1.1.5.26

EE24BTECH11030 - J.KEDARANANDA

Question:
Let **P** and **Q** be the points of trisection of the line segment joining the points **A** $(2,-2)$ and **B** $(-7,4)$ such that **P** is nearer to **A**. Find the coordinates of **P** and **Q**

$(10, 2016)$

Solution:

Variable	Description
x_1	x coordinate of P
y_1	y coordinate of P
y_2	x coordinate of Q
y_2	y coordinate of Q

TABLE 0: Variables Used

$$\mathbf{P} = \frac{k(\mathbf{B}) + (\mathbf{A})}{k+1} = \begin{pmatrix} x_1 \\ y_1 \end{pmatrix} \tag{0.1}$$

$$\mathbf{Q} = \frac{k(\mathbf{B}) + (\mathbf{A})}{k+1} = \begin{pmatrix} x_2 \\ y_2 \end{pmatrix} \tag{0.2}$$

Here according to problem value of k is 0.5 for **P** and 2 for **Q**

$$P = \frac{1B + 2A}{3} = \frac{1\begin{pmatrix} -7 \\ 4 \end{pmatrix} + 2\begin{pmatrix} 2 \\ -2 \end{pmatrix}}{3} = \frac{\begin{pmatrix} -3 \\ 0 \end{pmatrix}}{3} \tag{0.3}$$

(0.4)

$$P = \begin{pmatrix} -1 \\ 0 \end{pmatrix} \tag{0.5}$$

$$Q = \frac{2B + 1A}{3} = \frac{2\begin{pmatrix} -7 \\ 4 \end{pmatrix} + 1\begin{pmatrix} 2 \\ -2 \end{pmatrix}}{3} = \frac{\begin{pmatrix} -12 \\ 6 \end{pmatrix}}{3} \tag{0.6}$$

(0.7)

$$Q = \begin{pmatrix} -4 \\ 2 \end{pmatrix} \tag{0.8}$$

Hence the coordinates of **P** are $(-1, 0)$ and of **Q** are $(-4, 2)$

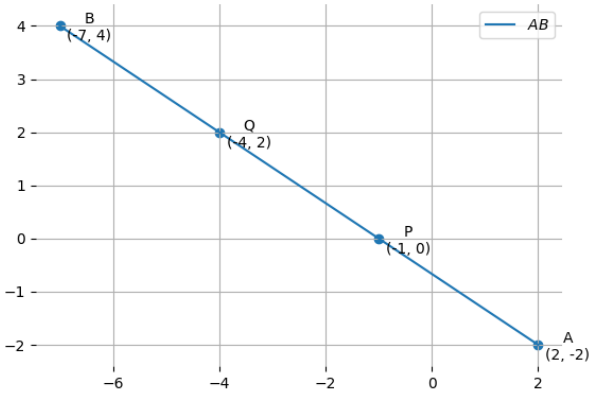

Fig. 0.1: Stem Plot of y(n)