

1.4.9.9

EE24BTECH11047 - Niketh Prakash Achanta

Question:

Find the coordinates of the points of trisection (*i.e. points dividing to three equal parts*) of the line segment joining the points **A** (2, -2) and **B** (-7, 4).

Solution:

Variable	Description
A	One end of line segment
B	Other end of line segment
P_1	First point of trisection
P_2	Second point of trisection
m	Ratio in which P_1 divides AB
n	Ratio in which P_2 divides AB

TABLE 0: Variables Used

Using the section formula:

$$\mathbf{C} = \left(\frac{\mathbf{B} + m\mathbf{A}}{1 + m} \right) \quad (1)$$

$$\mathbf{P1orP2} = \left(\frac{\frac{-7+2m}{4-2m}}{\frac{1+m}{1+m}} \right) \quad (2)$$

P1 divides AB in the ratio 1 : 2, so

$$m = \frac{1}{2} \quad (3)$$

Plugging this value in 0.2, we get

$$\mathbf{P1} = \begin{pmatrix} -1 \\ 0 \end{pmatrix} \quad (4)$$

Similarly, in case of **P2**,

$$n = 2 \quad (5)$$

Again, putting this value in place of m in 0.2, we get

$$\mathbf{P2} = \begin{pmatrix} -4 \\ 2 \end{pmatrix} \quad (6)$$

Thus, we have found the points of intersection viz. $\mathbf{P1} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$ and $\mathbf{P2} = \begin{pmatrix} -4 \\ 2 \end{pmatrix}$.

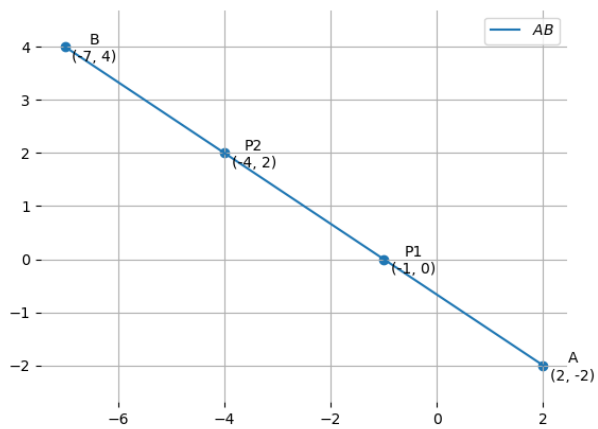


Fig. 0