



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) $y = 3x$

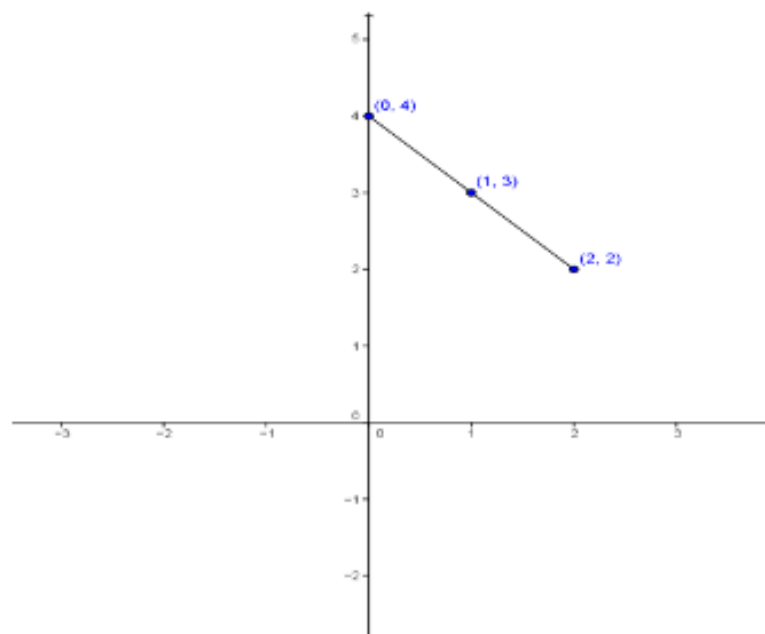
(iv) $3 = 2x + y$

(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

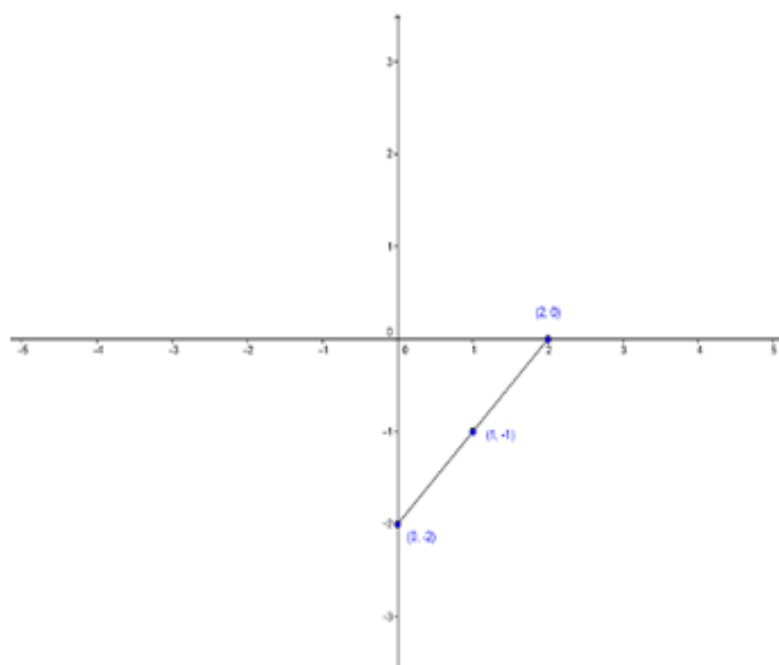


(ii) $x - y = 2$

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

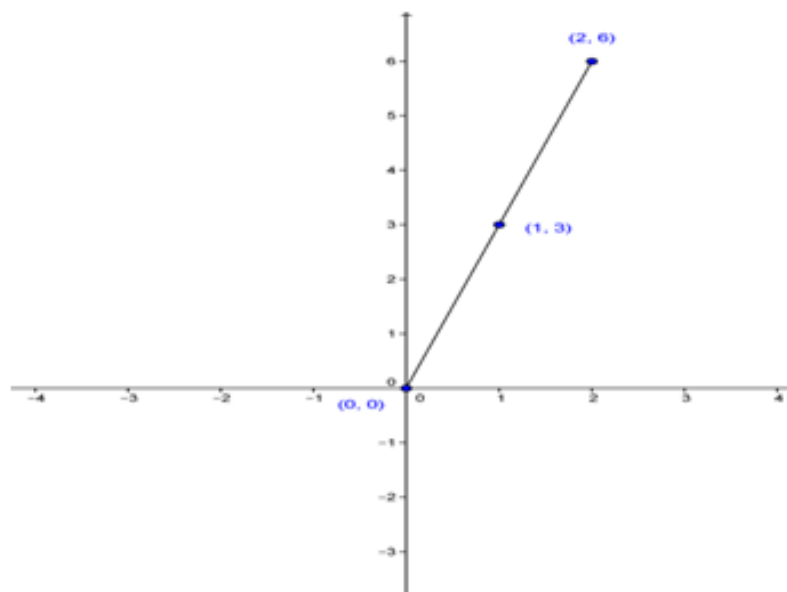


(iii) $y = 3x$

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

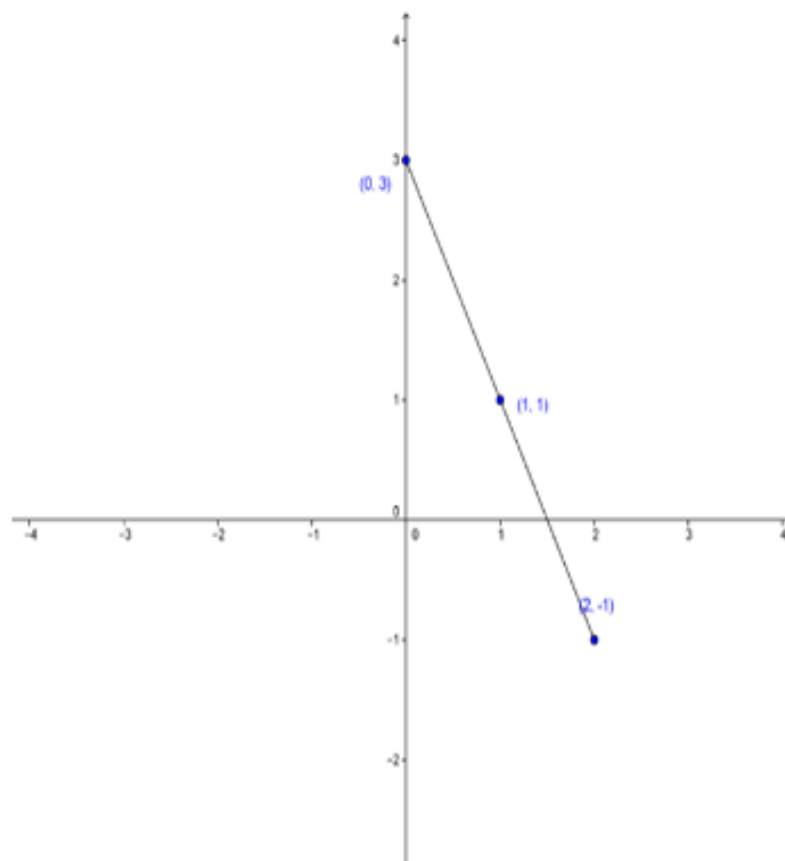


(iv) $3 = 2x + y$

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

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

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

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:

