Coordinate-Geomentry

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

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

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

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

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

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

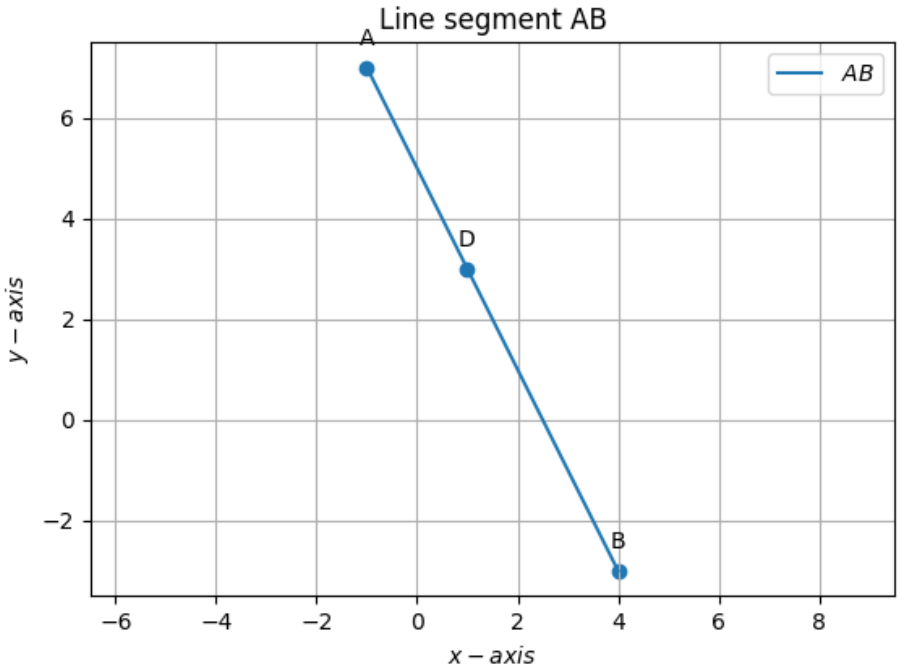

Figure 1: Line segment AB