



SpeedLabs

MATHS

CBSE 9th

TEEVRA EDUTECH PVT. LTD.

Q 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

Ans - $y = 3x + 5$ is a linear equation in two variables and it has infinite possible solutions. As for every value of x , there will be a value of y satisfying the above equation and vice-versa.

Hence, the correct answer is (iii).

Q 2. Write four solutions for each of the following equations:

(i) $2x + y = 7$ (ii) $\pi x + y = 9$ (iii) $x = 4y$

Ans - (i) $2x + y = 7$

For $x = 0$,

$$2(0) + y = 7$$

$$\Rightarrow y = 7$$

Therefore, $(0, 7)$ is a solution of this equation.

For $x = 1$,

$$2(1) + y = 7$$

$$\Rightarrow y = 5$$

Therefore, $(1, 5)$ is a solution of this equation.

For $x = -1$,

$$2(-1) + y = 7$$

$$\Rightarrow y = 9$$

Therefore, $(-1, 9)$ is a solution of this equation.

For $x = 2$,

$$2(2) + y = 7$$

$$\Rightarrow y = 3$$

Therefore, $(2, 3)$ is a solution of this equation.

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

For $x = 0$,

$$\pi(0) + y = 9$$

$$\Rightarrow y = 9$$

Therefore, $(0, 9)$ is a solution of this equation.

For $x = 1$,

$$\pi(1) + y = 9$$

$$\Rightarrow y = 9 - \pi$$

Therefore, $(1, 9 - \pi)$ is a solution of this equation.

For $x = 2$,

$$\pi(2) + y = 9$$

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

Therefore, $(2, 9 - 2\pi)$ is a solution of this equation.

For $x = -1$,

$$\pi(-1) + y = 9$$

$$\Rightarrow y = 9 + \pi$$

$\Rightarrow (-1, 9 + \pi)$ is a solution of this equation.

(iii) $x = 4y$

For $x = 0$,

$$0 = 4y$$

$$\Rightarrow y = 0$$

Therefore, $(0, 0)$ is a solution of this equation.

For $y = 1$,

$$x = 4(1) = 4$$

Therefore, $(4, 1)$ is a solution of this equation.

For $y = -1$,

$$x = 4(-1)$$

$$\Rightarrow x = -4$$

Therefore, $(-4, -1)$ is a solution of this equation.

For $x = 2$,

$$2 = 4y$$

$$\Rightarrow y = \frac{2}{4} = \frac{1}{2}$$

Therefore, $\left(2, \frac{1}{2}\right)$ is a solution of this equation.

Q 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) $(1, 1)$

Ans - **(i)** $(0, 2)$

Putting $x = 0$ and $y = 2$ in the L.H.S of the given equation,

$$x - 2y = 0 - 2 \times 2 = -4 \neq 4$$

L.H.S \neq R.H.S

Therefore, $(0, 2)$ is not a solution of this equation.

(ii) $(2, 0)$

Putting $x = 2$ and $y = 0$ in the L.H.S of the given equation,

$$x - 2y = 2 - 2 \times 0 = 2 \neq 4$$

L.H.S \neq R.H.S

Therefore, $(2, 0)$ is not a solution of this equation.

(iii) $(4, 0)$

Putting $x = 4$ and $y = 0$ in the L.H.S of the given equation,

$$x - 2y = 4 - 2(0)$$

$$= 4 = \text{R.H.S}$$

Therefore, $(4, 0)$ is a solution of this equation.

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

Putting $x = \sqrt{2}$ and $y = 4\sqrt{2}$ in the L.H.S of the given equation,

$$x - 2y = \sqrt{2} - 2(4\sqrt{2})$$

$$= \sqrt{2} - 8\sqrt{2} = -7\sqrt{2} \neq 4$$

L.H.S \neq R.H.S

Therefore, $(\sqrt{2}, 4\sqrt{2})$ is not a solution of this equation.

(v) $(1, 1)$

Putting $x = 1$ and $y = 1$ in the L.H.S of the given equation,

$$x - 2y = 1 - 2(1) = 1 - 2 = -1 \neq 4$$

L.H.S \neq R.H.S

Therefore, $(1, 1)$ is not a solution of this equation.

Q 4. Find the value of k , if $x = 2, y = 1$ is a solution of the equation $2x + 3y = k$

Ans - Putting $x = 2$ and $y = 1$ in the given equation,

$$2x + 3y = k$$

$$\Rightarrow 2(2) + 3(1) = k$$

$$\Rightarrow 4 + 3 = k$$

$$\Rightarrow k = 7$$

Therefore, the value of k is 7.