

RD SHARMA

Solutions

Class 9 Maths

Chapter 13

Ex 13.2

Q 1 : Write two solutions for each of the following equations:

(i) $5x - 2y = 7$

(ii) $x = 6y$

(iii) $x + \pi y = 4$

(iv) $2/3x - y = 4$.

A 1 :

(i) We are given,

$$3x + 4y = 7$$

Substituting $x = 1$

In the given equation,

We get

$$3 \times 1 + 4y = 7$$

$$4y = 7 - 3 \quad 4 = 4Y$$

$$Y = 1$$

Thus $x = 1$ and $y = 1$ is the solution of $3x + 4y = 7$

Substituting $x = 2$ in the given equation,

$$\text{we get } 3 \times 2 + 4y = 7$$

$$4y = 7 - 6$$

$$y = 1/4$$

Thus $x = 2$ and $y = 1/4$ is the solution of $3x + 4y = 7$

(ii) We are given, $x = 6y$

Substituting $x = 0$ in the given equation,

$$\text{we get } 0 = 6y$$

$$6y = 0$$

$$y = 0$$

Thus $x = 0$, \Rightarrow Solution $(0,0)$

Substituting $x=6$

$$6 = 6y$$

$$y = 6/6$$

$$y = 1 \quad \Rightarrow \text{Solution } (6,1)$$

(iii) We are given $x + \pi y = 4$

Substituting $x = 0$ in the given equation,

$$\text{We get } 0 + \pi y = 4$$

$$\pi y = 4$$

$$y = \frac{4}{\pi}$$

$$\Rightarrow \text{Solution} = \left(0, \frac{4}{\pi}\right)$$

Substituting $y = 0$ in the given equation, we get

$$x + 0 = 4$$

$$x = 4$$

$$\Rightarrow \text{Solution} = (4, 0)$$

(iv) We are given $\frac{2}{3}x - y = 4$

Substituting $x = 0$ in the given equation, we get

$$0 - y = 4$$

$$y = -4$$

Thus $x = 0$ and $y = -4$ is a solution

Substituting $x = 3$ in the given equation, we get

$$\frac{2}{3} \times 3 - y = 4$$

$$2 - y = 4$$

$$y = 2 - 4$$

$$y = -2$$

Thus $x = 3$ and $y = -2$ is a solution

Q 2 : Write two solutions of the form $x = 0$, $y = a$ and $x = b$, $y = 0$ for each of the following equations : (i) $5x - 2y = 10$ (ii) $-4x + 3y = 12$ (iii) $2x + 3y = 24$

A 2 :

(i) We are given,

$$5x - 2y = 10$$

Substituting $x = 0$ in the given equation,

We get;

$$5 \times 0 - 2y = 10$$

$$-2y = 10$$

$$-y = 10/2$$

$$y = -5$$

Thus $x = 0$ and $y = -5$ is the solution of $5x - 2y = 10$

Substituting $y = 0$ in the given equation, we get $5x - 2 \times 0 = 10$

$$5x = 10$$

$$x = 10/2$$

$$x = 2$$

Thus $x = 2$ and $y = 0$ is a solution of $5x - 2y = 10$

(ii) We are given, $-4x + 3y = 12$

Substituting $x = 0$ in the given equation,

we get;

$$-4 \times 0 + 3y = 12$$

$$3y = 12$$

$$y = 4$$

Thus $x = 0$ and $y = 4$ is a solution of the $-4x + 3y = 12$

Substituting $y = 0$ in the given equation, we get;

$$-4x + 3 \times 0 = 12$$

$$-4x = 12$$

$$x = -12/4$$

$$x = -3$$

Thus $x = -3$ and $y = 0$ is a solution of $-4x + 3y = 12$

(iii) We are given, $2x + 3y = 24$

Substituting $x = 0$ in the given equation, we get;

$$2 \times 0 + 3y = 24$$

$$3y = 24$$

$$y = 24/3$$

$$y = 8$$

Thus $x = 0$ and $y = 8$ is a solution of $2x + 3y = 24$

Substituting $y = 0$ in the given equation, we get;

$$2x + 3 \times 0 = 24$$

$$2x = 24$$

$$x = 24/2$$

$$x = 12$$

Thus $x = 12$ and $y = 0$ is a solution of $2x + 3y = 24$

Q3: Check which of the following are solutions of the equation $2x - y = 6$ and Which are not :

(i) $(3, 0)$

(ii) $(0, 6)$

(iii) $(2, -2)$ (iv) $(\sqrt{3}, 0)$ (v) $(\frac{1}{2}, -5)$

A3:

We are given, $2x - y = 6$

(i) In the equation $2x - y = 6$,

We have L.H.S = $2x - y$ and R.H.S = 6

Substituting $x = 3$ and $y = 0$ in $2x - y$,

We get L.H.S = $2 \times 3 - 0 = 6$

\Rightarrow L.H.S = R.H.S

$\Rightarrow (3, 0)$ is a solution of $2x - y = 6$.

