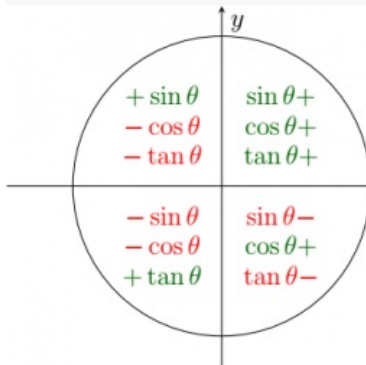


Sign in quadrants



Unit circle trig functions

$$\begin{aligned} \sin \theta &= y/r & \csc \theta &= r/y \\ \cos \theta &= x/r & \sec \theta &= r/x \\ \tan \theta &= y/x & \cot \theta &= x/y \end{aligned}$$

Degrees

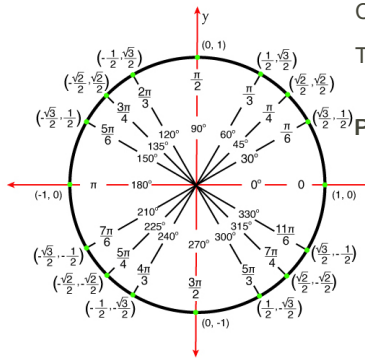
Acute	Less than 90
Right	90
Obtuse	More than 90, less than 180
Straight	180

Fundamental identities

Reciprocal Identities	$\sin \theta = 1/\csc \theta$	$\csc \theta = 1/\sin \theta$
	$\cos \theta = 1/\sec \theta$	$\sec \theta = 1/\cos \theta$
	$\tan \theta = 1/\cot \theta$	$\cot \theta = 1/\tan \theta$
Pythagorean Identities	$\sin^2 \theta + \cos^2 \theta = 1$	
	$1 + \tan^2 \theta = \sec^2 \theta$	
	$1 + \cot^2 \theta = \csc^2 \theta$	
Quotient Identities	$\tan \theta = \sin \theta / \cos \theta$	
	$\cot \theta = \cos \theta / \sin \theta$	

Unit circle

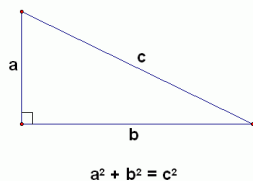
Unit Circle



SohCahToa Trig Functions

$$\begin{aligned} \sin \theta &= \text{opp}/\text{hyp} & \csc \theta &= \text{hyp}/\text{opp} \\ \cos \theta &= \text{adj}/\text{hyp} & \sec \theta &= \text{hyp}/\text{adj} \\ \tan \theta &= \text{adj}/\text{opp} & \cot \theta &= \text{opp}/\text{adj} \end{aligned}$$

Pythagorean Theory



Odd and Even Functions

Odd	Even
$\sin(-t) = -\sin t$	$\cos(-t) = \cos t$
$\csc(-t) = -\csc t$	$\sec(-t) = \sec t$
$\tan(-t) = -\tan t$	
$\cot(-t) = -\cot t$	

Formulas

Arc length	$S = r\theta$
Area of a sector	$A = 1/2 r^2 \theta$
Linear speed	$V = s/t = r\theta/t = r\omega$
Angular speed	$\omega = \theta/t$
R	$r = \sqrt{x^2 + y^2}$

Unit circle θ

θ		$\sin \theta$	$\cos \theta$	$\tan \theta$	$\csc \theta$	$\sec \theta$	$\cot \theta$
Rad	Deg						
0	0	0	1	0	Undef	1	Undef
$\pi/6$	30	1/2	$\sqrt{3}/2$	$\sqrt{3}/3$	2	$2\sqrt{3}/3$	$\sqrt{3}$
$\pi/4$	45	$\sqrt{2}/2$	$\sqrt{2}/2$	1	$\sqrt{2}$	$\sqrt{2}$	1
$\pi/3$	60	$\sqrt{3}/2$	1/2	$\sqrt{3}$	$2\sqrt{3}/3$	2	$\sqrt{3}/3$
$\pi/2$	90	1	0	Undef	1	Undef	0
$2\pi/3$	120	$\sqrt{3}/2$	-1/2	$-\sqrt{3}$	$2\sqrt{3}/3$	-2	$-\sqrt{3}/3$
$3\pi/4$	135	$\sqrt{2}/2$	$-\sqrt{2}/2$	-1	$\sqrt{2}$	$-\sqrt{2}$	-1
$5\pi/6$	150	1/2	$-\sqrt{3}/2$	$-\sqrt{3}/3$	2	$-2\sqrt{3}/3$	$-\sqrt{3}$
π	180	0	-1	0	Undef	-1	Undef
$7\pi/6$	210	-1/2	$-\sqrt{3}/2$	$\sqrt{3}/3$	-2	$-2\sqrt{3}/3$	$\sqrt{3}$
$5\pi/4$	225	$-\sqrt{2}/2$	$-\sqrt{2}/2$	1	$-\sqrt{2}$	$-\sqrt{2}$	1
$4\pi/3$	240	$-\sqrt{3}/2$	-1/2	$-\sqrt{3}$	$-2\sqrt{3}/3$	-2	$\sqrt{3}/3$
$3\pi/2$	270	-1	0	Undef	-1	Undef	0
$5\pi/3$	300	$-\sqrt{3}/2$	1/2	$-\sqrt{3}/3$	-2	$2\sqrt{3}/3$	$-\sqrt{3}$
$7\pi/4$	315	$-\sqrt{2}/2$	$\sqrt{2}/2$	-1	$-\sqrt{2}$	$\sqrt{2}$	-1
$11\pi/6$	330	-1/2	$\sqrt{3}/2$	$-\sqrt{3}/3$	-2	$2\sqrt{3}/3$	$-\sqrt{3}$