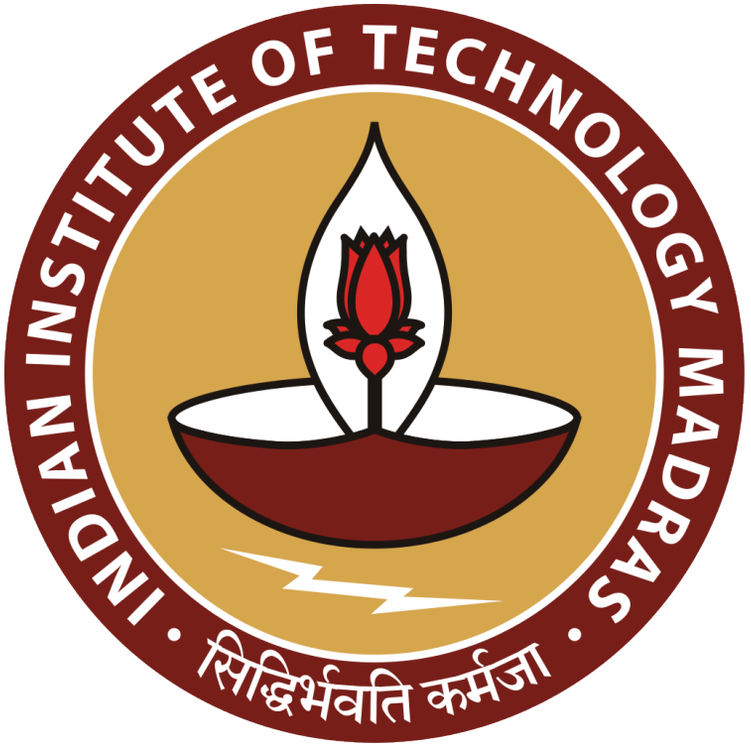

IIT Madras

ONLINE DEGREE

General Equation of a Line

Different forms of Equation of Line	Representation	General Form Ax + By +C = 0
Slope-Point Form	$(y - y_0) = m(x - x_0)$	$m = -\frac{A}{B}, y_0 - mx_0 = -\frac{C}{B}$
Slope-Intercept Form	$y = mx + c$ or $y = m(x - d)$	$m = -\frac{A}{B}, c = -\frac{C}{B}$ or $d = -\frac{C}{A}$
Two-Point Form	$(y - y_1) = \frac{y_2 - y_1}{x_2 - x_1}(x - x_1).$	$\frac{y_2 - y_1}{x_2 - x_1} = -\frac{A}{B}, y_1 + \frac{A}{B}x_1 = -\frac{C}{B}$
Intercept Form	$\frac{x}{a} + \frac{y}{b} = 1$	$a = -\frac{C}{A}, b = -\frac{C}{B}$

Any equation of the form Ax+By+C = 0, where A, B ≠ 0 simultaneously, is called *general linear equation* or *general equation of a line*.

Example

Question. The equation of a line is 3x -4y +12 = 0. Find the slope, x-intercept and y-intercept of the line.

Identify A = 3, B = -4 and C = 12.

Using Intercept form, a = - C/A = -4 and b = -C/B = 3.

Using Slope-intercept form, y= $\frac{3}{4}x + 3$. Hence, m = $\frac{3}{4}$.

Slope = ¾, x-intercept= -4 and y-intercept = 3.