

1.1.10.30

EE24BTECH11018 - Durgi Swaraj Sharma

Question:

The direction cosines of the vector $(2\hat{i} + 2\hat{j} - \hat{k})$ are _____.

Solution:

Point	Description	Coordinates
B	End of the given vector \mathbf{B}	$\begin{pmatrix} 2 \\ 2 \\ -1 \end{pmatrix}$
A	End of the unit vector in the direction of \mathbf{B} , \mathbf{A}	$\frac{1}{\ \mathbf{B}\ } \begin{pmatrix} 2 \\ 2 \\ -1 \end{pmatrix}$

The unit vector in the direction of the given vector is

$$\mathbf{A} = \frac{1}{\sqrt{9}} \begin{pmatrix} 2 \\ 2 \\ -1 \end{pmatrix} \quad (0.1)$$

$$\mathbf{A} = \frac{1}{3} \begin{pmatrix} 2 \\ 2 \\ -1 \end{pmatrix} \quad (0.2)$$

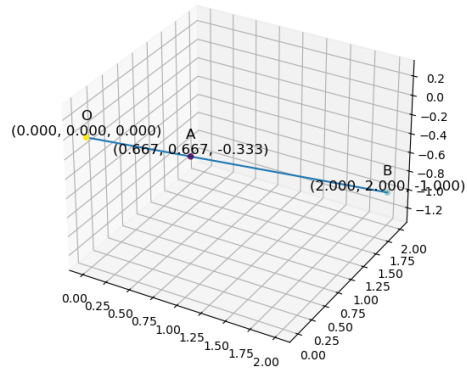


Fig. 0.1: Vector \mathbf{B} and Unit Vector \mathbf{A}