

# Equation of Line

**1 11<sup>th</sup> Maths - Chapter 10** From the line equation we find  $c$  value is

**This is Problem-15 from Exercise 10.3**

$$\begin{pmatrix} \frac{1}{2} \\ 1 \end{pmatrix} \begin{pmatrix} 1 \\ 2 \end{pmatrix} = c \quad (9)$$

1. The perpendicular from the origin to the line  $y=mx+c$  meets it at the point  $(-1,2)$  find value of  $m$  and  $c$ .

$$c = \frac{5}{2} \quad (10)$$

Solution:

Given

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

$$\mathbf{O} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \quad (2)$$

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

The equation of line is

$$\mathbf{n}^\top \mathbf{x} = c \quad (4)$$

$$(m \ -1) \mathbf{x} = c \quad (5)$$

The directional vector  $\mathbf{OP}$  is

$$(\mathbf{O} - \mathbf{P})^\top \mathbf{m} = 0 \quad (6)$$

$$(1 \ -2) \begin{pmatrix} -1 \\ -m \end{pmatrix} = 0 \quad (7)$$

$$m = \frac{1}{2} \quad (8)$$

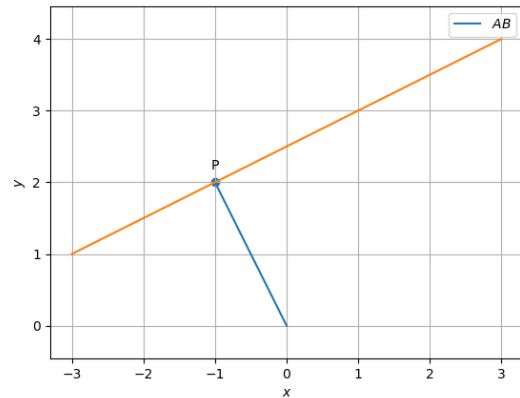


Figure 1