

Assignment 3

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Find Python Codes from below link

[https://github.com/Hruday-Beeravelli/
INTERNSHIP-IITH-1/blob/main/
Assignment2/A2.py](https://github.com/Hruday-Beeravelli/INTERNSHIP-IITH-1/blob/main/Assignment2/A2.py)

and Latex codes from below link

[https://github.com/Hruday-Beeravelli/
INTERNSHIP-IITH-1/blob/main/
Assignment2/A2.tex](https://github.com/Hruday-Beeravelli/INTERNSHIP-IITH-1/blob/main/Assignment2/A2.tex)

From (1.2.2)

$$= \frac{3 \begin{pmatrix} 2 \\ 7 \end{pmatrix} - (-4) \begin{pmatrix} 1 \\ 3 \end{pmatrix}}{3 + (-4)} \quad (1.2.6)$$

$$= - \left(\begin{pmatrix} 6 \\ 21 \end{pmatrix} - \begin{pmatrix} -4 \\ -12 \end{pmatrix} \right) \quad (1.2.7)$$

$$\mathbf{E} = \begin{pmatrix} 10 \\ 33 \end{pmatrix} \quad (1.2.8)$$

1 EXAMPLES 1

1.1 Question 16

Find coordinates of a point which divides the line joining the points (1, 3) and (2, 7) in the ratio 3 : -4

(1.1.1)

1.2 Solution

Let the I and E be coordinates dividing the line AB in the ratio $m : n$ internally and externally

$$\mathbf{I} = \frac{m\mathbf{B} + n\mathbf{A}}{m + n} \quad (1.2.1)$$

$$\mathbf{E} = \frac{m\mathbf{B} - n\mathbf{A}}{m + n} \quad (1.2.2)$$

Let $\mathbf{A} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}$, $\mathbf{B} = \begin{pmatrix} 2 \\ 7 \end{pmatrix}$, $m = 3$, $n = -4$

From (1.2.1)

$$= \frac{3 \begin{pmatrix} 2 \\ 7 \end{pmatrix} + (-4) \begin{pmatrix} 1 \\ 3 \end{pmatrix}}{3 + (-4)} \quad (1.2.3)$$

$$= - \left(\begin{pmatrix} 6 \\ 21 \end{pmatrix} + \begin{pmatrix} -4 \\ -12 \end{pmatrix} \right) \quad (1.2.4)$$

$$\mathbf{I} = \begin{pmatrix} -2 \\ -9 \end{pmatrix} \quad (1.2.5)$$

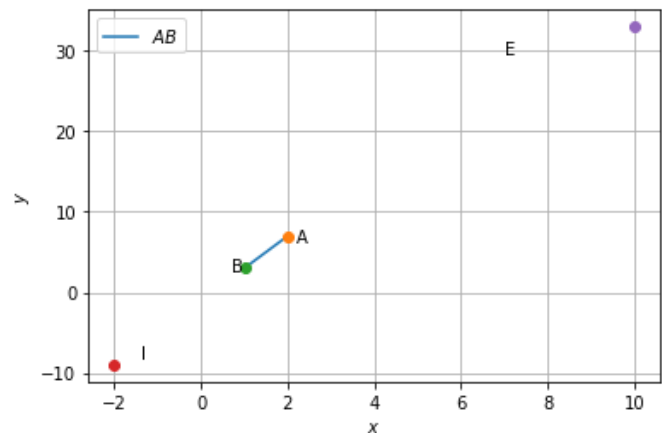


Fig. 0