1.1.6.27

EE24BTECH11057 - SHIVAM SHILVANT*

Question:
Prove that the three points $(-4, 6, 10)$, $(2, 4, 6)$ and $(14, 0, -2)$ are collinear.
If the points are collinear , then their determinant should equal to 0.

$$\begin{vmatrix} -4 & 6 & 10 \\ 2 & 4 & 6 \\ 14 & 0 & -2 \end{vmatrix} = 0 \tag{0.1}$$

expanding the det by column 3.

$$(-2)\begin{vmatrix} -4 & 6 \\ 2 & 4 \end{vmatrix} - 6\begin{vmatrix} -4 & 6 \\ 14 & 0 \end{vmatrix} + 10\begin{vmatrix} 2 & 4 \\ 14 & 0 \end{vmatrix} = 0 \tag{0.2}$$

$$(-2)(-28) - (6)(-84) + (10)(-56) = 0 \tag{0.3}$$

$$56 + 504 - 560 = 0 \tag{0.4}$$

$$0 = 0 \tag{0.5}$$

$$\tag{0.6}$$

So, as the determinant is zero , All the three points are collinear.

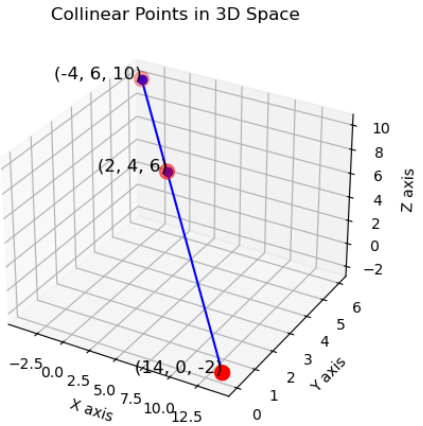

Fig. 0.1: Stem Plot of y(n)