1.9.15

EE24BTECH11012 - Bhavanisankar G S

QUESTION

If $\mathbf{a}$, $\mathbf{b}$, $\mathbf{c}$ are position vectors of the points $\mathbf{A}\begin{pmatrix}2\\3\\-4\end{pmatrix}$, $\mathbf{B}\begin{pmatrix}3\\-4\\-5\end{pmatrix}$, and $\mathbf{C}\begin{pmatrix}3\\2\\-3\end{pmatrix}$ respectively, then $|\mathbf{a}+\mathbf{b}+\mathbf{c}|$ is equal to

SOLUTION

Variable name	Description	Fo
A	$\begin{pmatrix}2\\3\\-4\end{pmatrix}$	
B	$\begin{pmatrix}3\\-4\\-5\end{pmatrix}$	
C	$\begin{pmatrix}3\\2\\-3\end{pmatrix}$	
D	Distance of the point from the origin.	$\left\|\mathbf{D}\begin{pmatrix}a\\b\\c\end{pmatrix}\right\| = \sqrt{a^2+b^2+c^2}$ = ? ($\|D\|$ *ist*

TABLE 0: Variables Used

Let

$$\mathbf{A}+\mathbf{B}+\mathbf{C} = \begin{pmatrix}8\\1\\-12\end{pmatrix} \tag{0.1}$$

$$\left\|\begin{pmatrix}a\\b\\c\end{pmatrix}\right\| = \sqrt{a^2+b^2+c^2} \tag{0.2}$$

$$\implies |\mathbf{a}+\mathbf{b}+\mathbf{c}| = \sqrt{209} \tag{0.3}$$

$$\tag{0.4}$$

Hence, the answer to the given question is $\sqrt{209}$.

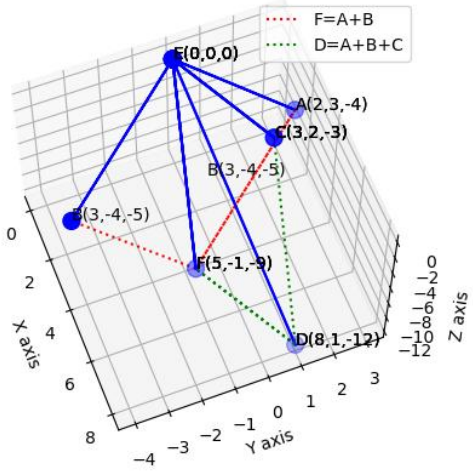

Fig. 0.1: A plot of the points given with the origin