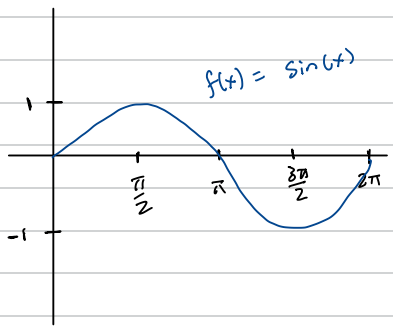
Unit 6: Trig Intro & Modeling (Trig Appetizer)

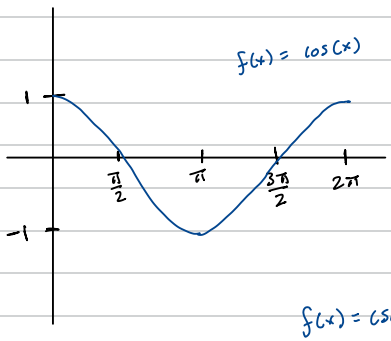
Basic Trig Functions

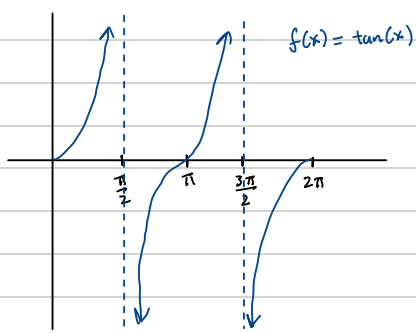
$\sin\theta \quad \cos\theta \quad \tan\theta = \frac{\sin\theta}{\cos\theta}$

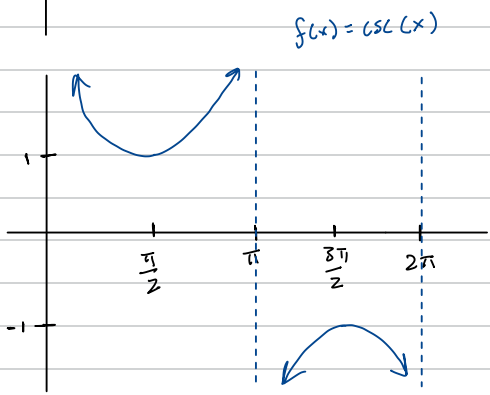
$\csc\theta = \frac{1}{\sin\theta} \quad \sec\theta = \frac{1}{\cos\theta} \quad \cot(\theta) = \frac{\cos\theta}{\sin\theta} = \frac{1}{\tan\theta}$

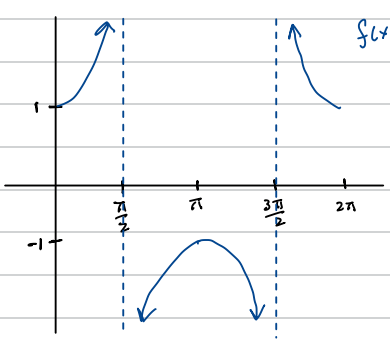
Graph of Trig Functions

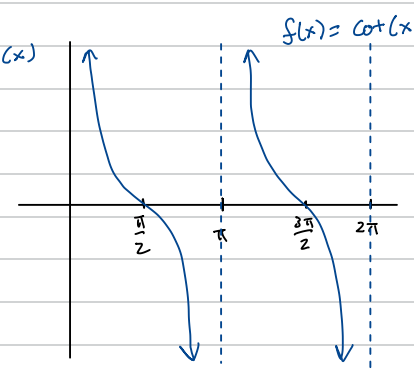






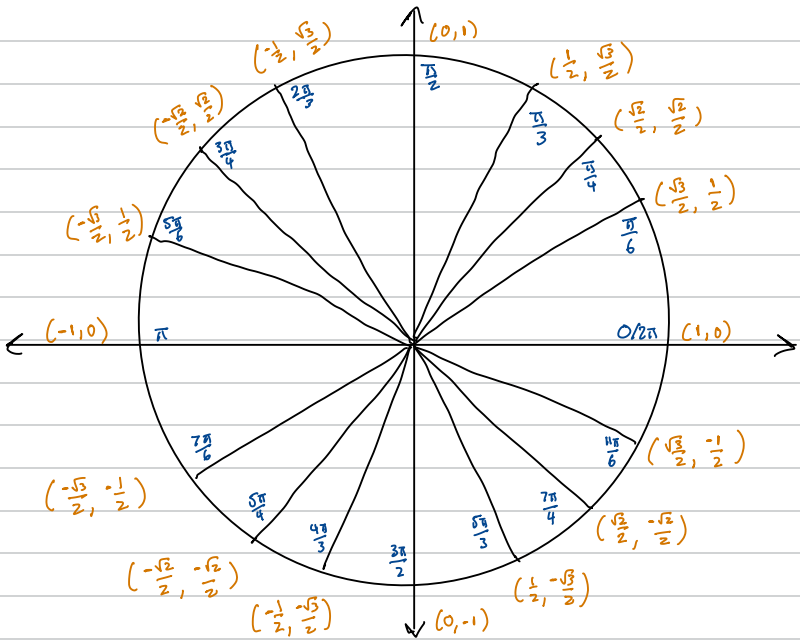






Unit Circle (IMPORTANT!!!)

The x-value refers to the cos value while the y-value refers to the Sin value



Conversion between Trig Functions

Aside from the methods of converting on page 1, the pythagorean identities are also important. The equations are...

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

$$\frac{\sin^2\theta}{\sin^2\theta} + \frac{\cos^2\theta}{\sin^2\theta} = \frac{1}{\sin^2\theta}$$

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

$$\frac{\sin^2\theta}{\cos^2\theta} + \frac{\cos^2\theta}{\cos^2\theta} = \frac{1}{\cos^2\theta}$$

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

Trig Modeling

using the function

$f(x) = a\sin(b(x+c)) + d$ or $f(x) = a\cos(b(x+c)) + d$

Changing ____ will...

- a - changes amplitude
- b - changes period (period $= \frac{2\pi}{b}$)
- c - phase shift by -c
- d = changes the midline to $y = d$

Solving Trig Equations

when solving Trig equations, imagine the unit circle where $\sin(x)$ is the y-value $\cos(x)$ is the x-value and $\tan(x)$ is the slope of the unit circle

Ex:

$\sin(x) = \frac{1}{2}$ $\cos(x) = \frac{1}{2}$ $\tan(x) = 1$