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Class 10 – Maths – Introduction to Trigonometry - Formulae

Reciprocal Relations

$$\sin\theta = \frac{1}{\cosec\theta} \Rightarrow \cosec\theta = \frac{1}{\sin\theta} \Rightarrow \sin\theta \cdot \cosec\theta = 1$$

$$\cos\theta = \frac{1}{\sec\theta} \Rightarrow \sec\theta = \frac{1}{\cos\theta} \Rightarrow \cos\theta \cdot \sec\theta = 1$$

$$\tan\theta = \frac{1}{\cot\theta} \Rightarrow \cot\theta = \frac{1}{\tan\theta} \Rightarrow \tan\theta \cdot \cot\theta = 1$$

sin	cos	tan
cosec	sec	cot

sin	cos	tan
P	B	P
cosec	sec	cot

Quotient Relations

$$\tan\theta = \frac{\sin\theta}{\cos\theta} \quad \text{and} \quad \cot\theta = \frac{\cos\theta}{\sin\theta}$$

Trigonometric Identities

$$\sin^2\theta + \cos^2\theta = 1 \quad \text{where} \quad 0^\circ \leq \theta \leq 90^\circ$$

$$\sec^2\theta - \tan^2\theta = 1 \quad \text{where} \quad 0^\circ \leq \theta < 90^\circ$$

$$\cosec^2\theta - \cot^2\theta = 1 \quad \text{where} \quad 0^\circ < \theta \leq 90^\circ$$

Trigonometric Ratios of Complementary Angles

$$\sin(90^\circ - \theta) = \cos\theta \quad \cos(90^\circ - \theta) = \sin\theta$$

$$\tan(90^\circ - \theta) = \cot\theta \quad \cot(90^\circ - \theta) = \tan\theta$$

$$\sec(90^\circ - \theta) = \cosec\theta \quad \cosec(90^\circ - \theta) = \sec\theta$$