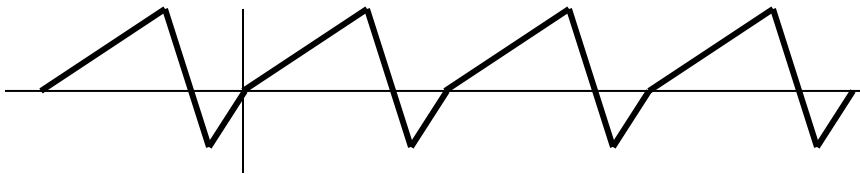


The Graphs of Trig Functions

A periodic function is a function that repeats a set of values at regular interval.

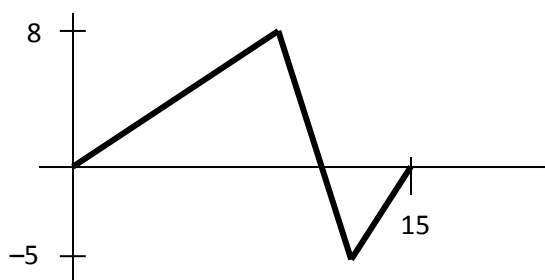


The part that repeats itself is called a CYCLE.

The length of one cycle is called the PERIOD. (The distance between identical points)

Halfway between the highest point on the cycle and the lowest is called the MIDLINE.

The distance from the midline to the highest point (or the midline to the lowest point) is called the AMPLITUDE.



In this example,

Period = 15

Midline is at $x = 1.5 \rightarrow \{ (8 + (-5)) / 2 = 3/2 = 1.5 \}$

Amplitude = 6.5 $\rightarrow \{ 8 - (-5) = 13 \quad 13/2 = 6.5 \}$

The trigonometric functions are periodic functions. We'll use the Phet Simulation: Trig Tour to investigate the graphs of these functions.

Turn on the labels.

1. COSINE:

Move the red dot around the circle. Notice how as you go round and round the circle, the pattern repeats.

AT 0° , the value of cosine is 1. At 360° , the value of cosine is the same as at 0° .

The period of the cosine graph is 360° .

The highest that the graph gets is 1. The lowest is -1. The midline is at $x = 0$.

The amplitude is 1.

Draw the graph of the cosine function from 0° to 360° on the other side.

2. SINE:

AT 0° , the value of sine is 0.

The period of the sine graph is 360° .

The highest that the graph gets is 1. The lowest is -1. The midline is at $x = 0$.

The amplitude is 1.

Draw the graph of the sine function from 0° to 360° on the other side.

3. TANGENT:

AT 0° , the value of tangent is 0. At 180° , the value of tangent is the same as at 0° .

