Pair of Linear Equations in Two varibles Ex 3.3 Q33

Answer:

The given equations are:

$$\frac{2}{3x+2y}+\frac{3}{3x-2y}=\frac{17}{5}$$

$$\frac{5}{3x+2y}+\frac{1}{3x-2y}=2$$

Let $\dfrac{1}{3x+2y}=u$ and $\dfrac{1}{3x-2y}=v$ then equations are

$$2u+3v=\frac{17}{5} \quad \ldots (i)$$

$$5u+v=2 \quad \ldots (ii)$$

Multiply equation (ii) by 3 and subtract (ii) from (i), we get

$$2u+3v=\frac{17}{5}$$

$$15u+3v=6$$

$$\overline{}$$

$$-13u=-\frac{13}{5}$$

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

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

$$2 \times \frac{1}{5} + 3v = \frac{17}{5}$$

$$\Rightarrow 3v = 3$$

$$\Rightarrow v = 1$$

Then

$$\frac{1}{3x+2y} = \frac{1}{5} \quad \dots (iii)$$

$$\Rightarrow 3x + 2y = 5$$

$$\frac{1}{3x-2y} = 1 \quad \dots (iv)$$

$$\Rightarrow 3x - 2y = 1$$

Add both equations, we get

$$3x + 2y = 5$$
$$3x - 2y = 1$$
$$\overline{6x = 6}$$

$$\Rightarrow x = 1$$

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

$$3 \times 1 + 2y = 5$$

$$\Rightarrow 2y = 2$$

$$\Rightarrow y = 1$$

Hence the value of $\boxed{x = 1}$ and $\boxed{y = 1}$.

Pair of Linear Equations in Two varibles Ex 3.3 Q34

Answer :

The given equations are:

$$\frac{4}{x} + 3y = 14 \quad \dots (i)$$

$$\frac{3}{x} - 4y = 23 \quad \dots (ii)$$

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

$$\frac{16}{x} + 12y = 56$$

$$\frac{9}{x} - 12y = 69$$

$$\overline{\frac{25}{x} = 125}$$

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

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

$$\frac{4}{\frac{1}{5}} + 3y = 14$$

$$\Rightarrow 3y = -6$$

$$\Rightarrow y = -2$$

Hence the value of $\boxed{x = \frac{1}{5}}$ and $\boxed{y = -2}$.

Pair of Linear Equations in Two varibles Ex 3.3 Q35

Answer :

The given equations are:

$$99x + 101y = 499 \quad \dots (i)$$

$$101x + 99y = 501 \quad \dots (ii)$$

Multiply equation (i) by 99 and equation (ii) by 101, and subtract (ii) from (i) we get

$$9801x + 9999y = 49401$$

$$\underline{10201x + 9999y = 50601}$$

$$-400x = -1200$$

$$\Rightarrow x = 3$$

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

$$99 \times 3 + 101y = 499$$

$$\Rightarrow 101y = 202$$

$$\Rightarrow y = 2$$

Hence the value of $\boxed{x = 3}$ and $\boxed{y = 2}$

********** END *********