# LINE

## 1 $11^{th}$ Maths - EXERCISE-10.2

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

## 2 SOLUTION

Given points are

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

The directional vector is:

$$\mathbf{m} = \begin{pmatrix} -1 \\ \frac{1}{2} \end{pmatrix} \tag{2}$$

The normal vector is:

$$\mathbf{n} = \begin{pmatrix} \frac{1}{2} \\ -1 \end{pmatrix} \tag{3}$$

$$\mathbf{n}^\top = \begin{pmatrix} \frac{1}{2} & -1 \end{pmatrix} \tag{4}$$

The line equation is represented in the form of

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

$$\begin{pmatrix} \frac{1}{2} & -1 \end{pmatrix} (\mathbf{x} - \mathbf{P}) = 0 \tag{6}$$

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

$$\begin{pmatrix} \frac{1}{2} & -1 \end{pmatrix} \mathbf{x} = -10 \tag{8}$$

## 3 Figure

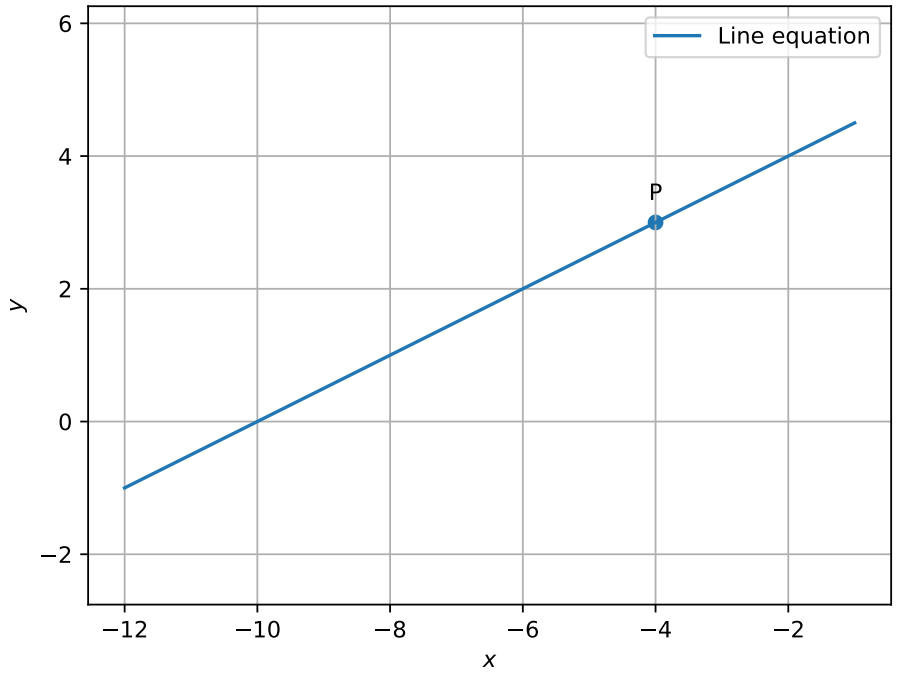


Figure 1: line