

1 Pythagorean Identities

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

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

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

2 Cofunction Identities

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

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

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

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

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

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

3 Even Odd Identities

$\sin(-\theta) = -\sin \theta$

$\tan(-\theta) = -\tan \theta$

$\cos(-\theta) = \cos \theta$

$\csc(-\theta) = -\csc \theta$

$\cot(-\theta) = -\cot \theta$

$\sec(-\theta) = \sec \theta$

4 Supplement Angle Identities

$\sin(\pi - \theta) = \sin \theta$

$\cos(\pi - \theta) = -\cos \theta$

$\tan(\pi - \theta) = -\tan \theta$

$\csc(\pi - \theta) = \csc \theta$

$\sec(\pi - \theta) = -\sec \theta$

$\cot(\pi - \theta) = -\cot \theta$

$\sin(\pi + \theta) = -\sin \theta$

$\cos(\pi + \theta) = -\cos \theta$

$\tan(\pi + \theta) = \tan \theta$

$\csc(\pi + \theta) = -\csc \theta$

$\sec(\pi + \theta) = -\sec \theta$

$\cot(\pi + \theta) = \cot \theta$

5 Addition and Subtraction Identities

$\sin(A + B) = \sin A \cos B + \cos A \sin B$

$\cos(A + B) = \cos A \cos B - \sin A \sin B$

$\tan(A + B) = \frac{\tan A + \tan B}{1 - \tan A \tan B}$

$\sin(A - B) = \sin A \cos B - \cos A \sin B$

$\cos(A - B) = \cos A \cos B + \sin A \sin B$

$\tan(A - B) = \frac{\tan A - \tan B}{1 + \tan A \tan B}$

6 Double-Angle Identities

$\sin(2\theta) = 2 \sin \theta \cos \theta$

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

$\tan(2\theta) = \frac{2 \tan \theta}{1 - \tan^2 \theta}$

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