

Tangents and Intersecting Chords

Chapter 18: Tangents and Intersecting Chords · Topic 1

Key Concept

A tangent to a circle is perpendicular to the radius at the point of contact, a fundamental tangent property.

When two chords intersect inside a circle, the products of their segments are equal: if chords AB and CD intersect at P, then $AP \times PB = CP \times PD$.

The tangent-secant relationship states that the square of the tangent length equals the product of the secant's external and total lengths.

Understanding these theorems helps solve various circle geometry problems involving tangent lines, chords, and their relationships.

Quick Revision Notes

- A tangent is perpendicular to the radius at contact.
- Intersecting chords: $AP \times PB = CP \times PD$.
- Tangent-secant: $\text{tangent}^2 = \text{external} \times \text{total secant length}$.
- These are key circle theorems.
- They involve tangents, chords, secants.
- They help solve circle geometry problems.
- Practice builds theorem application skills.
- These theorems connect various circle properties.

Practice Questions

- 1 Verify the tangent-radius perpendicularity property.
- 2 Solve a problem using the intersecting chords theorem.
- 3 Solve a problem using the tangent-secant theorem.
- 4 Discuss the difference between a chord, secant and tangent.
- 5 Draw a diagram showing intersecting chords.
- 6 Explain these theorems in your own words.