1-1.4-11

EE24BTECH11004 - ANKIT JAINAR

Question: Find the coordinates of the points which divide the line segment joining A(-2, 2) and B(2, 8) into four equal parts.

Solution: Using the section formula for internal division, the coordinates of the point dividing the line in the ratio $k : 1$ are given by:

$$R_k = \left(\frac{x_2 + k \cdot x_1}{k+1}, \frac{y_2 + k \cdot y_1}{k+1} \right) \tag{0.1}$$

where $k = \frac{i}{n-i}$ n, $0 < i < n$ is number of equal parts

For $n = 4$

now for

$$R_1, k = \frac{1}{3} \tag{0.2}$$

$$for R_2, k = 1 \tag{0.3}$$

$$for R_3, k = 3 \tag{0.4}$$

$$\textbf{for } R_1, k = \frac{1}{3} \tag{0.5}$$

$$\textbf{for } R_2, k = 1 \tag{0.6}$$

$$\textbf{for } R_3, k = 3 \tag{0.7}$$

by substituting A=$(-2, 2)$ and B=$(2, 8)$ in R_k
we get

$$R_1 = (-1.0, 3.5) \tag{0.8}$$

$$R_2 = (0.0, 5.0) \tag{0.9}$$

$$R_3 = (1.0, 6.0) \tag{0.10}$$

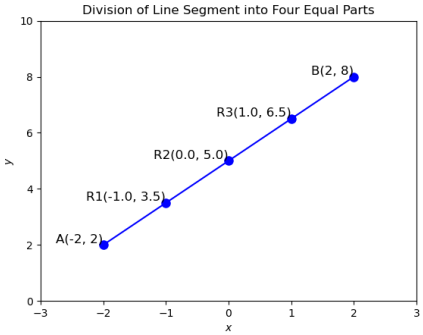

Fig. 0.1: Stem Plot of y(n)