ASSIGNMENT 6

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Download all python codes from

https://github.com/Y.Nagarani/ASSIGNMENT6/tree/main/CODES

and latex-tikz codes from

https://github.com/Y.Nagarani/ASSIGNMENT6/tree/main

1 Question No 2.5

In $\triangle ABC$, $A = \begin{pmatrix}1\\2\\3\end{pmatrix}$, $B = \begin{pmatrix}-1\\0\\0\end{pmatrix}$, $C = \begin{pmatrix}0\\1\\2\end{pmatrix}$. Find $\angle B$.

2 SOLUTION

Let,$\mathbf{A} = \begin{pmatrix}1\\2\\3\end{pmatrix}$, $\mathbf{B} = \begin{pmatrix}-1\\0\\0\end{pmatrix}$, $\mathbf{C} = \begin{pmatrix}0\\1\\2\end{pmatrix}$.

Now ,

$$\mathbf{A} = \sqrt{14}, \mathbf{C} = \sqrt{5} \tag{2.0.1}$$

$$\mathbf{A}^T\mathbf{C} = 8 \tag{2.0.2}$$

We know that ,

$$\mathbf{B} = \cos^{-1}\left(\frac{\mathbf{A}^T\mathbf{C}}{\|\mathbf{A}\|\|\mathbf{C}\|}\right) \tag{2.0.3}$$

Then Substitute (2.0.1),(2.0.2) in (2.0.3) then ,

$$\mathbf{B} = \cos^{-1}\left(\frac{8}{\sqrt{14}\sqrt{5}}\right) \tag{2.0.4}$$

$$\mathbf{B} = 64.6 \tag{2.0.5}$$

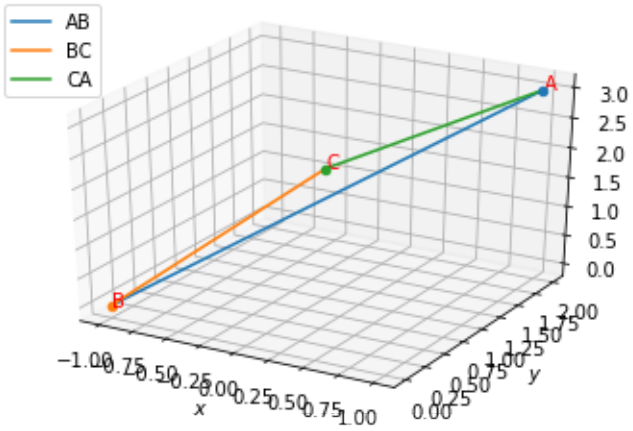

Fig. 0: $\triangle ABC$