



Pair of Linear Equations in Two variables Ex 3.4 Q27

**Answer :**

GIVEN:

$$\frac{ax}{b} - \frac{by}{a} = a + b$$

$$ax - by = 2ab$$

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

Here we have the pair of simultaneous equation

$$\frac{ax}{b} - \frac{by}{a} - (a + b) = 0$$

$$ax - by - 2ab = 0$$

By cross multiplication method we get

$$\frac{x}{(-2ab)\left(-\frac{b}{a}\right) - (-b)(-(a+b))} = \frac{-y}{(-2ab)\left(\frac{a}{b}\right) - (a)(-(a+b))} = \frac{1}{(-a)(-b)}$$

$$\frac{x}{(2b^2) - (ab + b^2)} = \frac{-y}{(-2a^2) + (a^2 + ab)} = \frac{1}{(b - a)}$$

$$\frac{x}{(b^2 - ab)} = \frac{-y}{(-a^2 + ab)} = \frac{1}{(b - a)}$$

$$\frac{x}{b(b-a)} = \frac{1}{(b-a)}$$

$$x = b$$

For y

$$\frac{-y}{(-a^2 + ab)} = \frac{1}{(b - a)}$$

$$\frac{-y}{a(b - a)} = \frac{1}{(b - a)}$$

$$y = -a$$

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

Pair of Linear Equations in Two variables Ex 3.4 Q28

**Answer :**

GIVEN:

$$\frac{b}{a}x + \frac{a}{b}y = a^2 + b^2$$

$$x + y = 2ab$$

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

Here we have the pair of simultaneous equation

$$\frac{b}{a}x + \frac{a}{b}y - (a^2 + b^2) = 0$$

$$x + y - 2ab = 0$$

By cross multiplication method we get

$$\frac{x}{(-2ab)\left(\frac{a}{b}\right) - (-(a^2 + b^2))} = \frac{-y}{(-2ab)\left(\frac{b}{a}\right) - (-(a^2 + b^2))} = \frac{1}{\frac{b}{a} - \frac{a}{b}}$$

$$\frac{x}{(-2a^2) + (a^2 + b^2)} = \frac{-y}{(-2b^2) + (a^2 + b^2)} = \frac{1}{\frac{(b^2 - a^2)}{ab}}$$

$$\frac{x}{(b^2 - a^2)} = \frac{y}{(b^2 - a^2)} = \frac{1}{\frac{ab}{(b^2 - a^2)}}$$

$$\frac{x}{(b^2 - a^2)} = \frac{y}{(b^2 - a^2)} = \frac{ab}{(b^2 - a^2)}$$

$$x = y = ab$$

Hence we get the value of  $\boxed{x = y = ab}$

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