1.8.11

AI25BTECH11035 - SUJAL RAJANI

Question:
AOBC is a rectangle whose three vertices are vertices **A**(0,3),**O**(0,0),**B**(5,0). The length of diagonal is _____. **Solution:**
From the given information,

$$A = \begin{pmatrix} 0 \\ 3 \end{pmatrix}, O = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, B = \begin{pmatrix} 5 \\ 0 \end{pmatrix} \tag{1}$$

Then the length of the diagonal AB is :

$$A - B = \begin{pmatrix} 0 \\ 3 \end{pmatrix} - \begin{pmatrix} 5 \\ 0 \end{pmatrix} = \begin{pmatrix} -5 \\ 3 \end{pmatrix}, \tag{2}$$

$$\tag{3}$$

$$(A - B)^T (A - B) = 34 \tag{4}$$

Thus the desired distance is

$$\implies AB = \|A - B\| = \sqrt{34} \tag{5}$$