

Trigonometric Identities Cheat Sheet

A printable trig identities cheat sheet organized by reciprocal, quotient, Pythagorean, even-odd, cofunction, and double-angle identities.

Reciprocal

$$\csc \theta = 1/\sin \theta; \sec \theta = 1/\cos \theta$$

Quotient

$$\tan \theta = \sin \theta/\cos \theta; \cot \theta = \cos \theta/\sin \theta$$

Pythagorean

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

Tangent form

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

Even / odd

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

Cofunction

$$\sin(\pi/2 - \theta) = \cos \theta$$

Double-angle sine

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

Double-angle cosine

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

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01 Reciprocal and quotient

Rewrite everything in sine and cosine when you are stuck.

Reciprocal

$$\csc \theta = 1/\sin \theta; \sec \theta = 1/\cos \theta$$

Quotient

$$\tan \theta = \sin \theta/\cos \theta; \cot \theta = \cos \theta/\sin \theta$$

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02 Pythagorean and symmetry

These connect squares and negative angles.

Pythagorean

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

Tangent form

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

Even / odd

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

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03 Angle changes

Use these when the angle itself must be rewritten.

Cofunction

$$\sin(\pi/2 - \theta) = \cos \theta$$

Double-angle sine

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

Double-angle cosine

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

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HOW TO REMEMBER IT

Build from the three foundational families

1

Reciprocal identities come from flipping a fraction.

2

Divide $\sin^2\theta + \cos^2\theta = 1$ by $\cos^2\theta$ or $\sin^2\theta$ to produce the other Pythagorean identities.

3

For cofunctions, complementary angles swap partners.