1.9.16

EE24BTECH11008 - Aslin Garvasis

Question:
Constuct a triangle whose sides are $3.6cm, 3.0cm$ and $4.8cm$. Bisect the smallest angle and measure each part.
Solution:
$\because$ The smallest angle is associated with the opposite smallest side.

Variable	Description
A= $(0, 0)$	coordinates of first point
B= $(4.8, 0)$	coordinates of second point
C= $(2.812, 2.245)$	coordinates of third point
D	intersection of angle bisector of A in BC

TABLE 0: Input parameters

The angle bisector of a triangle of a triangle divides the opposite side into two parts proportional to the other two sides of the triangle.

$$\therefore \mathbf{D} = \frac{||AC||\,.\mathbf{B} + ||AB||\,.\mathbf{C}}{||AC|| + ||BC||} \tag{0.1}$$

$$\implies \mathbf{D} = \begin{pmatrix} 3.66 \\ 1.28 \end{pmatrix} \tag{0.2}$$

$$\implies ||BD|| = \frac{||BC||\,||AB||}{||AB|| + ||AC||} = 1.71 \tag{0.3}$$

$$\implies ||CD|| = \frac{||BC||\,||AC||}{||AB|| + ||AC||} = 1.28 \tag{0.4}$$

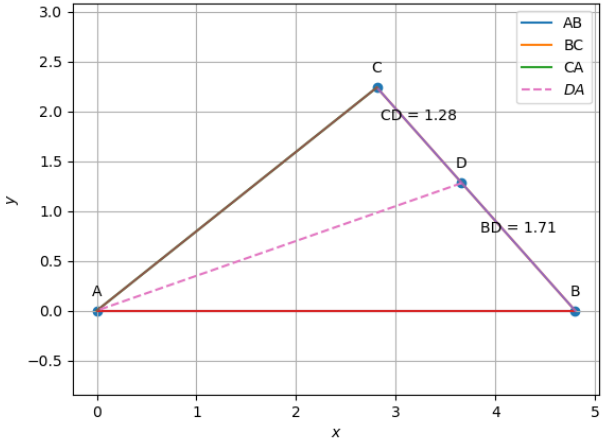

Fig. 0.1: Plot of points **A**, **B**, **C** and **D**