

# Assignment 4

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Find Python Codes from below link

<https://github.com/Nagarajunaddi/Assignment-4>

and latex-tikz codes from

<https://github.com/Nagarajunaddi/Assignment-4>

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

$$\mathbf{Q} = \frac{m\mathbf{B} - n\mathbf{A}}{m - n} \quad (1.2.6)$$

From (1.2.6)

$$\mathbf{Q} = \frac{2\begin{pmatrix} 4 \\ -5 \end{pmatrix} - 3\begin{pmatrix} -1 \\ 2 \end{pmatrix}}{2 - 3} \quad (1.2.7)$$

$$\mathbf{Q} = \frac{\begin{pmatrix} 8 \\ -10 \end{pmatrix} - \begin{pmatrix} -3 \\ 6 \end{pmatrix}}{-1} \quad (1.2.8)$$

$$\mathbf{Q} = \frac{\begin{pmatrix} 11 \\ -16 \end{pmatrix}}{-1} \quad (1.2.9)$$

$$\mathbf{Q} = \begin{pmatrix} -11 \\ 16 \end{pmatrix} \quad (1.2.10)$$

## 1 EXAMPLES 1

### 1.1 Question

Find coordinates of the point which divides, internally and externally, the line joining  $(-1, 2)$  to  $(4, -5)$  in the ratio  $2 : 3$

$$\mathbf{A} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} \quad \mathbf{B} = \begin{pmatrix} 4 \\ -5 \end{pmatrix} \quad (1.1.1)$$

### 1.2 Solution

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

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

$$\text{Let } \mathbf{A} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 4 \\ -5 \end{pmatrix}, m = 2, n = 3$$

From (1.2.1)

$$\mathbf{P} = \frac{2\begin{pmatrix} 4 \\ -5 \end{pmatrix} + 3\begin{pmatrix} -1 \\ 2 \end{pmatrix}}{2 + 3} \quad (1.2.2)$$

$$\mathbf{P} = \frac{\begin{pmatrix} 8 \\ -10 \end{pmatrix} + \begin{pmatrix} -3 \\ 6 \end{pmatrix}}{5} \quad (1.2.3)$$

$$\mathbf{P} = \frac{\begin{pmatrix} 5 \\ -4 \end{pmatrix}}{5} \quad (1.2.4)$$

$$\mathbf{P} = \begin{pmatrix} 1 \\ -4/5 \end{pmatrix} \quad (1.2.5)$$

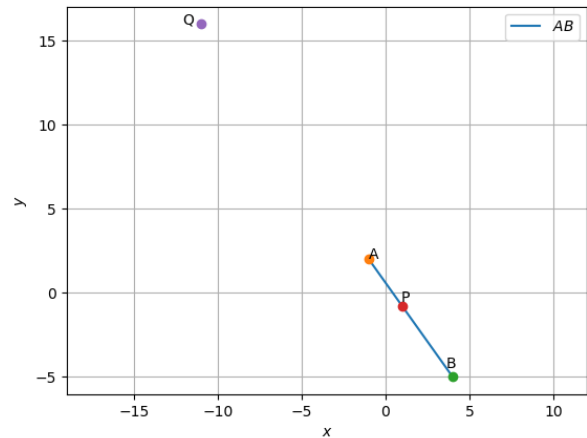


Fig. 0