

Trigonometric Ratios

Chapter 8: Introduction to Trigonometry · Topic 1

Key Concept

These three primary ratios have three corresponding reciprocal ratios: $\operatorname{cosec} \theta = 1/\sin \theta$, $\sec \theta = 1/\cos \theta$, and $\cot \theta = 1/\tan \theta$. Trigonometric ratios remain constant for a given angle regardless of the specific right triangle's size, since all right triangles with the same acute angle are similar to each other (by AA similarity), making these ratios a reliable, universal tool for solving problems involving angles and distances.

Quick Revision Notes

- $\sin \theta = \text{opposite/hypotenuse}$. $\cos \theta = \text{adjacent/hypotenuse}$. $\tan \theta = \text{opposite/adjacent}$.
- Reciprocal ratios: $\operatorname{cosec} \theta = 1/\sin \theta$, $\sec \theta = 1/\cos \theta$, $\cot \theta = 1/\tan \theta$.
- Trigonometric ratios stay constant for a given angle, regardless of the triangle's size.
- This constancy follows from all right triangles with the same acute angle being similar (AA).

Practice Questions

- 1 In a right triangle, if the opposite side is 3 and hypotenuse is 5, find $\sin \theta$.
- 2 If $\cos \theta = 4/5$, find $\sec \theta$.
- 3 Explain why trigonometric ratios remain the same for a given angle regardless of the triangle's size.