The Practise Ground

Class 10-11 Maths

Trigonometric Identities

The identities behind most trig proofs

1

$$\sin^2\theta + \cos^2\theta = 1$$

Fundamental identity

Also $\sin^2\theta = 1 - \cos^2\theta$ and $\cos^2\theta = 1 - \sin^2\theta$

2

$$1 + \tan^2\theta = \sec^2\theta$$

Tangent and secant

Divide the fundamental identity by $\cos^2\theta$

3

$$1 + \cot^2\theta = \operatorname{cosec}^2\theta$$

Cotangent and cosecant

Divide the fundamental identity by $\sin^2\theta$

4

$$\sin(A + B) = \sin A \cos B + \cos A \sin B$$

Sum formula (Class 11)

$\cos(A + B) = \cos A \cos B - \sin A \sin B$

Also remember

$\tan\theta = \sin\theta / \cos\theta$

$\sin(90° - \theta) = \cos\theta$

Reduce everything to sin and cos when stuck.

Quick example

If $\sin\theta = 3/5$ and θ is acute:

$\cos^2\theta = 1 - 9/25 = 16/25$, so $\cos\theta = 4/5$

$\tan\theta = 3/4$

Think you've got it? Test yourself.

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