

pythagorean identities

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

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

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

reciprocal identities

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

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

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

ratio identities

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cot \theta = \frac{\cos \theta}{\sin \theta}$$

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

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

$$\sin \theta = \sqrt{1 - \cos^2 \theta}$$

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

$$\cos \theta = \sqrt{1 - \sin^2 \theta}$$

SINE

$$\sin \theta = \sin \theta$$

$$\cos \theta = \sqrt{1 - \sin^2 \theta}$$

$$\tan \theta = \frac{\sin \theta}{\sqrt{1 - \sin^2 \theta}}$$

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

$$\sec \theta = \frac{1}{\sqrt{1 - \sin^2 \theta}}$$

$$\cot \theta = \frac{\sqrt{1 - \sin^2 \theta}}{\sin \theta}$$

COSINE

$$\sin \theta = \sqrt{1 - \cos^2 \theta}$$

$$\cos \theta = \cos \theta$$

$$\tan \theta = \frac{\sqrt{1 - \cos^2 \theta}}{\cos \theta}$$

$$\csc \theta = \frac{1}{\sqrt{1 - \cos^2 \theta}}$$

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

$$\cot \theta = \frac{\cos \theta}{\sqrt{1 - \cos^2 \theta}}$$

$$\sin \theta = \frac{\tan \theta}{\sqrt{1 + \tan^2 \theta}}$$

$$\cos \theta = \frac{1}{\sqrt{1 + \tan^2 \theta}}$$

$$\tan \theta = \tan \theta$$

$$\csc \theta = \frac{\sqrt{1 + \tan^2 \theta}}{\tan \theta}$$

$$\sec \theta = \sqrt{1 + \tan^2 \theta}$$

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

TANGENT

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cos \theta \cdot \tan \theta = \sin \theta$$

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

$$\sqrt{1 + \tan^2 \theta} = \sec \theta$$

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

$$\cos \theta = \frac{\sqrt{\csc^2 \theta - 1}}{\csc \theta}$$

$$\tan \theta = \frac{1}{\sqrt{\csc^2 \theta - 1}}$$

$$\csc \theta = \csc \theta$$

$$\sec \theta = \frac{\csc \theta}{\sqrt{\csc^2 \theta - 1}}$$

$$\cot \theta = \sqrt{\csc^2 \theta - 1}$$

COSECANT

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

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

$$\cot \theta = \sqrt{\csc^2 \theta - 1}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cos \theta \cdot \tan \theta = \sin \theta$$

$$\cos \theta = \frac{\sin \theta}{\tan \theta}$$

$$\sin \theta = \frac{\sqrt{\sec^2 \theta - 1}}{\sec \theta}$$

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

$$\tan \theta = \sqrt{\sec^2 \theta - 1}$$

$$\csc \theta = \frac{\sec \theta}{\sqrt{\sec^2 \theta - 1}}$$

$$\sec \theta = \sec \theta$$

$$\cot \theta = \frac{1}{\sqrt{\sec^2 \theta - 1}}$$

SECANT

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

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

$$\tan \theta = \sqrt{\sec^2 \theta - 1}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cos \theta \cdot \tan \theta = \sin \theta$$

$$\sin \theta = \frac{1}{\sqrt{1 + \cot^2 \theta}}$$

$$\cos \theta = \frac{\cot \theta}{\sqrt{1 + \cot^2 \theta}}$$

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

$$\csc \theta = \sqrt{1 + \cot^2 \theta}$$

$$\sec \theta = \frac{\sqrt{1 + \cot^2 \theta}}{\cot \theta}$$

$$\cot \theta = \cot \theta$$

COTANGENT

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

$$\sqrt{1 + \cot^2 \theta} = \csc \theta$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$\cos \theta \cdot \tan \theta = \sin \theta$$

$$\cos \theta = \frac{\sin \theta}{\tan \theta}$$