1.5.5

EE25BTECH11017 - CHOLLANGI MAHESH

Question:

1) Find the coordinates of the point which divides the line segment joining the points**A** $(7,-1)$ and **B** $(-3,-4)$ in the ratio $2:3$ ....

Solution: Let us consider the coordinates of **P** on **AB** such that **AP** : **PB** = 2 : 3, where coordinates of A = $\begin{pmatrix}7\\-1\end{pmatrix}$ and B are $\begin{pmatrix}-3\\-4\end{pmatrix}$ are $P = \begin{pmatrix}x\\y\end{pmatrix}$

Variable	Description
x	x coordinate of P
y	y coordinate of P

TABLE 1: Variables Used

$$\mathbf{P} = \frac{k(\mathbf{B}) + (\mathbf{A})}{k+1} = \begin{pmatrix}x\\y\end{pmatrix} \tag{1.1}$$

$$\tag{1.2}$$

Here according to problem value of k is 2/3

$$\mathbf{P} = \frac{2(\mathbf{B}) + 3(\mathbf{A})}{5} = \frac{2\begin{pmatrix}-3\\-4\end{pmatrix} + 3\begin{pmatrix}7\\-1\end{pmatrix}}{5} = \frac{\begin{pmatrix}15\\-11\end{pmatrix}}{5} \tag{1.3}$$

$$\tag{1.4}$$

$$\mathbf{P} = \begin{pmatrix}3\\-11/5\end{pmatrix} \tag{1.5}$$

Hence the coordinates of **P** are $(3,-11/5)$

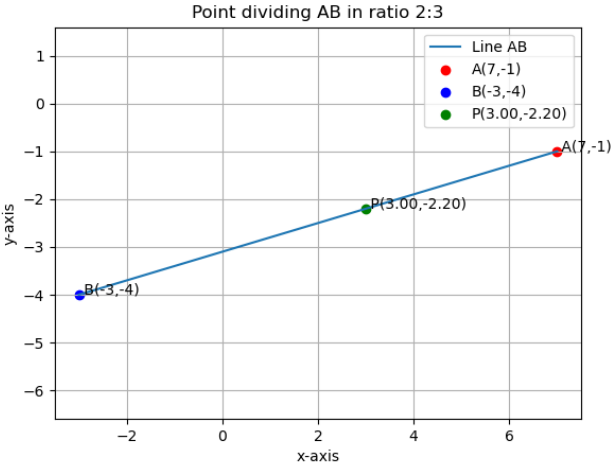

Fig. 1.1: Stem plot of y(n)