

In trigonometry sine and cosine graphs are very similar and can be used to model alternating electrical current and many types of waves.

y equals sine of x . y equals cosine of x .

Both graphs have a maximum, a minimum, an amplitude which is half the vertical distance between the maximum and minimum, the period which is the number of times a function repeats its cycle in 360 degrees, and roots, where the graph cuts the x axis.

The graph of y equals sine x 's key features are:

Amplitude one with a maximum of one when x is 90 degrees and a minimum of negative one when x is 270 degrees.

The period is 360 degrees.

The roots are at zero, 180 and 360 degrees

The graph of y equals cosine x 's key features are:

The amplitude is one with a maximum at one when x is zero degrees and 360 degrees and a minimum of negative one when x is 180 degrees.

The period is 360 degrees.

The roots are at 90 and 270 degrees.

This is the graph of y equals four sine three x .

The maximum value is four and minimum is negative four, so the maximum at 30, four and minimum at 90, negative four and amplitude is four.

The sine three x tells us the function repeats three times in 360 degrees so the period is 120 degrees.

Graphs can also shift up and down the y axis as well as along the x axis.

If c is greater than one the graph shifts up the y axis.

If c is less than one the graph shifts down the y axis.

If d is greater than one the graph shifts left along the x axis.

If d is less than one the graph shifts right along the x axis.

This is the graph y equals sin of x plus 30 degrees plus one.

The standard sin function has moved 30 degrees to the left and moved up the y-axis by one, so the maximum is two at 60 degrees, and the minimum is zero at 240 degrees.

Remember sin and cosine graphs are the same shape but are shifted 90 degrees horizontally from each other.

Changing the function can change their amplitude, period and shift them up, down or sideways.