1.5.11

EE25BTECH11023 - Venkata Sai

Question:
The point **R** divides the line segment AB, where $\mathbf{A}(-4,0)$ and $\mathbf{B}(0,6)$ such that AR = $\frac{3}{4}$AB. Find the coordinates of **R**.
Solution:

Variable	Description
x	x coordinate of R
y	y coordinate of R

TABLE 0: Variables Used

$$\mathbf{AR} = \frac{3}{4}\mathbf{AB} \implies \frac{\mathbf{AR}}{\mathbf{RB}} = 3 \tag{0.1}$$

$$\mathbf{R} = \frac{k(\mathbf{B}) + (\mathbf{A})}{k+1} = \begin{pmatrix} x \\ y \end{pmatrix} \tag{0.2}$$

$$\tag{0.3}$$

Here according to problem value of k is 3

$$\mathbf{R} = \frac{3\mathbf{B} + \mathbf{A}}{4} = \frac{3\begin{pmatrix} 0 \\ 6 \end{pmatrix} + \begin{pmatrix} -4 \\ 0 \end{pmatrix}}{4} = \frac{\begin{pmatrix} -4 \\ 18 \end{pmatrix}}{4} \tag{0.4}$$

$$\tag{0.5}$$

$$\mathbf{R} = \begin{pmatrix} -1 \\ \frac{9}{2} \end{pmatrix} \tag{0.6}$$

Hence the coordinates of **R** are $\left(-1, \frac{9}{2}\right)$

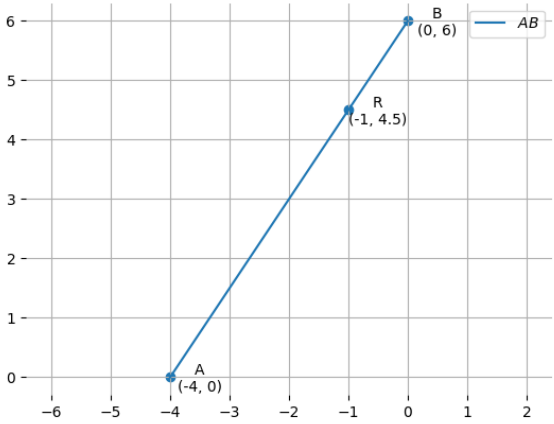

Fig. 0.1: Stem Plot of y(n)