

## Special Angles

$\theta$	$0^\circ$	$30^\circ$	$45^\circ$	$60^\circ$	$90^\circ$	$180^\circ$	$270^\circ$
	$(0)rad$	$(\pi/6)rad$	$(\pi/4)rad$	$(\pi/3)rad$	$(\pi/2)rad$	$(\pi)rad$	$(3\pi/2)rad$
$\sin \theta$	$\frac{\sqrt{0}}{2}$	$\frac{\sqrt{1}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{4}}{2}$	0	-1
$\cos \theta$	$\frac{\sqrt{4}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{1}}{2}$	$\frac{\sqrt{0}}{2}$	-1	0
$\tan \theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	X	0	X

## Positive Trigonometric Functions

Quadrant	I	II	III	IV
	All	sin csc	tan cot	cos sec

## Trigonometric Identities

$\csc \theta = \frac{1}{\sin \theta}$ $\sec \theta = \frac{1}{\cos \theta}$ $\cot \theta = \frac{1}{\tan \theta}$	$\tan \theta = \frac{\sin \theta}{\cos \theta}$ $\cot \theta = \frac{\cos \theta}{\sin \theta}$	$\sin^2 \theta + \cos^2 \theta = 1$ $1 + \tan^2 \theta = \sec^2 \theta$ $1 + \cot^2 \theta = \csc^2 \theta$	$\sin(-\theta) = -\sin \theta$ $\cos(-\theta) = \cos \theta$ $\tan(-\theta) = -\tan \theta$
$\sin(x+y) = \sin x \cos y + \cos x \sin y$ $\cos(x+y) = \cos x \cos y - \sin x \sin y$ $\tan(x+y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$		$\sin(x-y) = \sin x \cos y - \cos x \sin y$ $\cos(x-y) = \cos x \cos y + \sin x \sin y$ $\tan(x-y) = \frac{\tan x - \tan y}{1 + \tan x \tan y}$	
$\sin 2x = 2 \sin x \cos x$ $\cos 2x = \cos^2 x - \sin^2 x$ $\cos 2x = 2 \cos^2 x - 1$ $\cos 2x = 1 - 2 \sin^2 x$ $\tan 2x = \frac{2 \tan x}{1 - \tan^2 x}$		$\sin \frac{x}{2} = \pm \sqrt{\frac{1 - \cos x}{2}}$ $\cos \frac{x}{2} = \pm \sqrt{\frac{1 + \cos x}{2}}$ $\tan \frac{x}{2} = \frac{1 - \cos x}{\sin x} = \frac{\sin x}{1 + \cos x}$	