

Linear equations in two variables

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10th Maths - Chapter 3

This is Problem-4.4 from Exercise 3.2

1. Which of the following pairs of linear equations are consistent, or inconsistent. If consistent, obtain the solution graphically.

$$2x - 2y = 2 \quad (1)$$

$$4x - 4y = 5 \quad (2)$$

$$(3)$$

Solution:

Matrix form of the equations: $\begin{pmatrix} 2 & -2 & 2 \\ 4 & -4 & 5 \end{pmatrix}$

$$R_1 = (2 \quad -2 \quad 2), R_2 = (4 \quad -4 \quad 5)$$

$R_2 \rightarrow R_2 - 2R_1$, we get:

$$\begin{pmatrix} 2 & -2 & 2 \\ 0 & 0 & 1 \end{pmatrix} \quad (4)$$

$R_1 \rightarrow \frac{R_1}{2}$, we get:

$$\begin{pmatrix} 1 & 1 & 1 \\ 0 & 0 & 1 \end{pmatrix} \quad (5)$$

Therefore, $x = 0$, $y = 0$