Assignment 8

R.OOHA

1 Question No.VECTORS-2.4

Show that the points $\mathbf{A} = \begin{pmatrix} 2 \\ -1 \\ 1 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 \\ -3 \\ -5 \end{pmatrix}, \mathbf{C} = \begin{pmatrix} 3 \\ -4 \\ -4 \end{pmatrix}$ are the vertices of a right angle triangle

2 SOLUTION

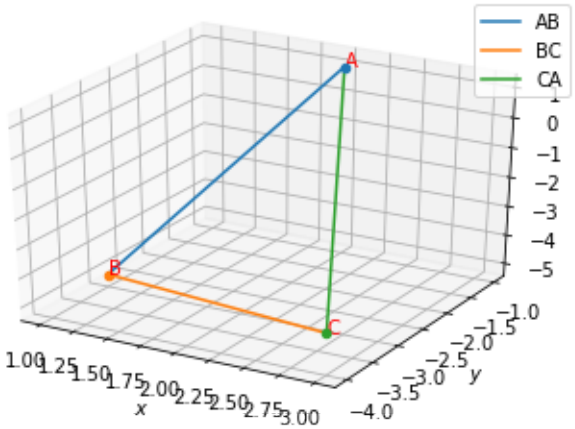

Fig. 0: 2.0.

From the figure,it appears that $\triangle\mathbf{ABC}$ is right angled at $\mathbf{C}$.Since

$$\left(\mathbf{A}-\mathbf{C}\right)^{\top}\left(\mathbf{B}-\mathbf{C}\right) = \begin{pmatrix} -1 & 3 & 5 \end{pmatrix}\begin{pmatrix} -2 \\ 1 \\ -1 \end{pmatrix} \quad (2.0.1)$$

$$= 0 \quad (2.0.2)$$

it is proved that the traingle is indeed right angled.