1-1.5-27

AI24BTECH11002 - K.AKSHAY TEJA

Question:

If the coordinates of points **A** and **B** are $(-2,-2)$ and $(2,-4)$ respectively, find the coordinates of **P** such that $AP = \frac{3}{7}AB$, and **P** lies on the line segment AB.

(10, 2015)

Solution:

Point	x**-coordinate**	y**-coordinate**
A	-2	-2
B	2	-4

TABLE 0: Coordinates of points A and B

Given, $AP = \frac{3}{7}AB$.That means P divides AB in ratio 3:4

Using section formula,

$$\mathbf{P} = \frac{1}{1+k}\begin{pmatrix}1 & k\end{pmatrix}\begin{pmatrix}\mathbf{A}\\ \mathbf{B}\end{pmatrix} \tag{0.1}$$

$$\mathbf{P} = \frac{1}{1+\frac{3}{4}}\begin{pmatrix}1 & \frac{3}{4}\end{pmatrix}\begin{pmatrix}-2 & 2\\ -2 & -4\end{pmatrix} \tag{0.2}$$

$$\mathbf{P} = \frac{4}{7}\begin{pmatrix}\frac{-1}{2}\\ -5\end{pmatrix} \tag{0.3}$$

$$= \begin{pmatrix}\frac{-2}{7}\\ \frac{-20}{7}\end{pmatrix} \tag{0.4}$$

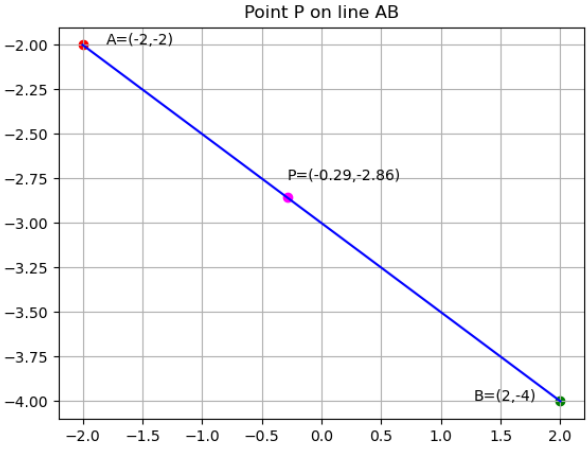

Fig. 0.1: Plot of points A,B and P