1/1.6/20

EE24BTECH11040 - Mandara Hosur

Question:
Show that the points $(-2,3,5)$, $(1,2,3)$ and $(7,0,-1)$ are collinear.
Solution:

Given Points	Description
$(-2,3,5)$	Point **A**
$(1,2,3)$	Point **B**
$(7,0,-1)$	Point **C**

TABLE 0: Given Information

The matrix

$$\begin{pmatrix}\mathbf{B}-\mathbf{A} & \mathbf{C}-\mathbf{A}\end{pmatrix}^{\top} = \begin{pmatrix}3 & -1 & -2\\ 9 & -3 & -6\end{pmatrix} \tag{0.1}$$

$$\xleftrightarrow{R_2=R_2-3R_1} \begin{pmatrix}3 & -1 & -2\\ 0 & 0 & 0\end{pmatrix} \tag{0.2}$$

has rank of 1.

Hence, it has been proved that the three given points are collinear.

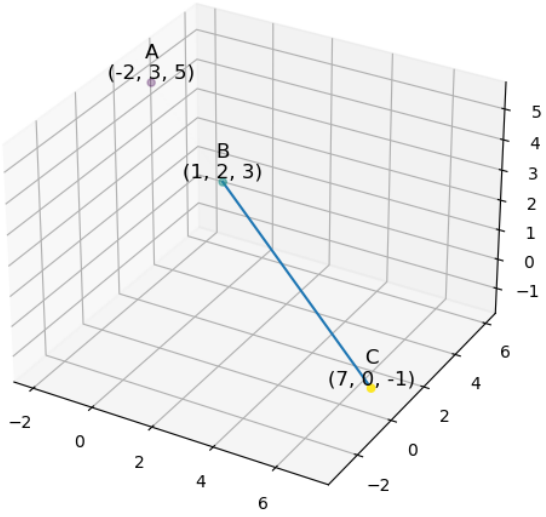

Fig. 0.1: 3D plot of line through points **A**, **B**, **C**