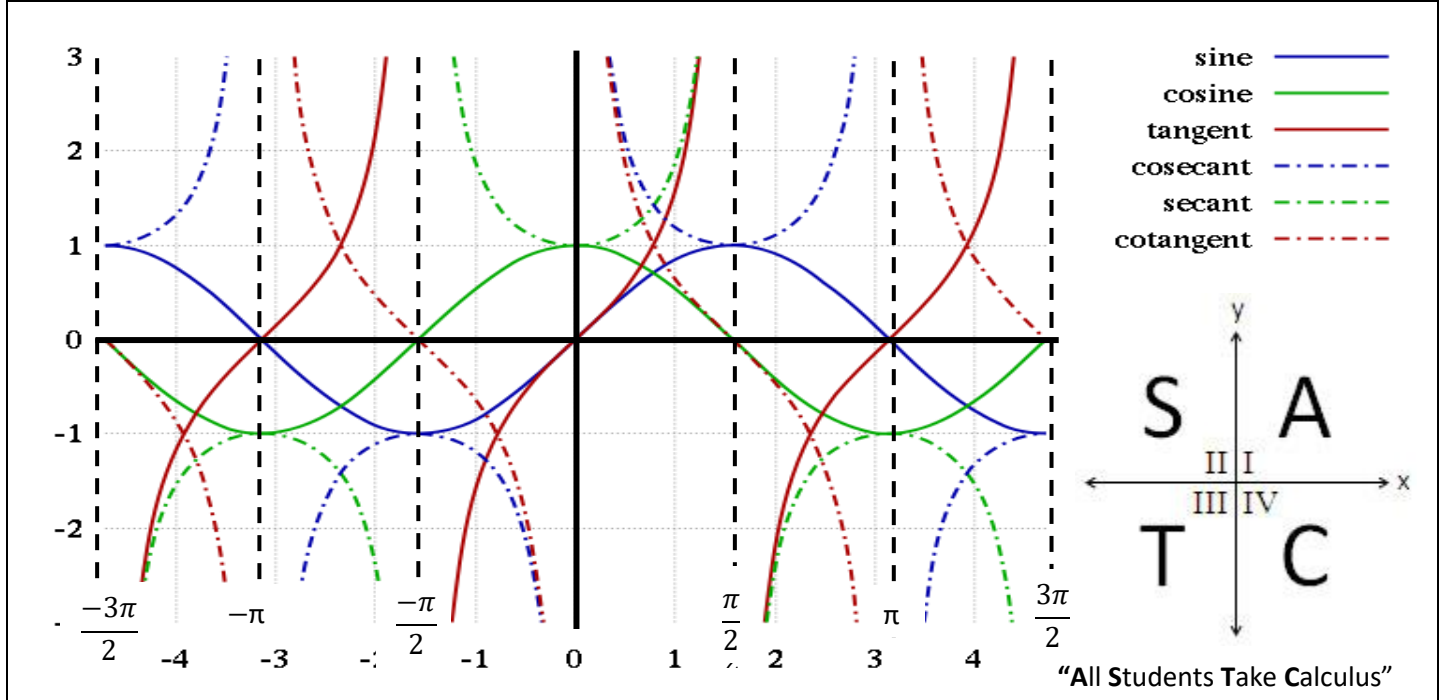


# Harold's Trigonometry "Cheat Sheet"

18 January 2023

Unit Circle	Trig Chart					
	(Quadrant I only)					
	Degrees	0°	30°	45°	60°	90°
	Radians	0	$\pi/6$	$\pi/4$	$\pi/3$	$\pi/2$
	Sin (θ) →	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1
	Cos (θ) ←	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0
Sin (θ) Pattern	$\frac{\sqrt{0}}{2}$	$\frac{\sqrt{1}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{4}}{2}$	
Tan (θ) Pattern	0	$\frac{(\sqrt{3})^1}{3}$	$\frac{(\sqrt{3})^2}{3}$	$\frac{(\sqrt{3})^3}{3}$	Und	

