TRIGONOMETRY

Complete SSC CGL Examination Notes

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1. BASIC TRIGONOMETRIC RATIOS

Right Triangle Definitions

sin θ = Opposite/Hypotenuse

cos θ = Adjacent/Hypotenuse

tan θ = Opposite/Adjacent

cosec θ = 1/sin θ

sec θ = 1/cos θ

cot θ = 1/tan θ

Standard Angle Values

Angle	0°	30°	45°	60°	90°
sin	0	½	1/√2	√3/2	1
cos	1	√3/2	1/√2	½	0
tan	0	1/√3	1	√3	∞

2. TRIGONOMETRIC IDENTITIES

Pythagorean Identities

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

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

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

Sum and Difference Formulas

sin(A+B) = sinA cosB + cosA sinB

sin(A-B) = sinA cosB - cosA sinB

cos(A+B) = cosA cosB - sinA sinB

cos(A-B) = cosA cosB + sinA sinB

tan(A+B) = (tanA + tanB)/(1 - tanA tanB)

tan(A-B) = (tanA - tanB)/(1 + tanA tanB)

3. HEIGHT AND DISTANCE

Important Terms

Angle of Elevation: Angle between horizontal and line of sight when object is above

Angle of Depression: Angle between horizontal and line of sight when object is below

Line of Sight: Straight line from eye to object

Example: Tower height when angle of elevation is 45° from 50m away

Solution:

• tan 45° = Height/Distance

• 1 = Height/50

• Height = **50 meters**

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