Trigonometry

Deg.	Rad.	Sine	Cosine	Tangent
30	$\pi/6$	0.5	$\sqrt{3}/2$	$1/\sqrt{3}$
45	$\pi/4$	$1/\sqrt{2}$	$1/\sqrt{2}$	1
60	$\pi/3$	$\sqrt{3}/2$	0.5	$\sqrt{3}$
90	$\pi/2$	1	0	UND.
120	$2\pi/3$	$\sqrt{3}/2$	-0.5	$-\sqrt{3}$
135	$3\pi/4$	$1/\sqrt{2}$	$-1/\sqrt{2}$	-1
150	$5\pi/6$	0.5	$-\sqrt{3}/2$	$-1/\sqrt{3}$
180	π	0	-1	0
210	$7\pi/6$	-0.5	$-\sqrt{3}/2$	$1/\sqrt{3}$
225	$5\pi/4$	$-1/\sqrt{2}$	$-1/\sqrt{2}$	1
240	$4\pi/3$	$-\sqrt{3}/2$	-0.5	$\sqrt{3}$
270	$3\pi/2$	-1	0	UND.
300	$5\pi/3$	$-\sqrt{3}/2$	0.5	$-\sqrt{3}$
315	$7\pi/4$	$-1/\sqrt{2}$	$1/\sqrt{2}$	-1
330	$11\pi/6$	-0.5	$\sqrt{3}/2$	$-1/\sqrt{3}$
0,360	2π	0	1	0
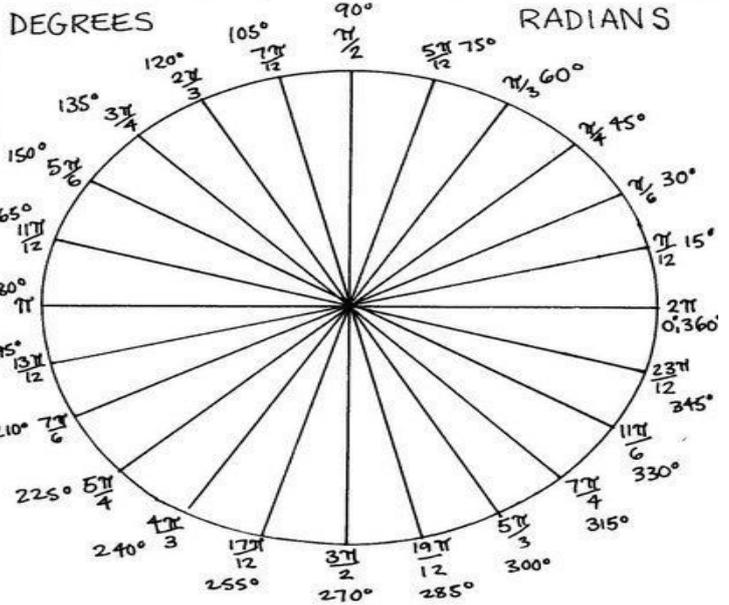
DEGREES   RADIANS

SOH	CAH	TOA
Y/R	X/R	Y/X

Degrees–Radians $n° = n°\left(\dfrac{\pi}{180} rad\right)$;

Radians–Degrees $n\pi\,rad = n\pi\,rad\left(\dfrac{180}{\pi rad}\right)$

Def. of Radian
$s = r\theta$
S–Arc Length

All Smart Trig Classes

	Sin⊕	All⊕
	II : I	
	III : IV	
Tan⊕	Cos⊕	

30-60-90 $\pi/6 - \pi/3 - \pi/2$

$2x$, $x\sqrt{3}$, x

45-45-90 $\pi/4 - \pi/4 - \pi/2$

$x\sqrt{2}$, x , x
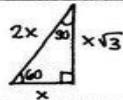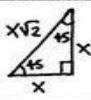
DERIVATIVES OF BASIC TRIG FUNCTIONS IF x is in radians

$\dfrac{d}{dx}\sin x = \cos x$ $\dfrac{d}{dx}\cos x = -\sin x$ $\dfrac{d}{dx}\sec x = \sec x \tan x$

$\dfrac{d}{dx}\tan x = \sec^2 x$ $\dfrac{d}{dx}\cot x = -\csc^2 x$ $\dfrac{d}{dx}\csc x = -\csc x \cot x$

$\dfrac{d}{dx}\sin u = \cos u \cdot u'$ $\dfrac{d}{dx}\tan u = \sec^2 u \cdot u'$ $\dfrac{d}{dx}\sec u = \sec u \tan u \cdot u'$

$\dfrac{d}{dx}\cos u = -\sin u \cdot u'$ $\dfrac{d}{dx}\cot u = -\csc^2 u \cdot u'$ $\dfrac{d}{dx}\csc u = -\csc u \cot u \cdot u'$

TRIG IDENTITIES

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

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

$1 + \cot^2 x = \csc^2 x$

$\sin 2x = 2\sin x \cos x$

$\cos 2x = \cos^2 x - \sin^2 x$

$\cos 2x = 2\cos^2 x - 1$

$\cos 2x = 1 - 2\sin^2 x$

$\tan 2x = \dfrac{2\tan x}{1 - \tan^2 x}$

$\sin\left(\dfrac{x}{2}\right) = \pm\sqrt{\dfrac{1-\cos x}{2}}$

$\cos\left(\dfrac{x}{2}\right) = \pm\sqrt{\dfrac{1+\cos x}{2}}$

$\tan\left(\dfrac{x}{2}\right) = \pm\sqrt{\dfrac{1-\cos x}{1+\cos x}}$

$\sin^2 x = \dfrac{1 - \cos 2x}{2}$

$\cos^2 x = \dfrac{1 + \cos 2x}{2}$

$\sin(x+y) = \sin x \cos y + \cos x \sin y$

$\sin(x-y) = \sin x \cos y - \cos x \sin y$

$\cos(x+y) = \cos x \cos y - \sin x \sin y$

$\cos(x-y) = \cos x \cos y + \sin x \sin y$

$\tan(x+y) = \dfrac{\tan x + \tan y}{1 - \tan x \tan y}$

$\tan(x-y) = \dfrac{\tan x - \tan y}{1 + \tan x \tan y}$

$\sin\left(\dfrac{\pi}{2}-\theta\right) = \cos\theta$

$\cos\left(\dfrac{\pi}{2}-\theta\right) = \sin\theta$

$\tan\left(\dfrac{\pi}{2}-\theta\right) = \cot\theta$

THE LAW OF COSINES

$a^2 = b^2 + c^2 - 2bc\cos A$

$b^2 = a^2 + c^2 - 2ac\cos B$

$c^2 = a^2 + b^2 - 2ab\cos C$
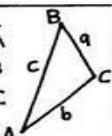
$\csc x = \dfrac{1}{\sin x}$ $\sec x = \dfrac{1}{\cos x}$ $\tan x = \dfrac{\sin x}{\cos x}$ $\cot x = \dfrac{1}{\tan x} = \dfrac{\cos x}{\sin x}$

THE LAW OF SINES

$\dfrac{\sin A}{a} = \dfrac{\sin B}{b} = \dfrac{\sin C}{c}$