



IIT Madras
ONLINE DEGREE

Equation of Line: Slope-Intercept Form

Let a line l with slope m cut Y-axis at c . Then c is called the y-intercept of the line l .

That is, the point $(0,c)$ lies on the line l .

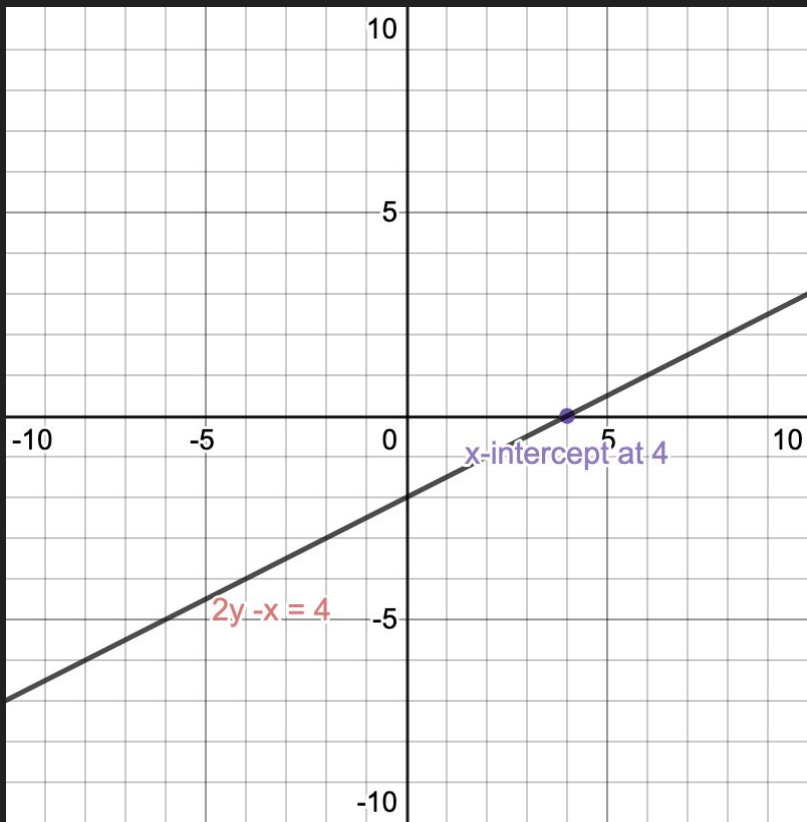
Therefore, by Point-Slope form, we get $y - c = mx$, or $y = mx + c$.

Let a line l with slope m cut X-axis at d . Then d is called the x-intercept of the line l .

That is, the point $(d,0)$ lies on the line l .

Therefore, by Point-Slope form, we get $y = m(x - d)$.

Examples



Q. Find the equation of a line with slope $\frac{1}{2}$ and y-intercept $-\frac{3}{2}$.

The equation of the line is $y = \frac{1}{2}x - \frac{3}{2}$

Q. Find the equation of a line with slope $\frac{1}{2}$ and x-intercept 4.

The equation of the line is $y = \frac{1}{2}(x - 4)$ or $2y - x + 4 = 0$.

Equation of a Line: Intercept Form

Suppose a line makes x-intercept at a and y-intercept at b . Then the two points on the line are $(a,0)$ and $(0,b)$.

Using two-point form,

$$(y - 0) = \frac{b-0}{0-a}(x - a) \text{ or } \frac{x}{a} + \frac{y}{b} = 1$$

Example

Q. Find the equation of a line having x-intercept at -3 and y-intercept at 3.

$$\frac{x}{-3} + \frac{y}{3} = 1 \text{ or } y = x + 3.$$

