

# Assignment-2

EE224BTECH11044 - Muthyala Koushik

## I. VECTOR ARITHMETIC(CBSE)

**Question:** AOBC is a rectangle whose three vertices are vertices **A** (0, 3), **O** (0,0) and **B** (5,0). The length of its diagonal is

**Solution:** Direction vector of **AB** :  $m = \mathbf{B} - \mathbf{A}$

$$\mathbf{AB} = \begin{pmatrix} 5 \\ 0 \end{pmatrix} - \begin{pmatrix} 0 \\ 3 \end{pmatrix} = \begin{pmatrix} 5 \\ -3 \end{pmatrix} \quad (1)$$

length of **AB**(Diagonal):  $\|\mathbf{m}\|^2 = mm'$

$$\|\mathbf{AB}\|^2 = (5 - 0)^2 + (0 - 3)^2 \quad (2)$$

$$\|\mathbf{AB}\|^2 = 5^2 + (-3)^2 \quad (3)$$

$$\|\mathbf{AB}\|^2 = 25 + 9 \quad (4)$$

$$\|\mathbf{AB}\|^2 = 34 \quad (5)$$

$$\|\mathbf{AB}\| = \sqrt{34} \quad (6)$$

so, length of diagonal =  $\sqrt{34}$ .

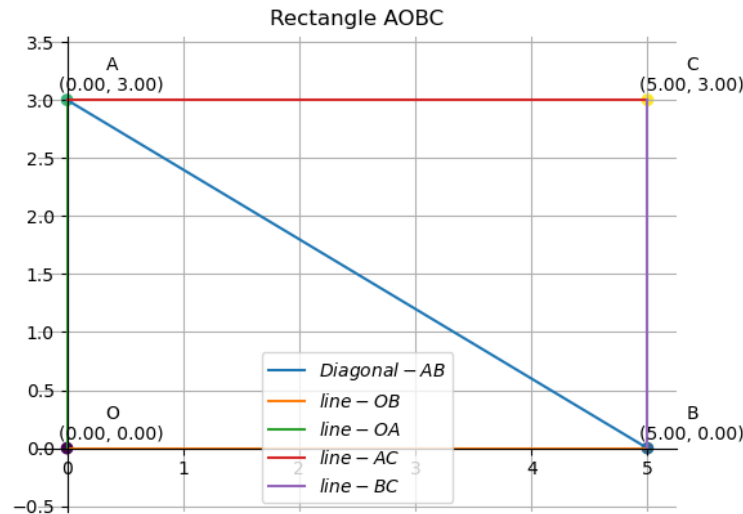


Fig. 1: The plot of the rectangle AOBC