

# 1.5.11

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## Question:

The point **R** divides the line segment AB, where **A**(-4, 0) and **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

$$AR = \frac{3}{4}AB \implies \frac{AR}{RB} = 3 \quad (0.1)$$

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

$$(0.3)$$

Here according to problem value of k is 3

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

$$(0.5)$$

$$R = \begin{pmatrix} -1 \\ \frac{9}{2} \end{pmatrix} \quad (0.6)$$

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

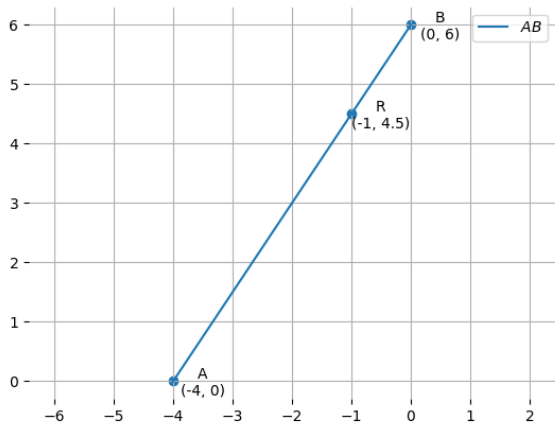


Fig. 0.1: Stem Plot of  $y(n)$