(ii) In the equation $2x - y = 6$,

We have L.H.S = $2x - y$ and R.H.S = 6

Substituting $x = 0$ and $y = 6$ in $2x - y$

We get L.H.S = $2 \times 0 - 6 = -6$

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

$\Rightarrow (0, 6)$ is not a solution of $2x - y = 6$.

(iii) In the equation $2x - y = 6$,

We have L.H.S = $2x - y$ and R.H.S = 6

Substituting $x = 2$ and $y = -2$ in $2x - y$,

We get L.H.S = $2 \times 2 - (-2) = 6$

\Rightarrow L.H.S = R.H.S

$\Rightarrow (2, -2)$ is a solution of $2x - y = 6$.

(iv) In the equation $2x - y = 6$,

We have L.H.S = $2x - y$ and R.H.S = 6

Substituting $x = \sqrt{3}$ and $y = 0$ in $2x - y$,

We get L.H.S = $2 \times \sqrt{3} - 0$

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

$\Rightarrow (\sqrt{3}, 0)$ is not a solution of $2x - y = 6$.

(v) In the equation $2x - y = 6$,

We have L.H.S = $2x - y$ and R.H.S = 6

Substituting $x = 1/2$ and $y = -5$ in $2x - y$, we get

L.H.S = $2 \times (1/2) - (-5)$

$\Rightarrow 1 + 5 = 6$

\Rightarrow L.H.S = R.H.S

$\Rightarrow (\frac{1}{2}, -5)$ is a solution of $2x - y = 6$.

Q4: If $x = -1, y = 2$ is a solution of the equation $3x + 4y = k$, find the value of k .

A4 :

We are given, $3x + 4y = k$

Given that, $(-1, 2)$ is the solution of equation $3x + 4y = k$.

Substituting $x = -1$ and $y = 2$ in $3x + 4y = k$,

We get; $3x - 1 + 4 \times 2 = k$

$k = -3 + 8$

$k = 5$

Q 5 : Find the value of λ , if $x = -\lambda$ and $y = \frac{5}{2}$ is a solution of the equation $x + 4y - 7 = 0$

A 5 :

We are given,

$x + 4y - 7 = 0$

$(-\lambda, -5)$ is a solution of equation $3x + 4y = k$

Substituting $x = -\lambda$ and $y = \frac{5}{2}$ in $x + 4y - 7 = 0$,

We get; $-\lambda + 4 \times (\frac{5}{2}) - 7 = 0$

$-\lambda + 4 \times \frac{5}{2} - 7 = 0$

$\lambda = 10 - 7$

$\lambda = 3$

Q 6 : If $x = 2a + 1$ and $y = a - 1$ is a solution of the equation $2x - 3y + 5 = 0$, find the value of a .

A 6:

We are given, $2x - 3y + 5 = 0$

$(2a + 1, a - 1)$ is the solution of equation $2x - 3y + 5 = 0$.

Substituting $x = 2a + 1$ and $y = a - 1$ in $2x - 3y + 5 = 0$,

We get $2 \times 2a + (1 - 3) \times a - 1 + 5 = 0$

$\Rightarrow 4a + 2 - 3a + 3 + 5 = 0$

$\Rightarrow a + 10 = 0$

$\Rightarrow a = -10$

Q 7 : If $x = 1$ and $y = 6$ is a solution of the equation $8x - ay + a^2 = 0$, find the values of a .

A 7 :

We are given,

$$8x - ay + a^2 = 0$$

$(1, 6)$ is a solution of equation $8x - ay + a^2 = 0$

Substituting $x = 1$ and $y = 6$ in $8x - ay + a^2 = 0$, we get

$$8 \times 1 - a \times 6 + a^2 = 0$$

$$\Rightarrow a^2 - 6a + 8 = 0$$

Using quadratic factorization

$$a^2 - 4a - 2a + 8 = 0$$

$$a(a - 4) - 2(a - 4) = 0$$

$$(a - 2)(a - 4) = 0$$

$$a = 2, 4$$