

NCERT Solutions for Class 9 Maths Chapter 4 Linear Equations in Two Variables Ex 4.2

Question 1.

Which one of the following options is true, and why?

$y = 3x + 5$ has

- (i) A unique solution,
- (ii) Only two solutions,
- (iii) Infinitely many solutions

Solution.

As the equation $y = 3x + 5$ is a linear equation in two variables.

Hence,

It will have (iii) infinitely many solutions.

Question 2.

Write four solutions for each of the following equations:

(i) $2x + y = 7$

(ii) $\pi x + y = 9$

(iii) $x = 4y$

Solution.

(i) $2x + y = 7$

$y = 7 - 2x$

Put $x = 0$,

$$y = 7 - 2 * 0$$

$$y = 7$$

$(0, 7)$ is the solution of the equation

Now,

Put $x = 1$

$$y = 7 - 2 * 1$$

$$y = 5$$

$(1, 5)$ is the solution of the equation

Now,

Put $x = 2$

$$y = 7 - 2 * 2$$

$$y = 3$$

$(2, 3)$ is the solution of the equation

Now,

Put $x = -1$

$$y = 7 - 2 * -1$$

$$y = 9$$

$(-1, 9)$ is the solution of the equation

The four solutions of the equation $2x + y = 7$ are:

$(0, 7)$,

$(1, 5)$,

$(2, 3)$

and $(-1, 9)$

$$(ii) \pi x + y = 9$$

$$y = 9 - \pi x$$

Now,

$$\text{Put } x = 0$$

$$y = 9 - \pi * 0$$

$$y = 9$$

$(0, 9)$ is the solution of the equation

Now,

$$\text{Put } x = 1$$

$$y = 9 - \pi * 1$$

$$y = 9 - \pi$$

$(1, 9 - \pi)$ is the solution of the equation

Now,

$$\text{Put } x = 2$$

$$y = 9 - \pi * 2$$

$$y = 9 - 2\pi$$

$(2, 9 - 2\pi)$ is the solution of the equation

Now,

$$\text{Put } x = -1$$

$$y = 9 - \pi * 1$$

$$y = 9 + \pi$$

$(-1, 9 + \pi)$ is the solution of the equation

The four solutions of the equation $\pi x + y = 9$ are:

$$(0, 9),$$

$$(1, 9 - \pi),$$

$$(2, 9 - 2\pi)$$

$$\text{and } (-1, 9 + \pi)$$

$$\text{(iii) } x = 4y$$

Now,

$$\text{Put } x = 0$$

$$0 = 4y$$

$$y = 0$$

$(0, 0)$ is the solution of the equation

Now,

$$\text{put } x = 1$$

$$1 = 4y$$

$$y = 1/4$$

$(1, 1/4)$ is the solution of the equation

Now,

$$\text{Put } x = 4$$

$$4 = 4y$$

$$y = 1$$

$(4, 1)$ is the solution of the equation

Now,

$$\text{Put } x = 8$$

$$8 = 4y$$

$$y = 2$$

(8, 2) is the solution of the equation

The four solutions of the equation $\pi x + y = 9$ are:

$$(0, 0),$$

$$(1, 1/4),$$

$$(4, 1),$$

$$\text{and } (8, 2)$$

Question 3.

Check which of the following are solutions of the equation $x - 2y = 4$ and which are not:

(i) $(0, 2)$

(ii) $(2, 0)$

(iii) $(4, 0)$

(iv) $(\sqrt{2}, 4\sqrt{2})$

(v) $(1, 1)$

Solution.

(i) Put $x = 0$

And

$$y = 2$$

In the equation $x - 2y = 4$

$$0 - 2 * 2 = 4$$

$$-4 \neq 4$$

Therefore,

$(0, 2)$ isn't a solution of the given equation

(ii) Put $x = 2$

And

$$y = 0$$

In the equation $x - 2y = 4$

$$2 - 2 * 0 = 4$$

$$2 \neq 4$$

Therefore,

$(2, 0)$ isn't a solution of the given equation

(iii) Put $x = 4$

And

$$y = 0$$

In the equation $x - 2y = 4$

$$4 - 2 * 0 = 4$$

$$4 = 4$$

Therefore,

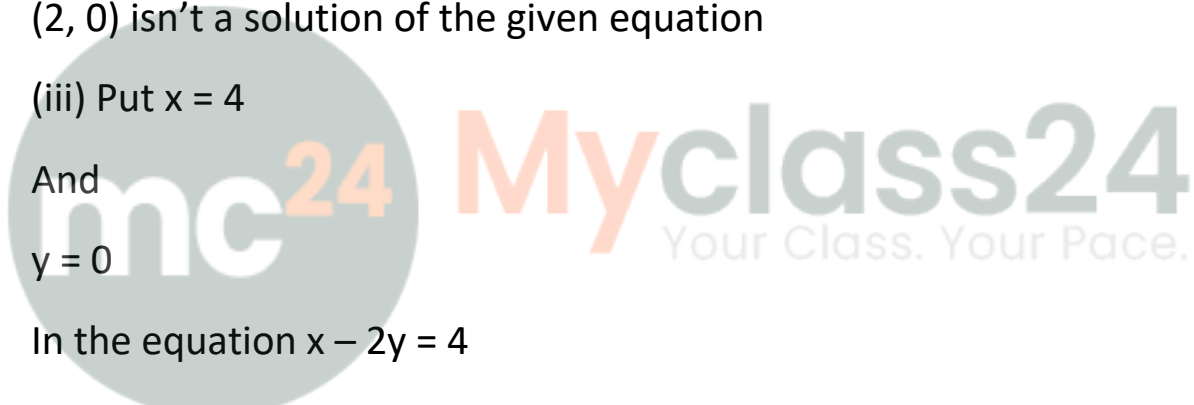
$(4, 0)$ is a solution of the equation

(iv) Put $x = \sqrt{2}$

And

$$y = 4\sqrt{2}$$

In the equation $x - 2y = 4$



$$\sqrt{2} - 2 * 4\sqrt{2} = 4$$

$$\sqrt{2} - 8\sqrt{2} = 4$$

$$\sqrt{2} (1 - 8) = 4$$

$$-7\sqrt{2} \neq 4$$

Therefore,

$(\sqrt{2}, 4\sqrt{2})$ is n't a solution of the given equation

(v) Put $x = 1$

And

$$y = 1$$

In the equation $x - 2y = 4$

$$1 - 2 * 1 = 4$$

$$-1 \neq 4$$

Therefore, $(1, 1)$ isn't a solution of the given equation

Question 4.

Find the value of k , if $x = 2$, $y = 1$ is a solution of the equation $2x + 3y = k$

Solution.

The Given equation is $2x + 3y = k$

The solution of the given equation are:

$$x = 2 \text{ and } y = 1$$

Now,

After putting the value of x and y in the equation, we get

$$2 * 2 + 3 * 1 = k$$

$$k = 4 + 3$$

$$k = 7$$

