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,

$$\mathbf{P} = \frac{\mathbf{A} + k\mathbf{B}}{1+k} \tag{0.1}$$

$$\mathbf{P} = \frac{1}{1+\frac{3}{4}}\left(\begin{pmatrix}-2\\-2\end{pmatrix} + \frac{3}{4}\begin{pmatrix}2\\-4\end{pmatrix}\right) \tag{0.2}$$

$$= \begin{pmatrix}\frac{-2}{7}\\\frac{-20}{7}\end{pmatrix} \tag{0.3}$$

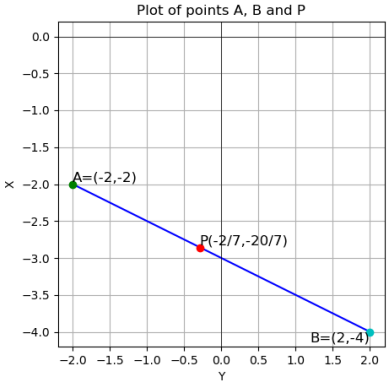

Fig. 0.1: Plot of points A,B and P