CHAPTER 03

Pair of Linear Equations in Two Variables

Solution of a pair of linear equations by substitution method:

Procedure to solve Substitution Method:

Step-1:

Solve one of the given equations for one of the variables in terms of other variable. [i.e. express x in terms of y].

Step-2:

Substitute that value found in step-1 in the other equation. [i.e. substitute the value of 'x' in second equation. We will get the equation in terms of 'y'].

Step-3:

Solve the resulting single-variable equation. [i.e., we get value of 'y', then substitute 'y' in another equation we get value of 'x'].

Question.

Solve the equations x + y = 5 and 2x – y = -2.

Explanation:

Let the equations are $x+y=5 \rightarrow (1)$ and $2x-y=-2 \rightarrow (2)$

Step-1:

From Eq. (1)

$x + y = 5$

$\Rightarrow x = 5 - y$

$\Rightarrow \boxed{x = 5 - y}$

Step-2:

Substitute 'x' in Eq. (2)

$2[5 - y] - y = -2$

Step-3:

$\Rightarrow 10 - 2y - y = -2$

$\Rightarrow -3y = -2 - 10$

$\Rightarrow -3y = -12$

$\Rightarrow y = \frac{-12}{-3} = 4$

$\Rightarrow \boxed{y = 4}$

Substitute 'y' in Eq. (1)

$\Rightarrow x + 4 = 5$

$\Rightarrow x = 5 - 4$

$\Rightarrow \boxed{x = 1}$

$\therefore$ The solution is $\boxed{x = 1, y = 4}$.