



Pair of Linear Equations in Two variables Ex 3.3 Q39

Answer :

The given equations are:

$$\frac{44}{x+y} + \frac{30}{x-y} = 10$$

$$\frac{55}{x+y} + \frac{40}{x-y} = 13$$

Let $\frac{1}{x+y} = u$ and $\frac{1}{x-y} = v$ then equations are

$$44u + 30v = 10 \quad \dots (i)$$

$$55u + 40v = 13 \quad \dots (ii)$$

Multiply equation (i) by 4 and equation (ii) by 3 add both equations, we get

$$176u + 120v = 40$$

$$165u + 120v = 39$$

$$11u = 1$$

$$\Rightarrow u = \frac{1}{11}$$

Put the value of u in equation (i), we get

$$44 \times \frac{1}{11} + 30v = 10$$

$$\Rightarrow 30v = 6$$

$$\Rightarrow v = \frac{1}{5}$$

Then

$$\frac{1}{x+y} = \frac{1}{11} \quad \dots (iii)$$

$$\Rightarrow x+y=11$$

$$\frac{1}{x-y} = \frac{1}{5} \quad \dots (iv)$$

$$\Rightarrow x-y=5$$

Add both equations, we get

$$x+y=11$$

$$x-y=5$$

$$2x=16$$

$$\Rightarrow x=8$$

Put the value of x in equation (iii) we get

$$8+1+y=11$$

$$\Rightarrow y=3$$

Hence the value of $x=8$ and $y=3$

Pair of Linear Equations in Two variables Ex 3.3 Q40

Answer :

The given equations are:

$$\frac{4}{x} + 5y = 7 \quad \dots (i)$$

$$\frac{3}{x} + 4y = 5 \quad \dots (ii)$$

Multiply equation (i) by 4 and equation (ii) by 5 and subtract (ii) from (i) we get

$$\frac{16}{x} + 20y = 28$$

$$\frac{15}{x} + 20y = 25$$

$$\frac{1}{x} = 3$$

$$\Rightarrow x = \frac{1}{3}$$

Put the value of x in equation (i), we get

$$\frac{4}{\frac{1}{3}} + 5y = 7$$

$$\frac{12}{1} + 5y = 7$$

$$\Rightarrow 5y = -5$$

$$\Rightarrow y = -1$$

Hence the value of $x = \frac{1}{3}$ and $y = -1$

***** END *****