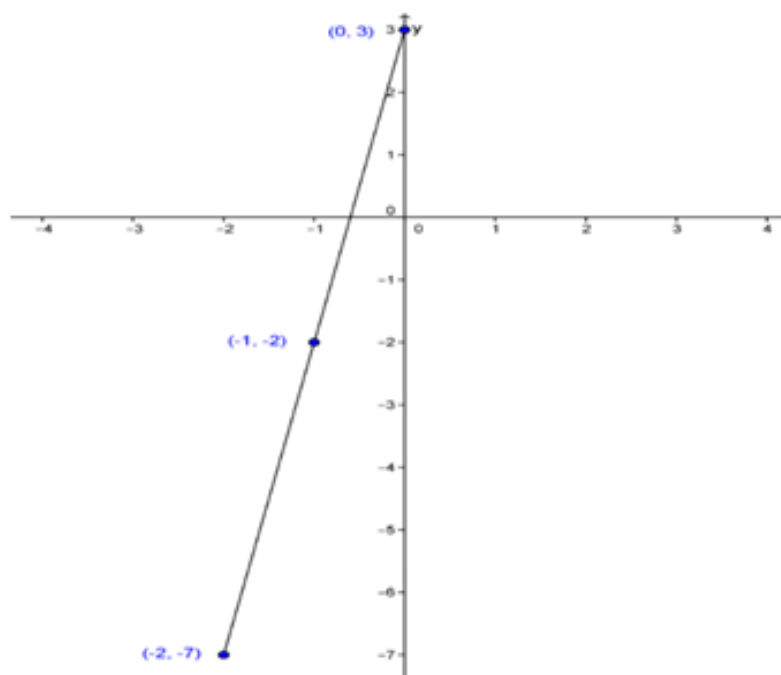
$$8 + 5(x-1) = y \Rightarrow 8 + 5x - 5 = y \Rightarrow 3 + 5x = y.$$

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



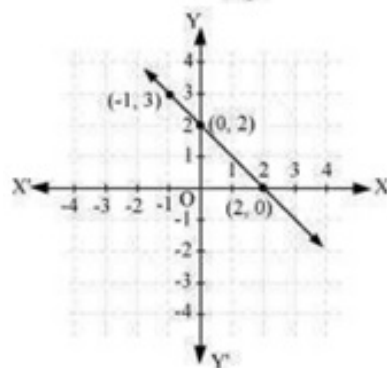
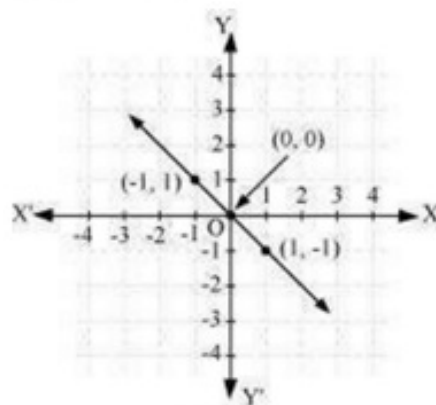
Q5. From the choices given below, choose the equation whose graphs are given in the given figures.

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

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

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

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

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, 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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