Problem 1.1.2

EE22BTECH11010 - Aryan Bubna

question:The length of side **BC** is
$\|\mathbf{B}-\mathbf{A}\| \overset{\Delta}{=} \sqrt{(\mathbf{B}-\mathbf{A})^{\top}\mathbf{B}-\mathbf{A}}$
where
$\mathbf{A}^{\top} \overset{\Delta}{=} \begin{pmatrix}1 & -1\end{pmatrix}$

Solution: As given in the question
$\mathbf{B} = \begin{pmatrix}-4\\6\end{pmatrix}$ and $\mathbf{C} = \begin{pmatrix}-3\\-5\end{pmatrix}$
now we can obtain the desired vectors

$$\mathbf{C}-\mathbf{B} = \begin{pmatrix}1\\-11\end{pmatrix} \tag{1}$$

$$(\mathbf{C}-\mathbf{B})^{\top} = \begin{pmatrix}-11 & 1\end{pmatrix} \tag{2}$$

using the above two vectors we obtain the length of side **BC**

$$\|\mathbf{C}-\mathbf{B}\| = \sqrt{\begin{pmatrix}1 & -11\end{pmatrix}\begin{pmatrix}1\\-11\end{pmatrix}} \tag{3}$$

$$= \sqrt{122} \tag{4}$$

hence the length of side **BC** is $\sqrt{122}$.

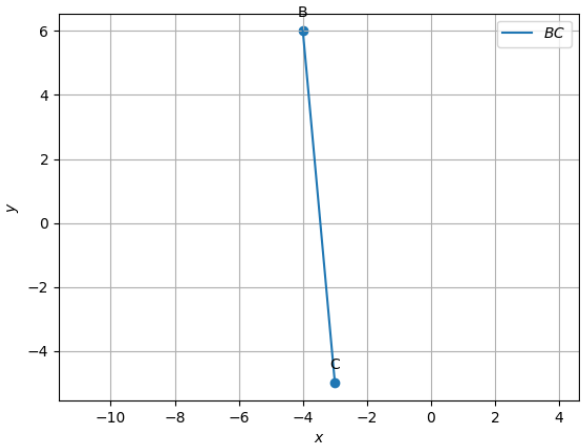

Fig. 0. the line BC