

# VECTORS

## 1 10<sup>th</sup> Maths - EXERCISE-7.2

1. If 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.

## 2 SOLUTION

Given points are

$$\mathbf{A} = \begin{pmatrix} -2 \\ -2 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 2 \\ -4 \end{pmatrix} \quad (1)$$

The equation of the formula is

$$\mathbf{P} = \frac{\mathbf{A} + n\mathbf{B}}{1 + n} \quad (2)$$

Ratio 3:4 has taken

$$n = \frac{3}{4} \quad (3)$$

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

$$= \frac{1}{\frac{7}{4}} \left( \begin{pmatrix} -2 \\ -2 \end{pmatrix} + \begin{pmatrix} \frac{6}{4} \\ -\frac{12}{4} \end{pmatrix} \right) \quad (5)$$

$$= \frac{1}{\frac{7}{4}} \left( \begin{pmatrix} -\frac{2}{4} \\ -\frac{20}{4} \end{pmatrix} \right) \quad (6)$$

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

$$(8)$$

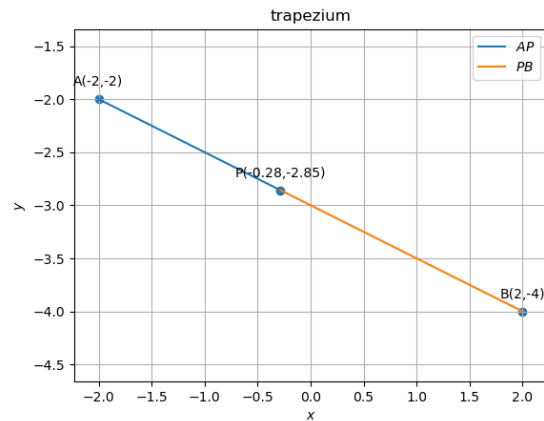


Figure 1