Trigonometry Basics

Trigonometry is a branch of mathematics that studies the relationships between the sides and angles of triangles. It is widely used in fields like engineering, physics, architecture, and astronomy.

Key Concepts:

Right-Angle Triangles: In a right-angle triangle, one angle is always 90°. The sides of the triangle are:

Hypotenuse: The longest side, opposite the right angle.

Adjacent Side: The side next to the angle being measured.

Opposite Side: The side opposite the angle being measured.

Trigonometric Ratios:

Sine (sin): $\sin(\theta)$ = Opposite / Hypotenuse

Cosine (cos): $\cos(\theta)$ = Adjacent / Hypotenuse

Tangent (tan): $\tan(\theta)$ = Opposite / Adjacent

Pythagoras' Theorem: In a right-angle triangle:

Applications of Trigonometry:

Navigation: Determining distances and angles in maps.

Engineering: Calculating forces and stresses in structures.

Astronomy: Measuring distances to celestial bodies.