

# Graphing Trigonometric Functions

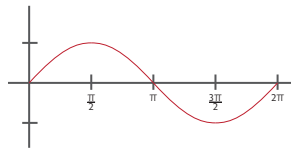
## Parent Functions

### Trig Functions

*Sine (sin)*

Amplitude: 1

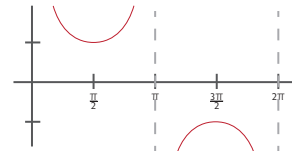
Period:  $2\pi$



*Cosecant (csc)*

Amplitude: N/A

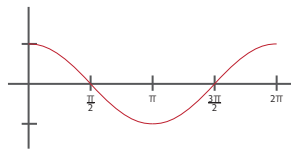
Period:  $2\pi$



*Cosine (cos)*

Amplitude: 1

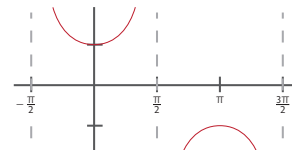
Period:  $2\pi$



*Secant (sec)*

Amplitude: N/A

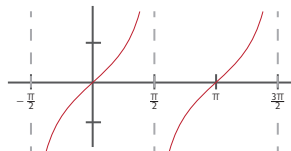
Period:  $2\pi$



*Tangent (tan)*

Amplitude: N/A

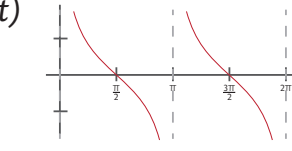
Period:  $\pi$



*Cotangent (cot)*

Amplitude: N/A

Period:  $\pi$



## Transforming the Parent Functions

The traditional function transformations have slightly different interpretations when applied to trig functions.

**Invert** about x-axis

**Amplitude**

**Phase shift:** Start of curve  
Positive is left; negative is

**Vertical shift:** centerline  
Positive is up; negative is down

**Sin, Tan:** move minus sign to the front of function  
**Cos:** remove it entirely

**Period modifier:** Divide the parent's period by this number

$$f(x) = -2(\sin(-4(x - \pi))) + 6$$

### Location of Asymptotes

**sec, tan:**  $x = (\text{phase shift}) + \frac{\pi}{2b} + \frac{\pi}{b}n$

**csc, cot:**  $x = (\text{phase shift}) + \frac{\pi}{b}n$