

Section Formula

Chapter 7: Coordinate Geometry · Topic 2

Key Concept

A special and very commonly used case of the section formula occurs when the ratio is 1:1, which simplifies to the mid-point formula: $[(x_1+x_2)/2, (y_1+y_2)/2]$ — the average of the x-coordinates and the average of the y-coordinates. The section formula has practical applications in geometry, such as finding centroids of triangles (which divide medians in a 2:1 ratio) and in fields like computer graphics for smoothly interpolating between two points.

Quick Revision Notes

- Section formula finds a point dividing a segment in ratio $m:n$: $[(mx_2+nx_1)/(m+n), (my_2+ny_1)/(m+n)]$.
- The mid-point formula is a special case for ratio 1:1: $[(x_1+x_2)/2, (y_1+y_2)/2]$.
- Section formula is used to find triangle centroids (dividing medians in 2:1 ratio).
- Also used in computer graphics for interpolating between two points.

Practice Questions

- 1 Find the coordinates of the point dividing the segment joining (2,3) and (8,9) in ratio 1:2.
- 2 Find the midpoint of the segment joining (-2,4) and (6,-2).
- 3 Explain how the mid-point formula is a special case of the section formula.