

Assignment 4

Jaisai Kandregula

Find Python Codes from below link

<https://raw.githubusercontent.com/jaisai1337/IITH/main/SU/Assignment4/code.py>

and Latex codes from below link

<https://raw.githubusercontent.com/jaisai1337/IITH/main/SU/Assignment4/main.tex>

1 EXAMPLES 1

1.1 Question 1

Find the area of the triangle of coordinates whose angular points are (1,3), (-7,6), (5,-1).

1.2 Solution

Area of the triangle

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

$$\text{Let } \mathbf{A} = \begin{pmatrix} 1 \\ 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} -7 \\ 6 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 5 \\ -1 \end{pmatrix}$$

$$\mathbf{A} - \mathbf{B} = \begin{pmatrix} 1 \\ 3 \end{pmatrix} - \begin{pmatrix} -7 \\ 6 \end{pmatrix} \quad (1.2.2)$$

$$= \begin{pmatrix} 8 \\ -3 \end{pmatrix} \quad (1.2.3)$$

$$\mathbf{A} - \mathbf{C} = \begin{pmatrix} 1 \\ 3 \end{pmatrix} - \begin{pmatrix} 5 \\ -1 \end{pmatrix} \quad (1.2.4)$$

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

From (1.2.1)

$$= \frac{1}{2} \begin{vmatrix} 8 & -4 \\ -3 & 4 \end{vmatrix} \quad (1.2.6)$$

$$= \frac{1}{2} [(8 \times 4) - (-3 \times -4)] \quad (1.2.7)$$

$$= \frac{1}{2} (32 - 12) \quad (1.2.8)$$

$$= \frac{1}{2} (20) \quad (1.2.9)$$

$$= 10$$

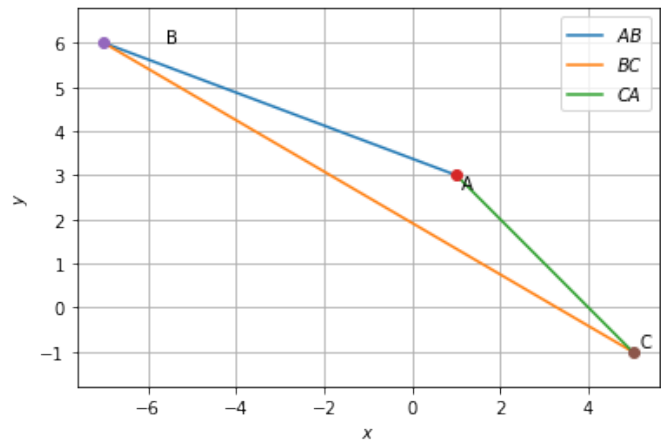


Fig. 0