



### Pair of Linear Equations in Two variables Ex 3.4 Q15

**Answer :**

GIVEN:

$$2ax + 3by = a + 2b$$

$$3ax + 2by = 2a + b$$

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

Here we have the pair of simultaneous equation

$$2ax + 3by - (a + 2b) = 0$$

$$3ax + 2by - (2a + b) = 0$$

By cross multiplication method we get

$$\frac{x}{(- (2a + b) \times 3b) - (2b \times (- (a + 2b)))} = \frac{-y}{(2a) \times (- (2a + b)) - ((3a) \times (- (a + 2b)))} = \frac{1}{4ab - 9ab}$$

$$\frac{x}{(- (2a + b) \times 3b) - (2b \times (- (a + 2b)))} = \frac{-y}{(2a) \times (- (2a + b)) - ((3a) \times (- (a + 2b)))} = \frac{1}{-5ab}$$

Now consider

$$\frac{x}{(- (2a + b) \times 3b) - (2b \times (- (a + 2b)))} = \frac{1}{-5ab}$$

$$-5abx = (- (2a + b) \times 3b) - (2b \times (- (a + 2b)))$$

$$-5abx = (-6ab - 3b^2) - (-2ab - 4b^2)$$

$$-5abx = -4ab + b^2$$

$$5xab = 4ab - b^2$$

$$\Rightarrow x = \frac{4ab - b^2}{5ab}$$

$$\Rightarrow x = \frac{4a - b}{5a}$$

And

$$\frac{-y}{(2a) \times (- (2a + b)) - ((3a) \times (- (a + 2b)))} = \frac{1}{-5ab}$$

$$5yab = (2a) \times (- (2a + b)) - ((3a) \times (- (a + 2b)))$$

$$5yab = -4a^2 - 2ab - (-3a^2 - 6ab)$$

$$5yab = -a^2 + 4ab$$

$$\Rightarrow y = \frac{4ab - a^2}{5ab}$$

$$\Rightarrow y = \frac{4b - a}{5b}$$

Hence we get the value of  $x = \frac{4a - b}{5a}$  and  $y = \frac{4b - a}{5b}$

### Pair of Linear Equations in Two variables Ex 3.4 Q16

Answer :

GIVEN:

$$5ax + 6by = 28$$

$$3ax + 4by = 18$$

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

Here we have the pair of simultaneous equation

$$5ax + 6by - 28 = 0$$

$$3ax + 4by - 18 = 0$$

By cross multiplication method we get

$$\frac{x}{(-18 \times 6b) - (4b \times (-28))} = \frac{-y}{(5a \times (-18)) - ((3a) \times (-28))} = \frac{1}{20ab - 18ab}$$

$$\frac{x}{(-108b) - (-112b)} = \frac{-y}{(-90a) - (-84a)} = \frac{1}{2ab}$$

$$\frac{x}{4b} = \frac{-y}{-6a} = \frac{1}{2ab}$$

$$\frac{x}{4b} = \frac{y}{6a} = \frac{1}{2ab}$$

Consider the following to calculate x

$$\frac{x}{4b} = \frac{1}{2ab}$$

$$x = \frac{4b}{2ab}$$

$$\Rightarrow x = \frac{2}{a}$$

And

$$\frac{y}{6a} = \frac{1}{2ab}$$

$$\frac{y}{6a} = \frac{1}{2ab}$$

$$\Rightarrow y = \frac{6a}{2ab} = \frac{3}{b}$$

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

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