1.5.6

EE25BTECH11018 - DARISY SREETEJ

Question:

1) The point which divides the line segment joining the points $(7, -6)$ and $(3, 4)$ in the ratio $1 : 2$ is ....

Solution: Let us consider the coordinates of **P** on **AB** such that **AP** : **PB** = 1 : 2, where coordinates of A = $\begin{pmatrix} 7 \\ -6 \end{pmatrix}$ 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

$$\mathbf{P} = \frac{2(\mathbf{B}) + (\mathbf{A})}{3} = \frac{2\begin{pmatrix} 7 \\ -6 \end{pmatrix} + \begin{pmatrix} 3 \\ 4 \end{pmatrix}}{3} = \frac{\begin{pmatrix} 17 \\ -8 \end{pmatrix}}{3} \tag{1.3}$$

$$\tag{1.4}$$

$$\mathbf{P} = \begin{pmatrix} 17/3 \\ -8/3 \end{pmatrix} \tag{1.5}$$

Hence the coordinates of **P** are $(17/3, -8/3)$

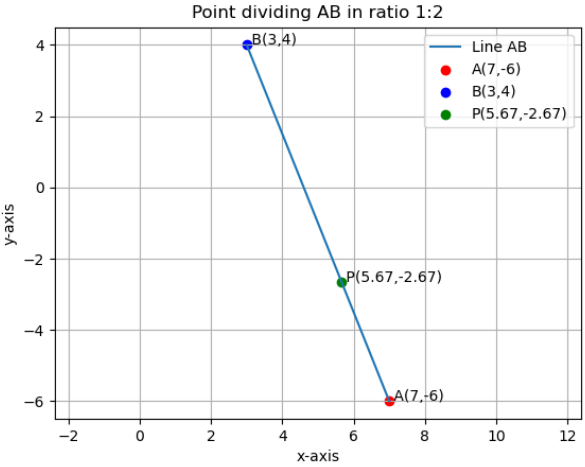

Fig. 1.1: Stem plot of y(n)