

# Assignment 5

Jaisai Kandregula

Find Python Codes from below link

<https://raw.githubusercontent.com/jaisai1337/IITH/main/SU/Assignment5/code.py>

and Latex codes from below link

<https://raw.githubusercontent.com/jaisai1337/IITH/main/SU/Assignment5/main.tex>

Area of the triangle

$$= \frac{1}{2} \begin{vmatrix} -2 & 4 \\ 6 & -12 \end{vmatrix} \quad (1.2.6)$$

$$= \frac{1}{2} [(-2 \times -12) - (6 \times 4)] \quad (1.2.7)$$

$$= \frac{1}{2} (24 - 24) \quad (1.2.8)$$

$$= \frac{1}{2} (0) \quad (1.2.9)$$

$$= 0$$

Since the area is 0 the given points form a straight line.

## 1 EXAMPLES 1

### 1.1 Question 1

Find the area of the triangle of the quadrilaterals the coordinates of whose angular points, taken in order, are (1,4), (3,-2), (-3,16).

### 1.2 Solution

$$\frac{1}{2} |(A - B)(A - C)| \quad (1.2.1)$$

$$\text{Let } \mathbf{A} = \begin{pmatrix} 1 \\ 4 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -3 \\ 16 \end{pmatrix}$$

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} 1 \\ 4 \end{pmatrix} - \begin{pmatrix} 3 \\ -2 \end{pmatrix} \quad (1.2.2)$$

$$= \begin{pmatrix} -2 \\ 6 \end{pmatrix} \quad (1.2.3)$$

$$\mathbf{A} - \mathbf{C} = \begin{pmatrix} 1 \\ 4 \end{pmatrix} - \begin{pmatrix} -3 \\ 16 \end{pmatrix} \quad (1.2.4)$$

$$= \begin{pmatrix} 4 \\ -12 \end{pmatrix} \quad (1.2.5)$$

From (1.2.1)

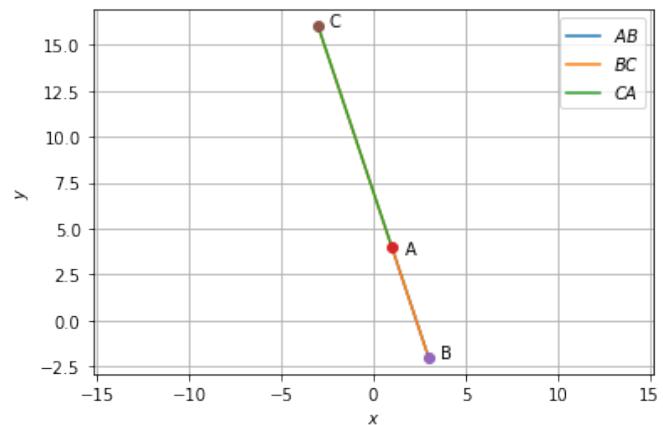


Fig. 0