

CLASS-11  
CHAPTER-10  
STRAIGHT LINES

### Exercise 10.4

Q2. Find the values of  $\theta$  and  $p$ , if the equation  $x \cos \theta + y \sin \theta = p$  is the normal form of the line  $\sqrt{3}x + y + 2 = 0$ .

**Solution:**

From the given line equation normal vector is given by:

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

$$c = -2 \quad (2)$$

The angle  $\theta$  is given by:

$$\tan \theta = -\sqrt{3} \quad (3)$$

$$\implies \theta = -60^\circ \quad (4)$$

The perpendicular distance  $p$  is given by:

$$p = \frac{|c|}{\|\mathbf{n}\|} = \frac{2}{2} = 1 \quad (5)$$

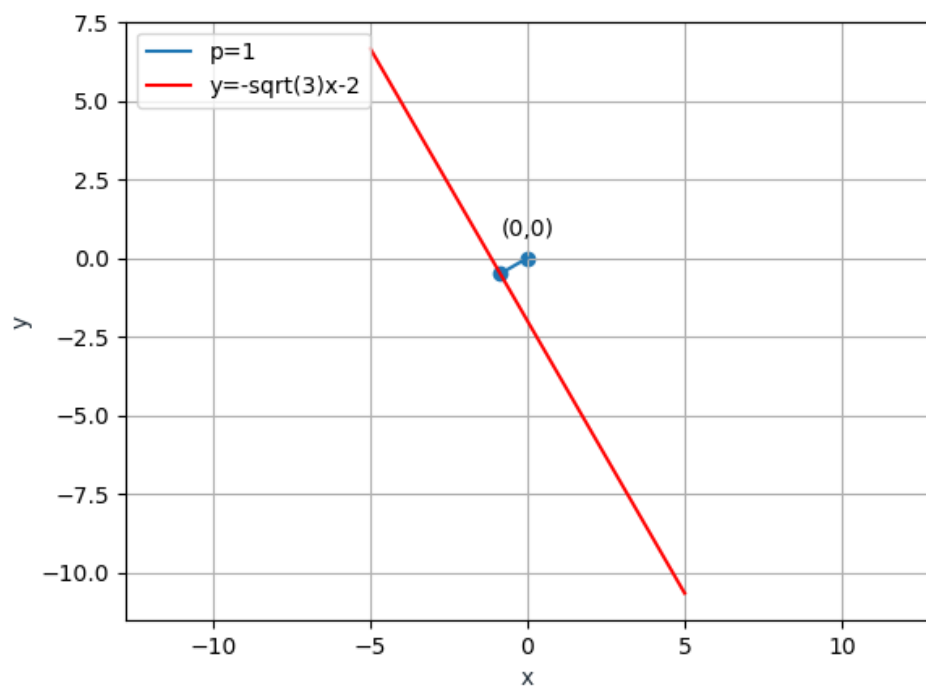


Figure 1: