

# LINE

## 1 11<sup>th</sup> Maths - EXERCISE-10.2

1. Passing through the point  $(-4, 3)$  with slope  $\frac{1}{2}$

## 2 SOLUTION

Given points are

$$\mathbf{P} = \begin{pmatrix} -4 \\ 3 \end{pmatrix}, m = \frac{1}{2} \quad (1)$$

The directional vector is:

$$\mathbf{m} = \begin{pmatrix} -1 \\ \frac{1}{2} \end{pmatrix} \quad (2)$$

The normal vector is:

$$\mathbf{n} = \begin{pmatrix} \frac{1}{2} \\ -1 \end{pmatrix} \quad (3)$$

$$\mathbf{n}^\top = \left( \frac{1}{2} \quad -1 \right) \quad (4)$$

The line equation is represented in the form of

$$\mathbf{n}^\top (\mathbf{x} - \mathbf{P}) = 0 \quad (5)$$

$$\left( \frac{1}{2} \quad -1 \right) (\mathbf{x} - \mathbf{P}) = 0 \quad (6)$$

$$\left( \frac{1}{2} \quad -1 \right) \left( (\mathbf{x}) - \begin{pmatrix} -4 \\ 3 \end{pmatrix} \right) = 0 \quad (7)$$

$$\left( \frac{1}{2} \quad -1 \right) \mathbf{x} = -10 \quad (8)$$

## 3 Figure

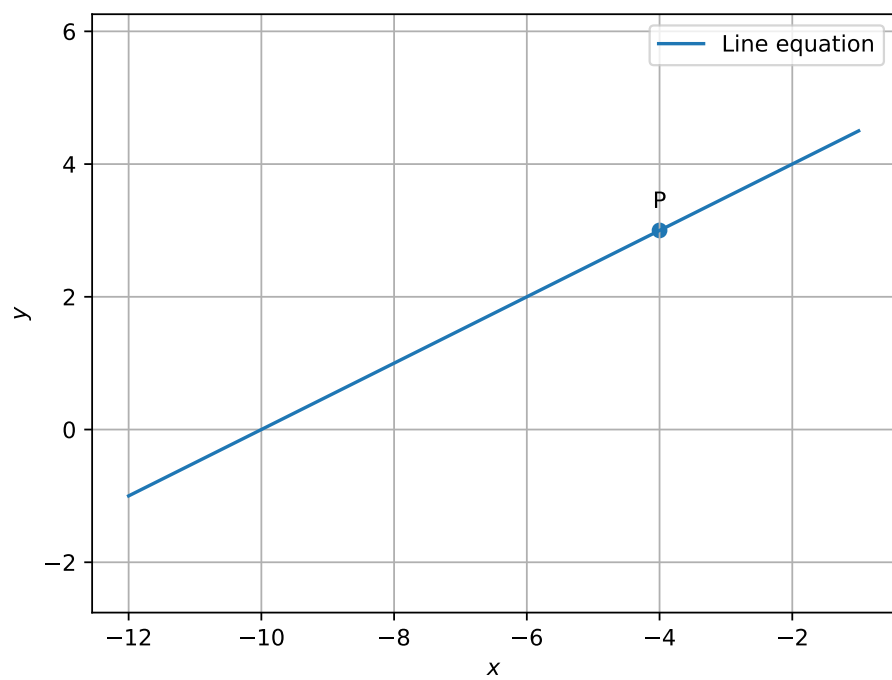


Figure 1: line