## Graphical Representation Of The Six Trig Functions

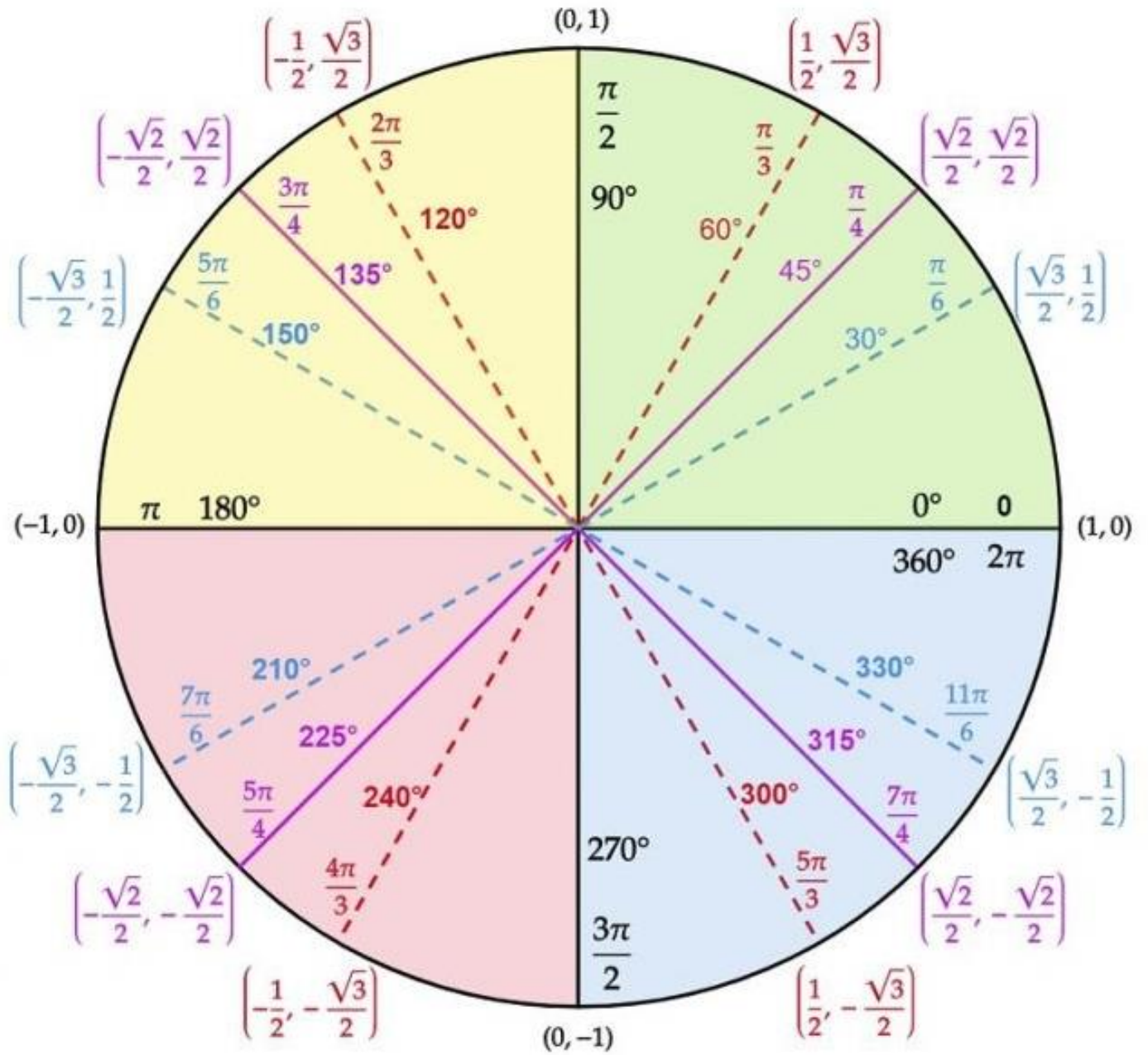


The Six Trig "Levers"	$y = a \sin (b (x - h)) + k$	Graphing Tips	Notes
1) Move up/down $\updownarrow$	k (Vertical translation)	$k = \frac{(\max + \min)}{2}$	If k = f(x) then x-axis is replaced by f(x)-axis
2) Move left/right $\leftrightarrow$	h (Phase shift)	'+' shifts right	$\sin (x) = \cos (x - \pi/2)$
3) Stretch up/down $\updownarrow$	a (Amplitude)	$a = \frac{(\max - \min)}{2}$	a is NOT peak-to-peak on the y-axis
4) Stretch left/right $\leftrightarrow$	b (Frequency $\cdot 2\pi$ )	$T = \frac{2\pi}{ b } = \frac{1}{f}$	T = peak-to-peak on the $\theta$ -axis $T = \frac{\pi}{ b }$ for $\tan (bx)$ and $\cot (bx)$
5) Flip about y-axis $\cup$	$b \rightarrow -b$	$f(x) \rightarrow f(-x)$	Even Function: $\cos (x) = \cos (-x)$
6) Flip about x-axis $\cap$	$a \rightarrow -a$	$f(x) \rightarrow -f(x)$	Odd Function: $\sin (x) = -\sin (-x)$

## Unit Circle

$$(x, y) = (\cos \theta, \sin \theta)$$

$$\pi \text{ rad} = 180^\circ$$



**Source:** Unit Circle Quick Lesson - Matter of Math  
<https://matterofmath.com/trigonometry/unit-circle/>