

# SM5083

## Assignment Number 01

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SM21MTECH11002

### 1. CHAPTER II Ex-14 Q. II

1.1. Problem Statement: Find the in-centres of the triangles whose vertices are as follows, (5,3), (5,-1), (-7,-6)

**Solution:** let

$$\mathbf{A} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 5 \\ -1 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} -7 \\ -6 \end{pmatrix} \quad (1.1.1)$$

$$\|\mathbf{AB}\| = 4$$

$$\|\mathbf{BC}\| = 13$$

$$\|\mathbf{CA}\| = 15$$

Now find in-centre of a triangle,

$$\begin{aligned} \text{In-centre} &= \left( \frac{\|\mathbf{AB}\|\mathbf{C} + \|\mathbf{BC}\|\mathbf{A} + \|\mathbf{CA}\|\mathbf{B}}{\|\mathbf{AB}\| + \|\mathbf{BC}\| + \|\mathbf{CA}\|} \right) \\ &= (3.5, 0) \end{aligned}$$

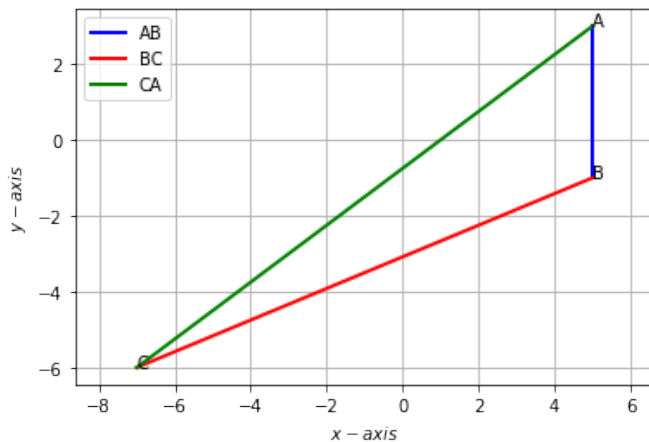


Fig. 1.1. A Triangle for given points