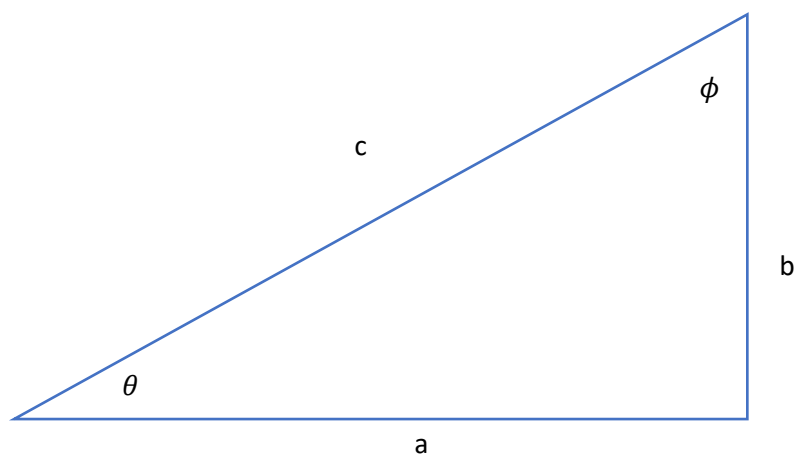


TRIGONOMETRY REVIEW



$$\sin \theta = \frac{b}{c}$$

$$\cos \theta = \frac{a}{c}$$

$$\tan \theta = \frac{b}{a}$$

$$\cot \theta = \frac{a}{b}$$

$$\sec \theta = \frac{c}{a}$$

$$\csc \theta = \frac{c}{b}$$

RECIPROCAL RELATIONSHIPS

$$\sin \theta = \frac{1}{\csc \theta}$$

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

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

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

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

$$\csc \theta = \frac{1}{\sin \theta}$$

COFUNCTIONS

$$\sin \theta = \cos\left(\frac{\pi}{2} - \theta\right)$$

$$\cos \theta = \sin\left(\frac{\pi}{2} - \theta\right)$$

$$\tan \theta = \cot\left(\frac{\pi}{2} - \theta\right)$$

$$\cot \theta = \tan\left(\frac{\pi}{2} - \theta\right)$$

$$\sec \theta = \csc\left(\frac{\pi}{2} - \theta\right)$$

$$\csc \theta = \sec\left(\frac{\pi}{2} - \theta\right)$$

INVERSE TRIGONOMETRY IDENTITIES

$$\sin^{-1} x + \cos^{-1} x = \frac{\pi}{2}$$

$$\tan^{-1} x + \cot^{-1} x = \frac{\pi}{2}$$

$$\sec^{-1} x + \csc^{-1} x = \frac{\pi}{2}$$

$$\sin^{-1} \frac{1}{x} = \csc^{-1} x$$

$$\cos^{-1} \frac{1}{x} = \sec^{-1} x$$

$$\tan^{-1} \frac{1}{x} = \cot x$$

ADDITION FORMULAS

$$\sin(x + y) = \sin x \cos y + \cos x \sin y$$

$$\sin(x - y) = \sin x \cos y - \cos x \sin y$$

$$\cos(x + y) = \cos x \cos y - \sin x \sin y$$

$$\cos(x - y) = \cos x \cos y + \sin x \sin y$$

DOUBLE ANGLE FORMULAS

$$\sin 2\theta = 2 \sin \theta \cos \theta$$

$$\cos 2\theta = \cos^2 \theta - \sin^2 \theta$$

$$\cos 2\theta = 2 \cos^2 \theta - 1$$

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

PYTHAGOREAN RELATIONS

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

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

$$1 + \cot^2 \theta = \csc^2 \theta$$

FUNDAMENTAL VALUES

$$\sin 0 = 0$$

$$\cos 0 = 1$$

$$\tan 0 = 0$$

$$\sin 30^\circ = \frac{1}{2}$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2}$$

$$\tan 30^\circ = \frac{\sqrt{3}}{3}$$

$$\sin 45^\circ = \frac{\sqrt{2}}{2}$$

$$\cos 45^\circ = \frac{\sqrt{2}}{2}$$

$$\tan 45^\circ = 1$$

$$\sin 60^\circ = \frac{\sqrt{3}}{2}$$

$$\cos 60^\circ = \frac{1}{2}$$

$$\tan 60^\circ = \sqrt{3}$$

$$\sin 90^\circ = 1$$

$$\cos 90^\circ = 0$$

$$\tan 90^\circ = \text{UNDEFINED}$$

$$\sin 0 = 0$$

$$\cos 0 = 1$$

$$\tan 0 = 0$$

$$\sin \frac{\pi}{6} = \frac{1}{2}$$

$$\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$$

$$\tan \frac{\pi}{6} = \frac{\sqrt{3}}{3}$$

$$\sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\cos \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\tan \frac{\pi}{4} = 1$$

$$\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$$

$$\cos \frac{\pi}{3} = \frac{1}{2}$$

$$\tan \frac{\pi}{3} = \sqrt{3}$$

$$\sin \frac{\pi}{2} = 1$$

$$\cos \frac{\pi}{2} = 0$$

$$\tan \frac{\pi}{2} = \text{UNDEFINED}$$

$$\text{AREA CIRCLE } A = \pi r^2$$

$$\text{CIRCUMFERENCE OF CIRCLE } C = 2 \pi r$$

$$\text{AREA OF SECTOR } A = \frac{1}{2} r^2 \theta \text{ where theta is in radians}$$

$$\text{ARC LENGTH SECTOR } S = r \theta$$