Assignment 2

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Find Python Codes from below link

https://github.com/RaghavendraKulkarni/internship/blob/main/Assignment1

and latex-tikz codes from

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1 Examples 1

1.1 Question

Find coordinates of the point which divides, internally and externally, the line joining (-3, -4) to (-8,7) in the ratio 7 : 5

$$\mathbf{A} = \begin{pmatrix} -3 \\ -4 \end{pmatrix} \qquad \mathbf{B} = \begin{pmatrix} -8 \\ 7 \end{pmatrix} \tag{1.1.1}$$

1.2 Solution

The coordinates of point P, internally dividing the line AB in the ratio $m : n$ is given by

$$\mathbf{P} = \frac{m\mathbf{B} + n\mathbf{A}}{m+n} \tag{1.2.1}$$

Let $\mathbf{A} = \begin{pmatrix} -3 \\ -4 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} -8 \\ 7 \end{pmatrix}, m = 7, n = 5$

From (**??**)

$$\mathbf{P} = \frac{7\begin{pmatrix} -8 \\ 7 \end{pmatrix} + 5\begin{pmatrix} -3 \\ 4 \end{pmatrix}}{7+5} \tag{1.2.2}$$

$$\mathbf{P} = \frac{\begin{pmatrix} -56 \\ 49 \end{pmatrix} + \begin{pmatrix} -15 \\ -20 \end{pmatrix}}{12} \tag{1.2.3}$$

$$\mathbf{P} = \frac{\begin{pmatrix} -71 \\ 29 \end{pmatrix}}{12} \tag{1.2.4}$$

The coordinates of point Q, externally dividing the line AB in the ratio $m : n$ is given by

$$\mathbf{Q} = \frac{m\mathbf{B} - n\mathbf{A}}{m-n} \tag{1.2.5}$$

From (1.2.5)

$$\mathbf{Q} = \frac{7\begin{pmatrix} -8 \\ 7 \end{pmatrix} - 5\begin{pmatrix} -3 \\ -4 \end{pmatrix}}{7-5} \tag{1.2.6}$$

$$\mathbf{Q} = \frac{\begin{pmatrix} -56 \\ 49 \end{pmatrix} - \begin{pmatrix} -15 \\ -20 \end{pmatrix}}{2} \tag{1.2.7}$$

$$\mathbf{Q} = \frac{\begin{pmatrix} -41 \\ 69 \end{pmatrix}}{2} \tag{1.2.8}$$

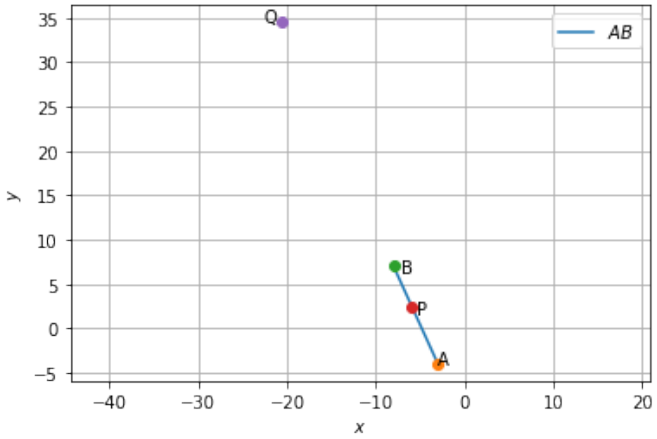

Fig. 0