

Basic Trigonometry

Angles and functions

$x(^{\circ})$	0	30	45	60	90	120	135	150	180	210	225	240	270	300	315	330	360
$x(\text{rad})$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$	2π
$x(\approx \text{rad})$	0	0.52	0.79	1.05	1.57	2.09	2.36	2.62	3.14	3.66	3.93	4.19	4.71	5.23	5.50	5.76	6.28
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0
sin \approx	0	0.5	0.71	0.87	1	0.87	0.71	0.5	0	-0.5	-0.71	-0.87	-1	-0.87	-0.71	-0.5	0
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	$-\frac{1}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{\sqrt{3}}{2}$	-1	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{2}}{2}$	$-\frac{1}{2}$	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
cos \approx	1	0.87	0.71	0.5	0	-0.5	-0.71	-0.87	-1	-0.87	-0.71	-0.5	0	0.5	0.71	0.87	1
tan	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	∞	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	∞	$-\sqrt{3}$	-1	$-\frac{\sqrt{3}}{3}$	0
tan \approx	0	0.58	1	1.73	∞	-1.73	-1	-0.58	0	0.58	1	1.73	∞	-1.73	-1	-0.58	0

Main identities

$$\sin^2 x + \cos^2 x = 1, \quad \tan x = \frac{\sin x}{\cos x}, \quad \cot x = \frac{1}{\tan x}, \quad \sin^{-1} x + \cos^{-1} x = \frac{\pi}{2};$$

$$\sin(x \pm 2\pi) = \sin x, \quad \cos(x \pm 2\pi) = \cos x, \quad \tan(x \pm \pi) = \tan x;$$

$$\sin(-x) = -\sin x, \quad \cos(-x) = \cos x, \quad \tan(-x) = -\tan x;$$

$$\sin\left(\frac{\pi}{2} - x\right) = \cos x, \quad \cos\left(\frac{\pi}{2} - x\right) = \sin x, \quad \tan\left(\frac{\pi}{2} - x\right) = \cot(x);$$

$$\sin(\pi - x) = \sin x, \quad \cos(\pi - x) = -\cos x, \quad \tan(\pi - x) = -\tan x.$$

