

Assignment 1

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Download all python codes from

<https://github.com/AnilMondedla/Python>

and latex-tikz codes from

<https://github.com/AnilMondedla/Python>

1 PROBLEM

(1.56) Find area of the triangle with vertices at the point given in each of the following :

(i) (1 0) , (6 0) , (4 3)

2 SOLUTION

vertices in vector form

$$\mathbf{A} = \begin{pmatrix} 1 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 6 \\ 0 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 4 \\ 3 \end{pmatrix} \quad (2.0.1)$$

Area of triangle $\triangle ABC$ is given by

$$\frac{1}{2} \times \begin{vmatrix} 1 & 1 & 1 \\ \mathbf{A} & \mathbf{B} & \mathbf{C} \end{vmatrix} \quad (2.0.2)$$

$$\det(ABC) = \begin{vmatrix} 1 & 1 & 1 \\ 1 & 6 & 4 \\ 0 & 0 & 3 \end{vmatrix} \quad (2.0.3)$$

$$= 3 \begin{vmatrix} 1 & 1 \\ 1 & 6 \end{vmatrix} \quad (2.0.4)$$

$$= 3(6 - 1) \quad (2.0.5)$$

$$= 3(5) \quad (2.0.6)$$

$$\det(ABC) = 15 \quad (2.0.7)$$

Area of triangle $\triangle ABC$ is given by

$$\frac{1}{2} \times \det(ABC) \quad (2.0.8)$$

$$\Delta = \frac{1}{2} \times 15 \quad (2.0.9)$$

$$\Delta = 7.5 \quad (2.0.10)$$

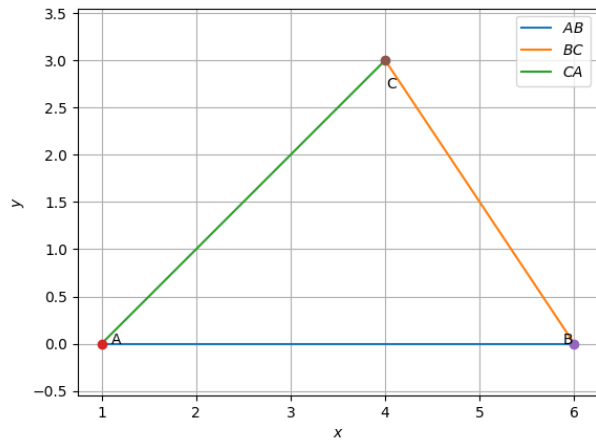


Fig. 0: triangle