

1.8.11

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August 27, 2025

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,

$$\mathbf{A} = \begin{pmatrix} 0 \\ 3 \end{pmatrix}, \mathbf{O} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 5 \\ 0 \end{pmatrix} \quad (0.1)$$

Then the length of the diagonal AB is :

$$\mathbf{A}-\mathbf{B} = \begin{pmatrix} 0 \\ 3 \end{pmatrix} - \begin{pmatrix} 5 \\ 0 \end{pmatrix} = \begin{pmatrix} -5 \\ 3 \end{pmatrix}, \quad (0.2)$$

(0.3)

$$(\mathbf{A}-\mathbf{B})^T (\mathbf{A}-\mathbf{B}) = 34 \quad (0.4)$$

Thus the desired distance is

$$\Rightarrow AB = \|\mathbf{A}-\mathbf{B}\| = \sqrt{34} \quad (0.5)$$

