Pair of Linear Equations in Two varibles 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 $\boxed{x = b}$ and $\boxed{y = -a}$

Pair of Linear Equations in Two varibles 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

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

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

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

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

$$x=y=ab$$

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

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