LINE USING PYTHON

Mukesh Guptha.CH
mukeshchinta1313@gmail.com
FWC22069 IITH Future Wireless Communication (FWC) ASSIGN-4

Problem Statement – **Find the equation of the line passing through (-3,5) and perpendicular to the line through the points (2,5) and (-3,6).**

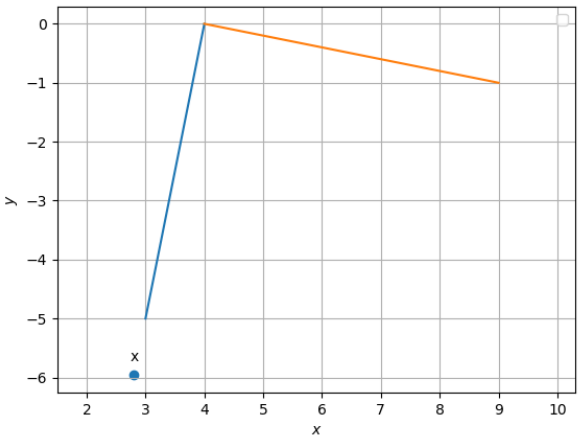

Figure 1: perpendicular intersection

Construction

the input parameters are as follows

Symbol	Value	Description
c	$\begin{pmatrix} 5 \\ -1 \end{pmatrix}$	coefficients of line
d	$\begin{pmatrix} 20 \end{pmatrix}$	constants

solution

part 1

let us take A=(2,5),B=(-3,6) and P=(-3,5).Directional vector of the pointsm=B-A

$$m = \begin{pmatrix} 2 \\ 5 \end{pmatrix} - \begin{pmatrix} -3 \\ 6 \end{pmatrix} \qquad m = \begin{pmatrix} 5 \\ -1 \end{pmatrix} \tag{1}$$

$$\mathbf{m^t(X - P)} = 0 \tag{2}$$

$$\begin{pmatrix} 5 & -1 \end{pmatrix} \begin{pmatrix} X - P \end{pmatrix} \tag{3}$$

$$\begin{pmatrix} 5 & -1 \end{pmatrix} \begin{pmatrix} x + 3 \\ y - 5 \end{pmatrix} \tag{4}$$

The required line equation is

$$\mathbf{5x - y + 20 = 0} \tag{5}$$