Linear Equation In Two Variables

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Class 10^{th} Maths - Chapter 3

This is Problem-1(ii) from Exercise 3.3

x–y=3 , 2x–3y=36

Solution:

Given Data: x–y=3 , 2x–3y=36

This can also be written as:

$$\tag{1}$$

$$a1\begin{pmatrix}1\\2\end{pmatrix}a2\begin{pmatrix}-1\\3\end{pmatrix}b\begin{pmatrix}3\\36\end{pmatrix} \tag{2}$$

$$\tag{3}$$

$$x = \frac{\begin{vmatrix} b & a2 \end{vmatrix}}{\begin{vmatrix} a1 & a2 \end{vmatrix}} = \frac{\begin{vmatrix} 3 & -1 \\ 36 & 3 \end{vmatrix}}{\begin{vmatrix} 1 & -1 \\ 2 & 3 \end{vmatrix}} = \frac{\begin{vmatrix} 9 & -(-36) \end{vmatrix}}{\begin{vmatrix} 3 & -(-2) \end{vmatrix}} = \frac{45}{5} = 9 \tag{4}$$

$$\tag{5}$$

$$y = \frac{\begin{vmatrix} a1 & b \end{vmatrix}}{\begin{vmatrix} a1 & a2 \end{vmatrix}} = \frac{\begin{vmatrix} 1 & 3 \\ 2 & 36 \end{vmatrix}}{\begin{vmatrix} 1 & -1 \\ 2 & 3 \end{vmatrix}} = \frac{\begin{vmatrix} 36 & -6 \end{vmatrix}}{\begin{vmatrix} 3 & -(-2) \end{vmatrix}} = \frac{30}{5} = 6 \tag{6}$$