

3.2.17

EE24BTECH11008 - Aslin Garvasis

Question:

Construct a triangle whose sides are 3.6cm , 3.0cm and 4.8cm . Bisect the smallest angle and measure each part.

Solution:

\therefore 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.

$$\therefore \mathbf{D} = \frac{\|AC\| \cdot \mathbf{B} + \|AB\| \cdot \mathbf{C}}{\|AC\| + \|BC\|} \quad (0.1)$$

$$\Rightarrow \mathbf{D} = \begin{pmatrix} 3.66 \\ 1.28 \end{pmatrix} \quad (0.2)$$

$$\Rightarrow \|BD\| = \frac{\|BC\| \|AB\|}{\|AB\| + \|AC\|} = 1.71 \quad (0.3)$$

$$\Rightarrow \|CD\| = \frac{\|BC\| \|AC\|}{\|AB\| + \|AC\|} = 1.28 \quad (0.4)$$

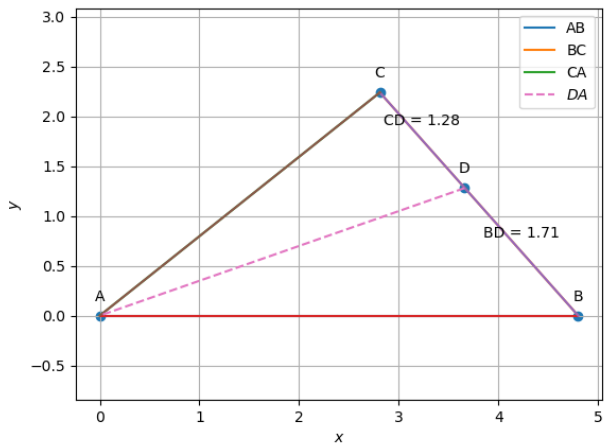


Fig. 0.1: Plot of points A, B, C and D