

Chapter: Linear Equations in Two Variables

Definitions

1.

$$ax + by + c = 0$$

Here, x and y are variables, and a, b, c are real numbers such that $a \neq 0$ and $b \neq 0$.

This is called a linear equation in two variables. It represents a straight line when drawn on a graph.

Standard Forms of Linear Equations

1.

$$ax + by + c = 0$$

a and b are coefficients of x and y , and c is a constant.

This is the most general form used to represent a linear equation in two variables.

2.

$$y = mx + c$$

Here, m is the slope of the line and c is the y-intercept.

This form is useful for quickly drawing the graph of a line.

Solutions of a Linear Equation

1.

$$(ax + by + c = 0) \Rightarrow (x, y)$$

An ordered pair (x, y) that satisfies the equation is called a solution.

Infinitely many solutions exist because a straight line has infinitely many points.

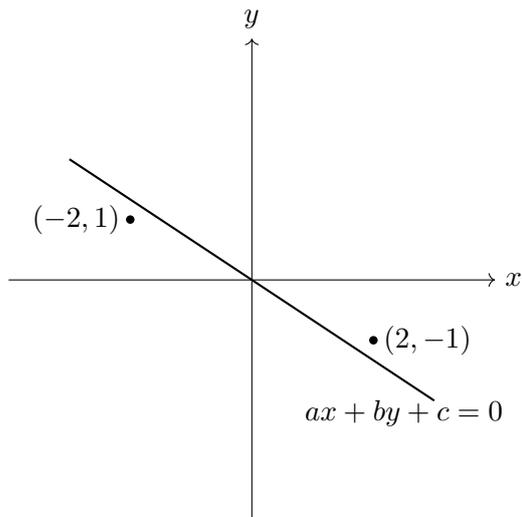
Graph of a Linear Equation

1.

$$ax + by + c = 0$$

To draw the graph:

- (a) Find two solutions of the equation.
- (b) Plot the points on the Cartesian plane.
- (c) Join the points to get a straight line.



This diagram shows the graph of a linear equation as a straight line.

Intercept Form

1.

$$\frac{x}{a} + \frac{y}{b} = 1$$

Here, a is the x-intercept and b is the y-intercept.

This form is used when intercepts on axes are known directly.

Real Life Applications

1.

$$x + y = k$$

Here, x and y represent quantities like ages, numbers, or money, and k is a constant.

This type of equation is used to solve problems related to age, numbers, and daily life situations.

Quick Revision Summary (Formulas Only)

1.

$$ax + by + c = 0$$

2.

$$y = mx + c$$

3.

$$\frac{x}{a} + \frac{y}{b} = 1$$

4.

$$x + y = k$$