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

$$\mathbf{A} = \begin{pmatrix} 2 \\ 7 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 \\ 1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 10 \\ 8 \end{pmatrix} \tag{2.0.1}$$

Area of triangle $\triangle ABC$ is given by

$$\frac{1}{2} \times \begin{vmatrix} 1 & 1 & 1 \\ A & B & C \end{vmatrix} \tag{2.0.2}$$

Area of triangle $\triangle ABC$ is det (ΔABC) =

$$\frac{1}{2} \times \begin{vmatrix} 1 & 1 & 1 \\ 2 & 1 & 10 \\ 7 & 1 & 8 \end{vmatrix} \tag{2.0.3}$$

$$\Delta = \frac{1}{2} \times \left| 1 \begin{vmatrix} 1 & 10 \\ 1 & 8 \end{vmatrix} - 1 \begin{vmatrix} 2 & 10 \\ 7 & 8 \end{vmatrix} + 1 \begin{vmatrix} 2 & 1 \\ 7 & 1 \end{vmatrix} \right| \tag{2.0.4}$$

$$\Delta = \frac{1}{2} \times (1(8-10) - 1(16-70) + 1(2-7)) \tag{2.0.5}$$

$$\Delta = \frac{1}{2} \times (-2 + 54 - 5) \tag{2.0.6}$$

$$\Delta = \frac{1}{2} \times (47) \tag{2.0.7}$$

$$\Delta = 23.5 \tag{2.0.8}$$

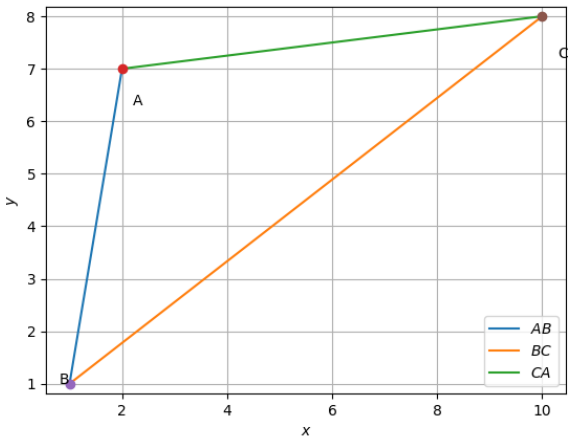

Fig. 0: triangle