightarrow 3a = 5 \Rightarrow a = \frac{5}{3}$$

Therefore, we can conclude that the value of a will be $\frac{5}{3}$.

Q4. The taxi fare in a city is as follows:
For the first kilometre, the fare is Rs 8 and for the subsequent distance it is Rs 5 per km. Taking the distance covered as x km and total fare as Rs y, write a linear equation for this information, and draw its graph.

Ans: From the given situation, we can conclude that the distance covered at the rate Rs 5 per km will be $(x-1)$, as first kilometer is charged at Rs 8 per km.

We can conclude that the linear equation for the given situation will be:

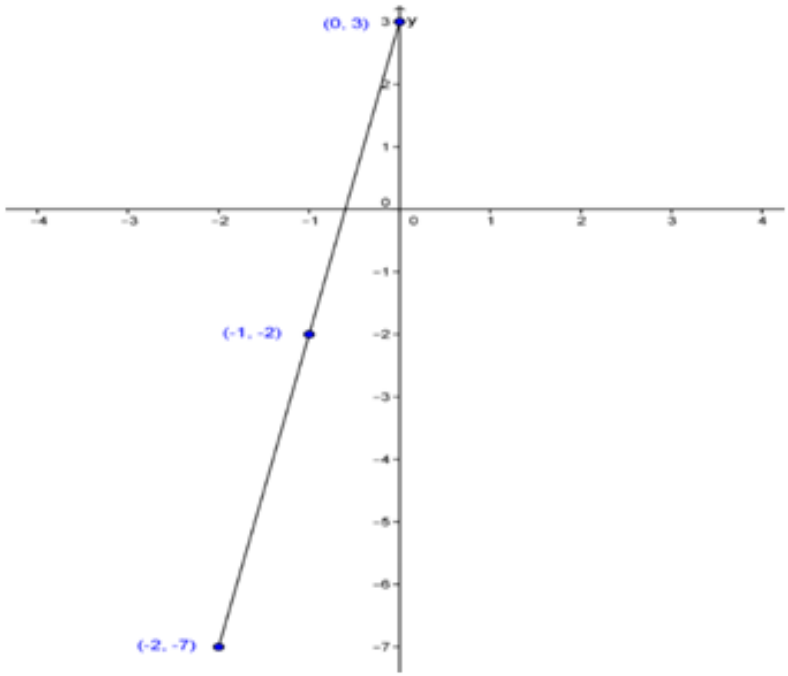
$$8+5(x-1) = y \Rightarrow 8+5x-5 = y \Rightarrow 3+5x = y.$$

We need to draw the graph of the linear equation $3+5x = y$.

We can conclude that $x = 0, y = 3; x = 1, y = 1$ and $x = 2, y = -1$ are the solutions of the linear equation $3+5x = y$.

We can optionally consider the given below table for plotting the linear equation $3+5x = y$ on the graph.

X	0	-1	-2
y	3	-2	-7



Q5. From the choices given below, choose the equation whose graphs are given in the given figures.

For the first figure

(i) $y = x$

(ii) $x + y = 0$

(iii) $y = 2x$

(iv) $2 + 3y = 7x$

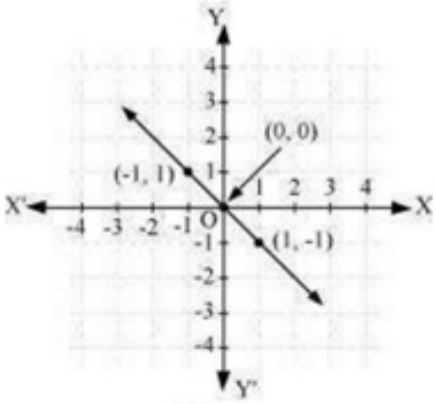
For the second figure

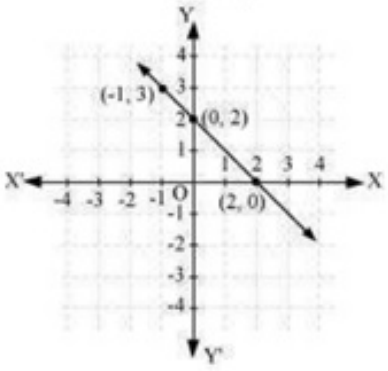
(i) $y = x + 2$

(ii) $y = x - 2$

(iii) $y = -x + 2$

(iv) $x + 2y = 6$





Ans: For First figure

(i) $y = x$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

Let us check whether
$x=-1, y=1; x=0, y=0$ and $x=1, y=-1$ are the solutions of the linear equation $y=x$.

For $x=-1, y=1$, we get

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

Therefore, the given graph does not belong to the linear equation $y=x$.

(ii) $x+y=0$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=1$, we get

$-1+1=0 \quad \Rightarrow \quad 0=0.$

For $x=0, y=0$, we get

$0+0=0 \quad \Rightarrow \quad 0=0.$

For $x=1, y=-1$, we get

$1+(-1)=0 \quad \Rightarrow 1-1=0 \Rightarrow 0=0.$

Therefore, the given graph belongs to the linear equation $x+y=0$.

(iii) $y=2x$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=1$, we get

$y=2x \quad \Rightarrow -1=2(1) \Rightarrow -1 \neq 2.$

Therefore, the given graph does not belong to the linear equation $y=2x$.

(iv) $2+3y=7x$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=1$, we get

$2+3(1)=7(-1) \Rightarrow 2+3=-7 \quad \Rightarrow 5 \neq -7.$

Therefore, the given graph does not belong to the linear equation $2+3y=7x$.

For Second figure

(i) $y=x+2$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=3$, we get

$3=-1+2 \quad \Rightarrow 3 \neq 1.$

Therefore, the given graph does not belong to the linear equation $y=x+2$.

(ii) $y=x-2$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=3$, we get

$3=-1-2 \quad \Rightarrow 3 \neq -3.$

Therefore, the given graph does not belong to the linear equation $y=x-2$.

(iii) $y=-x+2$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=3$, we get

$3=-(-1)+2 \quad \Rightarrow 3=1+2 \Rightarrow 3=3.$

For $x=0, y=2$, we get

$2=-(0)+2 \quad \Rightarrow 2=2.$

For $x=2, y=0$, we get

$0=-(2)+2 \quad \Rightarrow 0=0.$

Therefore, hat the given graph belongs to the linear equation $y=-x+2$.

(iv) $x+2y=6$

We know that if any point lie on the graph of any linear equation, then that point is the solution of that linear equation.

For $x=-1, y=3$, we get

$(-1)+2(3)=6 \quad \Rightarrow -1+6=6 \Rightarrow 5 \neq 6.$

Therefore, the given graph does not belong to the linear equation $x+2y=6$.

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