Assignment-2

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I. Intersection of Conics(CBSE)

Question: find the coordinates of the point which divides the line segment joining the points $(4, -3)$ and $(8, 5)$ in the ratio $3 : 1$ internally

Variable	Description	value
A	position vector of point	$(4, -3)$
B	position vector of point	$(8, 5)$
P	position vector of point whhich divides points **A** and **B** in the ratio	$3 : 1$

Table 1
Variables Used

Solution: given $\mathbf{A}(4, -3)(x_1, y_1)$ and $\mathbf{B}(8, 5)(x_2, y_2)$

The section formula states that if a point **P** divides the line segment joining points $\mathbf{A}(x_1, y_1)$ and $\mathbf{A}(x_2, y_2)$ in the ratio m : n, then the coordinates of point **P** are given by:

$$\mathbf{P}\left(\frac{mx_2 + nx_1}{m+n}, \frac{my_2 + my_1}{m+n}\right) \tag{1}$$

$$\mathbf{P} = \frac{3 \cdot 8 + 1 \cdot 4}{3+1}, \frac{3 \cdot 5 + 1 \cdot (-3)}{3+1} \tag{2}$$

$$\mathbf{P_x} = \frac{24+4}{4} = \frac{28}{4} = 7 \tag{3}$$

$$\mathbf{p_y} = \frac{15-3}{4} = \frac{12}{4} = 3 \tag{4}$$

Thus, the coordinates of the point that divides the line segment in the ratio $3 : 1$ are $(7, 3)$.

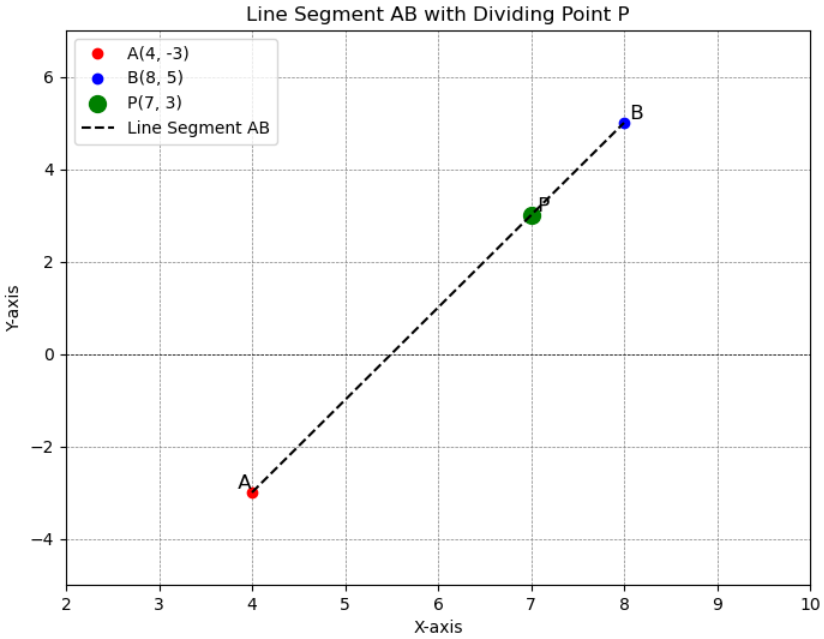

Fig. 1. Stem Plot of y(n)