

# 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,

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

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

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

$$= \begin{pmatrix} \frac{-2}{7} \\ \frac{-20}{7} \end{pmatrix} \quad (0.4)$$

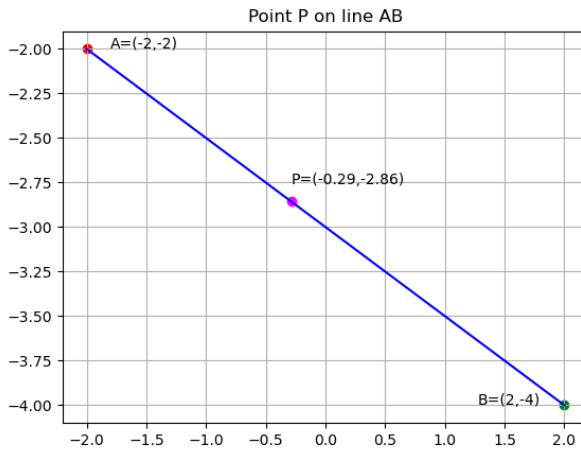


Fig. 0.1: Plot of points A,B and P