

Assignment-2

AI24BTECH11026- P Nitesh sri satya

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 which divides points A and B in the ratio	$3 : 1$

Table 1
VARIABLES USED

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

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

$$P\left(\frac{mx_2 + nx_1}{m + n}, \frac{my_2 + ny_1}{m + n}\right) \quad (1)$$

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

$$P_x = \frac{24 + 4}{4} = \frac{28}{4} = 7 \quad (3)$$

$$P_y = \frac{15 - 3}{4} = \frac{12}{4} = 3 \quad (4)$$

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

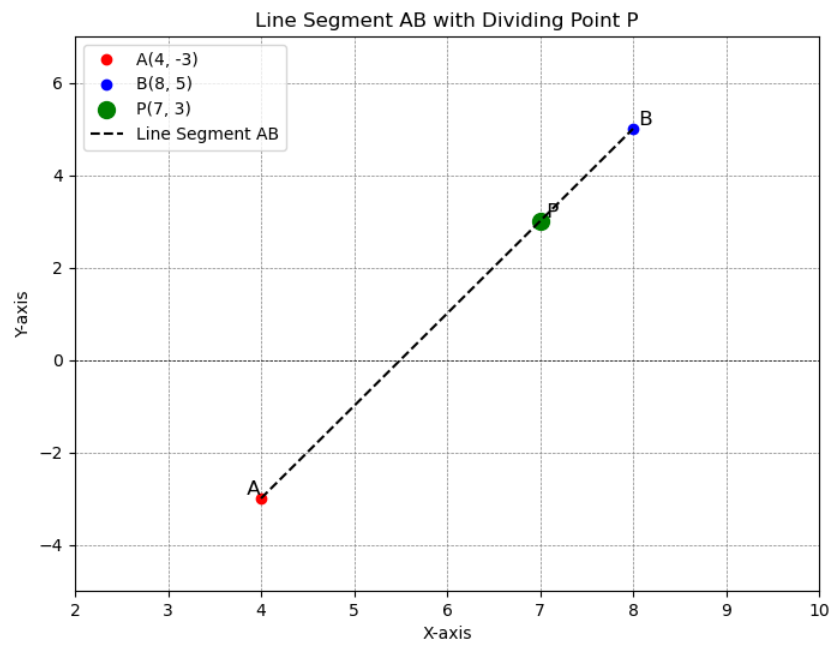


Fig. 1. Stem Plot of $y(n)$