# Trigonometry Review

Graphs

- General equation: $y = a\sin(bx - c) + d$
    - A: Amplitude – Height from the resting line
    - B: Frequency – Amount of times the function repeats within the period of the parent function
        - Sine, Cosine, Cosecant, Secant: Period is 2π
        - Tangent and Cotangent: Period is π
    - C: With B gives you horizontal (phase) shift
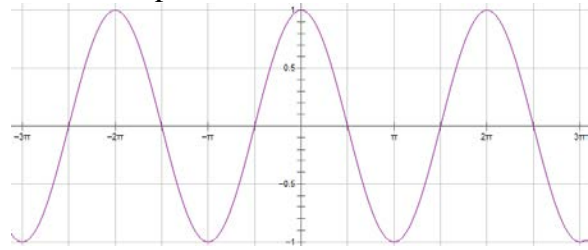   - $\frac{c}{b}$ = phase shift
    - D: Vertical shift

Sine Graph: Starts at 0
- 5 Critical Values: Rest, Max, Rest, Min, Rest (positive sine)
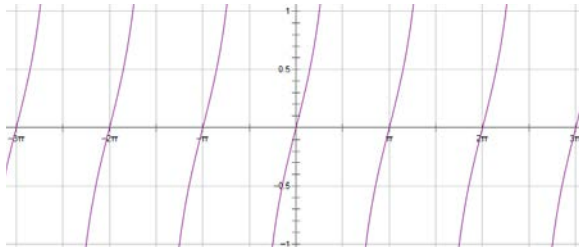- Period is 2π
- Amplitude is 1
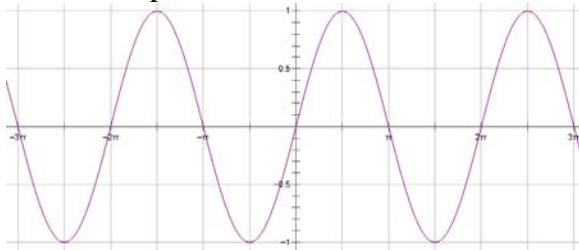
Cosine Graph: Starts at 1
- 5 Critical Values: Max, Rest, Min, Rest, Max (positive cosine)
- Period is 2π
- Amplitude is 1

Tangent Graph: Starts at 0
- Vertical Asymptotes at $-\frac{\pi}{2}$ and $\frac{\pi}{2}$
- Period is π

Reference Angles

- Acute angle
- Positive Angle
- Initial ray is on the x-axis

Quadrants
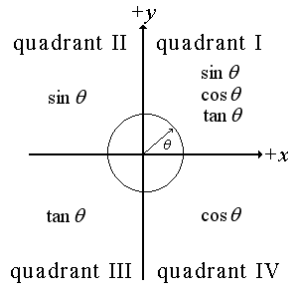
Quadrant 1:
- All functions are positive

Quadrant 2:
- Sine and Cosecant are positive

Quadrant 3:
- Tangent and Cotangent are positive

Quadrant 4:
- Cosine and Secant are positive

Trig Chart

Degrees	Radians	Sin	Cos	Tan	Csc	Sec	Cot
0°							
30°							
45°							
60°							
90°							

Calculating Exact Values of Trig Functions

- Reference Angle
  - Gives you value of the function
- Quadrant
  - Gives you the sign (+ or -)

Conversions

- ⊙ Degrees to Radians

    - $\theta * \frac{\pi}{180}$

- ⊙ Radians to Degrees

    - $\theta * \frac{180}{\pi}$

Coterminal Angles

- ⊙ Positive:

    - Add 360 or 2π until the angle is positive

- ⊙ Negative:

    - Subtract 360 or 2π until the angle is negative

Complementary and Supplementary

- ⊙ Complementary

    - Two angles that add up to $90°$ or $\frac{\pi}{2}$

- ⊙ Supplementary

    - Two angles that add up to $180°$ or π

Right Triangle Trigonometry
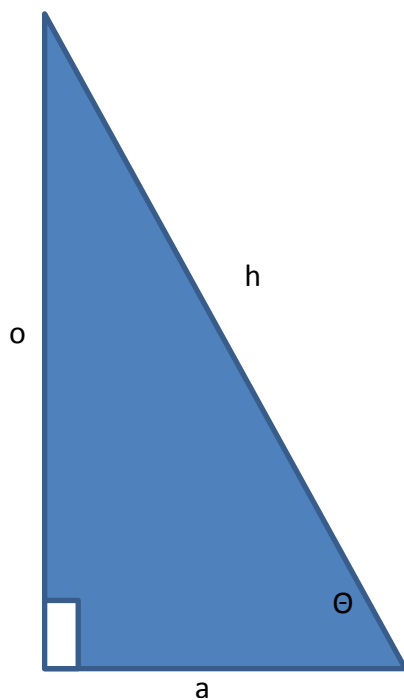
$$\sin \theta = \frac{o}{h}$$

$$\cos \theta = \frac{a}{h}$$

$$\tan \theta = \frac{o}{a}$$

$$\csc \theta = \frac{h}{o}$$

$$\sec \theta = \frac{h}{a}$$

$$\cot \theta = \frac{a}{o}$$

h

o

a

Θ

$$\sin^{-1} \frac{o}{h} = \theta$$

$$\cos^{-1} \frac{a}{h} = \theta$$

$$\tan^{-1} \frac{o}{a} = \theta$$

$$\csc^{-1} \frac{h}{o} = \theta$$

$$\sec^{-1} \frac{h}{a} = \theta$$

$$\cot^{-1} \frac{a}{o} = \theta$$