2.7.7

AI25BTECH11035 - SUJAL RAJANI

QUESTION Construct a rectangle whose adjacent sides are of lengths 5cm and 3.5cm. **SOLUTION** as mentioned in question adjacent sides are of lengths 5cm and 3.5cm.
as nothing is mentioned in question about the points :
so we are taking rectangle as ABCD :
where position vector of respective points are :

$$\mathbf{A} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 0 \\ 5 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 \\ 5 \end{pmatrix}, \mathbf{D} = \begin{pmatrix} 3 \\ 0 \end{pmatrix},$$

our assumed coordinates are satisfying all the properties of rectangle :

$$(\mathbf{B} - \mathbf{A})^\top (\mathbf{C} - \mathbf{B}) = 0$$
$$(\mathbf{C} - \mathbf{B})^\top (\mathbf{D} - \mathbf{C}) = 0$$
$$(\mathbf{D} - \mathbf{C})^\top (\mathbf{A} - \mathbf{D}) = 0$$
$$(\mathbf{A} - \mathbf{D})^\top (\mathbf{B} - \mathbf{A}) = 0$$

$$(\mathbf{B} - \mathbf{A})^\top (\mathbf{B} - \mathbf{A}) = 25$$
$$(\mathbf{C} - \mathbf{B})^\top (\mathbf{C} - \mathbf{B}) = 9$$
$$(\mathbf{D} - \mathbf{C})^\top (\mathbf{D} - \mathbf{C}) = 25$$
$$(\mathbf{A} - \mathbf{D})^\top (\mathbf{A} - \mathbf{D}) = 9$$