

# Assignment-2

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## 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):  $\|\mathbf{m}\| = m^t$

$$\|\mathbf{AB}\| = (5 - 3) \begin{pmatrix} 5 \\ -3 \end{pmatrix} \quad (2)$$

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

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

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

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

