Linear Equation In Two Variables

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This is Problem-4(iv) from Exercise 3.2

4 (iv) 2x–2y–2=0 , 4x–4y–5=0

Solution:

Given Data: 2x–2y–2=0 , 4x-4y–5=0

This can also be written as:

$$\mathbf{AX} = \mathbf{B} \tag{1}$$

Where, A= $\begin{pmatrix} 2 & -2 \\ 4 & -4 \end{pmatrix}$ X= $\begin{pmatrix} x \\ y \end{pmatrix}$ $B = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$

A = a1+a2

a1 = $\begin{pmatrix} 2 \\ 4 \end{pmatrix}$ a2 = $\begin{pmatrix} -2 \\ -4 \end{pmatrix}$

(2)

$$x = \frac{\begin{vmatrix} b & a2 \end{vmatrix}}{\begin{vmatrix} a1 & a2 \end{vmatrix}} = \frac{\begin{vmatrix} 2 & -2 \\ 5 & -4 \end{vmatrix}}{\begin{vmatrix} 2 & -2 \\ 4 & -4 \end{vmatrix}} \tag{3}$$

$$(4)$$

$$y = \frac{\begin{vmatrix} a1 & b \end{vmatrix}}{\begin{vmatrix} a1 & a2 \end{vmatrix}} = \frac{\begin{vmatrix} 2 & 2 \\ 4 & 5 \end{vmatrix}}{\begin{vmatrix} 2 & -2 \\ 4 & -4 \end{vmatrix}} \tag{5}$$

$$(6)$$

$$x = \frac{\begin{vmatrix} -8 & +10 \end{vmatrix}}{\begin{vmatrix} -8 & +8 \end{vmatrix}} \tag{7}$$

$$y = \frac{\begin{vmatrix} 10 & -8 \end{vmatrix}}{\begin{vmatrix} -8 & +8 \end{vmatrix}} \tag{8}$$

$$(9)$$

$$x = \frac{2}{0} \tag{10}$$

$$y = \frac{2}{0} \tag{11}$$