

# TRIGONOMETRIC FUNCTIONS REFERENCE

## GENERAL WAVE EQUATION

$$y = A \sin(B(x - C)) + D$$

**|A|** Amplitude (Height)

**Period**  $2\pi / |B|$

**C** Phase Shift (Horizontal)

**D** Vertical Shift (Midline)

## SINE FUNCTION

$$f(x) = \sin x$$

Domain  $(-\infty, \infty)$

Range  $[-1, 1]$

Period  $2\pi$

[ Sine Wave Visualization: Starts at Origin ]

## COSINE FUNCTION

$$f(x) = \cos x$$

Domain  $(-\infty, \infty)$

Range  $[-1, 1]$

Period  $2\pi$

[ Cosine Wave Visualization: Starts at Peak ]

## TANGENT FUNCTION

$$f(x) = \tan x$$

Period	$\pi$
Asymptotes	$x = \pi/2 + n\pi$
Range	$(-\infty, \infty)$

[ Tangent Curve Visualization ]

## RECIPROCAL IDENTITIES

csc x	$1 / \sin x$
sec x	$1 / \cos x$
cot x	$1 / \tan x$

## KEY VALUES (UNIT CIRCLE)

$\hat{\theta}$ (Deg)	$\hat{\theta}$ (Rad)	$\sin \hat{\theta}$	$\cos \hat{\theta}$	$\tan \hat{\theta}$
0	0	0	1	0
30	$\pi/6$	$1/2$	$\sqrt{3}/2$	$\sqrt{3}/3$
45	$\pi/4$	$\sqrt{2}/2$	$\sqrt{2}/2$	1
60	$\pi/3$	$\sqrt{3}/2$	$1/2$	$\sqrt{3}$
90	$\pi/2$	1	0	Undefined

