



Pair of Linear Equations in Two variables Ex 3.4 Q12

$$\Rightarrow y = b$$

Hence we get the value of  $x = a$  and  $y = b$

**Answer :**

GIVEN:

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

$$\frac{15}{x+y} + \frac{7}{x-y} = 10$$

To find: The solution of the systems of equation by the method of cross-multiplication:

Here we have the pair of simultaneous equation

Rewriting the equation again

$$\frac{5}{x+y} - \frac{2}{x-y} + 1 = 0$$

$$\frac{15}{x+y} + \frac{7}{x-y} - 10 = 0$$

$$\text{Taking } u = \frac{1}{x+y} \text{ and } v = \frac{1}{x-y}$$

$$5u - 2v + 1 = 0 \quad \dots\dots(1)$$

$$15u + 7v - 10 = 0 \quad \dots\dots(2)$$

By cross multiplication method we get

$$\frac{u}{(20)-(7)} = \frac{-v}{(-50)-(15)} = \frac{1}{(35)-(-30)}$$

$$\Rightarrow \frac{u}{13} = \frac{-v}{-65} = \frac{1}{65}$$

$$\Rightarrow \frac{u}{13} = \frac{v}{65} = \frac{1}{65}$$

$$\Rightarrow \frac{u}{13} = \frac{1}{65}$$

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

And

$$v = \frac{1}{13}$$

$$\frac{1}{65} = \frac{1}{65}$$

$$v = 1$$

We know that

$$u = \frac{1}{x+y} \text{ and } v = \frac{1}{x-y}$$

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

$$\Rightarrow x+y=5 \quad \text{.....(3)}$$

and

$$1 = \frac{1}{x-y}$$

$$\Rightarrow x-y=1 \quad \text{.....(4)}$$

Adding equation (3) and (4)

$$2x=6$$

$$x=3$$

Substituting value of  $x$  in equation (3) we get

$$y=5-3$$

$$=2$$

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

\*\*\*\*\* END \*\*\*\*\*