Coordinate-Geomentry

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10th Maths - Chapter 7

This is Problem-1 from Exercise 7.2

1. Find the coordinates of the point which divides the join of (–1, 7) and (4, –3) in the ratio 2 : 3

Solution:
Given,
$\mathbf{A}=\begin{pmatrix} -1 \\ 7 \end{pmatrix}$, $\mathbf{B}=\begin{pmatrix} 4 \\ -3 \end{pmatrix}$, $m_1 : m_2 = 2 : 3$

$$\mathbf{P} = \frac{m_1 B + m_2 A}{m_1 + m_2} \tag{1}$$

$$\mathbf{P} = \frac{2\begin{pmatrix} 4 \\ -3 \end{pmatrix} + 4\begin{pmatrix} -1 \\ 7 \end{pmatrix}}{2 + 3} \tag{2}$$

$$\mathbf{P} = \frac{\begin{pmatrix} 8 - 3 \\ -6 + 21 \end{pmatrix}}{2 + 3} \tag{3}$$

$$\mathbf{P} = \begin{pmatrix} \frac{8-3}{2+3} \\ \frac{-6+21}{2+3} \end{pmatrix} \tag{4}$$

$$\mathbf{P} = \begin{pmatrix} \frac{5}{5} \\ \frac{15}{5} \end{pmatrix} \tag{5}$$