

Chapter Name

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10th Maths - Chapter 7

This is Problem-2 from Exercise 7.2

1. Type your question
find the coordinates of the point of trisection joining (4,-1),(-2,-3)

Solution:

Case-1

$$\mathbf{A} = \begin{pmatrix} 4 \\ -2 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}, m_1 : m_2 = 2 : 1$$

$$\mathbf{P} = \frac{m_1 \mathbf{B} + m_2 \mathbf{A}}{m_1 + m_2} \quad (1)$$

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

$$\mathbf{P} = \frac{\begin{pmatrix} 8 - 2 \\ -4 - 3 \end{pmatrix}}{2 + 1} \quad (3)$$

$$\mathbf{P} = \begin{pmatrix} \frac{8-2}{2+1} \\ \frac{-4-3}{2+1} \end{pmatrix} \quad (4)$$

$$\mathbf{P} = \begin{pmatrix} \frac{6}{3} \\ \frac{-7}{3} \end{pmatrix} \quad (5)$$

$$\mathbf{P} = \begin{pmatrix} 2 \\ \frac{-7}{3} \end{pmatrix} \quad (6)$$

$$(7)$$

$$\text{Case-2} \\ \mathbf{A} = \begin{pmatrix} 4 \\ -2 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 \\ -3 \end{pmatrix}, m_1 : m_2 = 1 : 2$$

$$\mathbf{P} = \frac{m_1 B + m_2 A}{m_1 + m_2} \quad (8)$$

$$\mathbf{P} = \frac{1 \begin{pmatrix} 4 \\ -2 \end{pmatrix} + 2 \begin{pmatrix} -2 \\ -3 \end{pmatrix}}{1 + 2} \quad (9)$$

$$\mathbf{P} = \frac{\begin{pmatrix} 4 - 4 \\ -2 - 6 \end{pmatrix}}{1 + 2} \quad (10)$$

$$\mathbf{P} = \begin{pmatrix} \frac{4-4}{1+2} \\ \frac{-2-6}{1+2} \end{pmatrix} \quad (11)$$

$$\mathbf{P} = \begin{pmatrix} \frac{0}{3} \\ \frac{-8}{3} \end{pmatrix} \quad (12)$$

$$\mathbf{P} = \begin{pmatrix} (0) \\ \frac{-8}{3} \end{pmatrix} \quad (13)$$

$$(14)$$