

The Distance Formula

Chapter 7: Coordinate Geometry · Topic 1

Key Concept

For example, the distance between points (2,3) and (5,7) is calculated as $\sqrt{[(5-2)^2 + (7-3)^2]} = \sqrt{[9+16]} = \sqrt{25} = 5$ units. This formula has wide applications, from calculating the length of a line segment in geometry problems to determining the actual distance between two locations on a map when their coordinates are known, and even in more advanced fields like computer graphics and physics for calculating distances between points or objects.

Quick Revision Notes

- Distance formula: $d = \sqrt{[(x_2 - x_1)^2 + (y_2 - y_1)^2]}$.
- This formula is derived from the Pythagoras theorem applied to coordinate differences.
- Example: distance between (2,3) and (5,7) is $\sqrt{[9+16]} = \sqrt{25} = 5$ units.
- Applications include geometry problems, mapping, and computer graphics.

Practice Questions

- 1 Find the distance between points (2,3) and (5,7).
- 2 Calculate the distance between (-1,2) and (3,-1).
- 3 Explain how the distance formula relates to the Pythagoras theorem.