



Pair of Linear Equations in Two variables Ex 3.4 Q25

**Answer :**

**GIVEN:**

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

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

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

Here we have the pair of simultaneous equation

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

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

Let  $\frac{1}{x} = u$  and  $\frac{1}{y} = v$

Rewriting equations

$$a^2u - b^2v = 0 \dots (1)$$

$$a^2bu + ab^2v - (a + b) = 0 \dots (2)$$

Now, by cross multiplication method we get

$$\frac{u}{(-(a+b)(-b^2))-(0)} = \frac{-v}{(-(a+b)(a^2))-(0)} = \frac{1}{(a^3b^2)+(a^2b^3)}$$
$$\frac{u}{(ab^2+b^3)} = \frac{v}{(a^3+ba^2)} = \frac{1}{(a^3b^2+a^2b^3)}$$

For  $u$  consider the following

$$\frac{u}{(ab^2 + b^3)} = \frac{1}{(a^3b^2 + a^2b^3)}$$

$$\frac{u}{(a+b)} = \frac{1}{a^2(a+b)}$$

$$u = \frac{1}{a^2}$$

For  $y$  consider

$$\frac{v}{(a^3 + ba^2)} = \frac{1}{(a^3b^2 + a^2b^3)}$$

$$\frac{v}{(a+b)} = \frac{1}{b^2(a+b)}$$

$$v = \frac{1}{b^2}$$

We know that

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

Now

$$\frac{1}{x} = \frac{1}{a^2} \text{ and } \frac{1}{y} = \frac{1}{b^2}$$

$$x = a^2 \text{ and } y = b^2$$

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

Pair of Linear Equations in Two variables Ex 3.4 Q26

**Answer :**

GIVEN:

$$mx - ny = m^2 + n^2$$

$$x + y = 2m$$

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

Here we have the pair of simultaneous equation

$$mx - ny - (m^2 + n^2) = 0$$

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

By cross multiplication method we get

$$\frac{x}{(-2m)(-n) - (-(m^2 + n^2))} = \frac{-y}{(-2m)(m) - (-(m^2 + n^2))} = \frac{1}{m+n}$$

$$\frac{x}{(m+n)^2} = \frac{-y}{(-2m^2) + (m^2 + n^2)} = \frac{1}{m+n}$$

$$\frac{x}{(m+n)^2} = \frac{1}{m+n}$$

$$x = m+n$$

Now for  $y$

$$\frac{-y}{(-2m^2) + (m^2 + n^2)} = \frac{1}{m+n}$$

$$\frac{y}{(m^2 - n^2)} = \frac{1}{m+n}$$

$$\frac{y}{(m-n)(m+n)} = \frac{1}{m+n}$$

$$y = m - n$$

Hence we get the value of  $\boxed{x = m + n}$  and  $\boxed{y = m - n}$

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