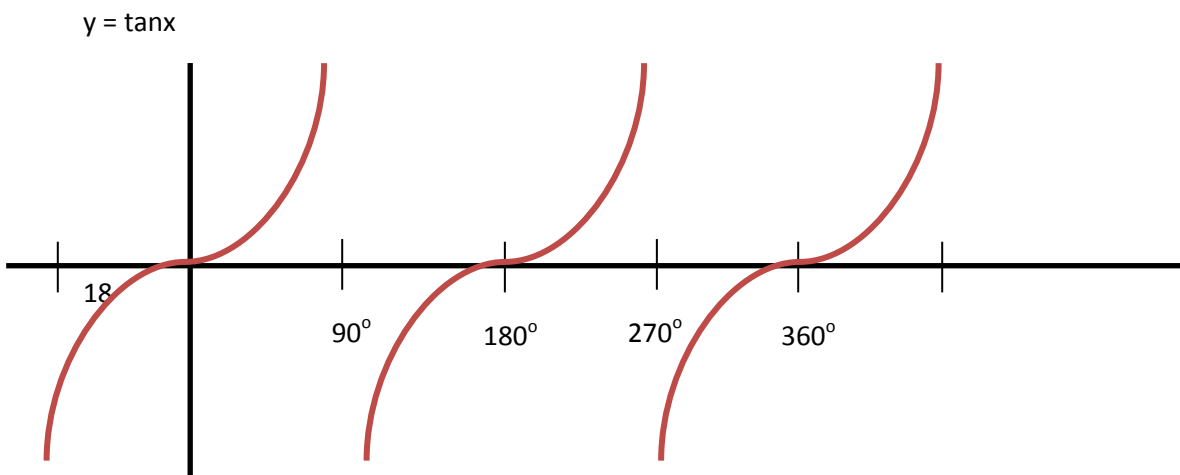
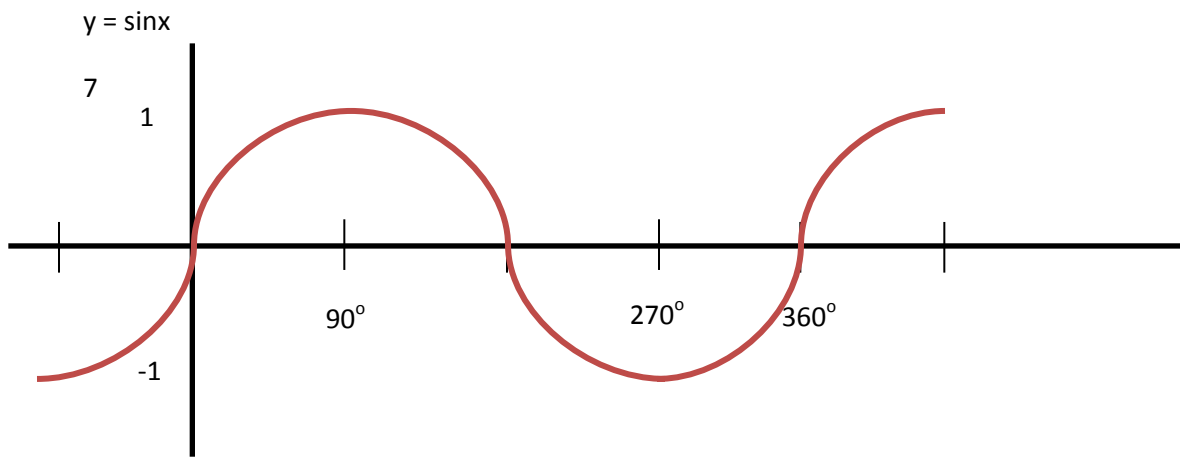
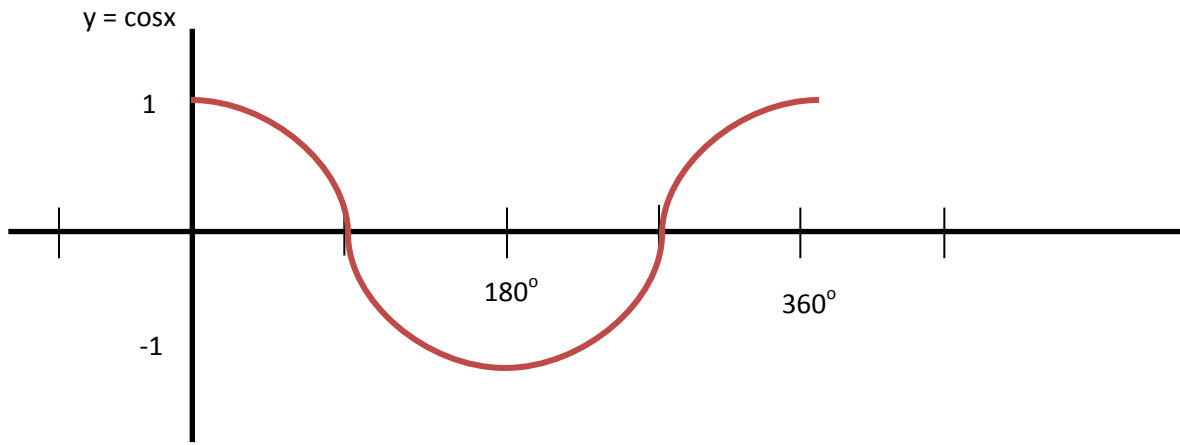
The period of the tangent graph is 180° .

Between 0° and 360° , there are asymptotes at 90° and 270° .

Because of the asymptotes, the tangent function does not have an amplitude.

But it does have a midline. The midline is at $x = 0$.

Draw the graph of the tangent function from 0° to 360° on the other side.



	cos	sin	tan
Amplitude:	1	1	N/A
Period:	360°	360°	180°
Midline:	$x=0$	$x=0$	$x=0$