Sine and Cosine Function: Period and Amplitude

Objective: to see how the values of A and B affect the graphs of $y = A\sin Bx$ and $y = A\cos Bx$.

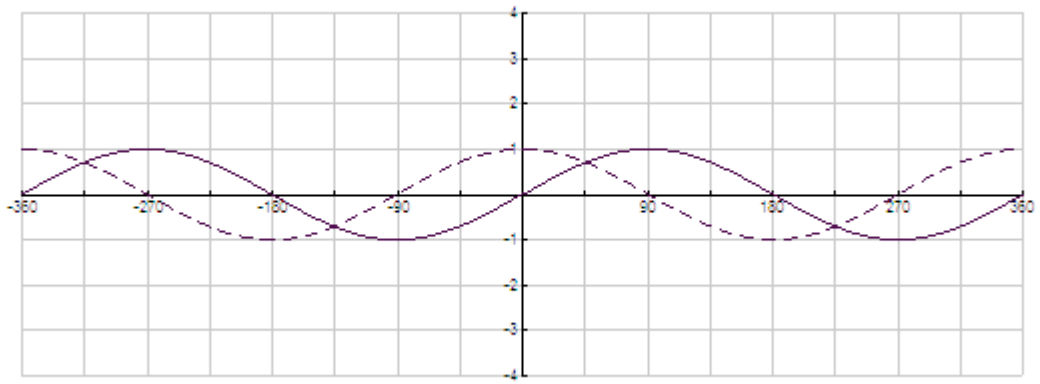
Our work will be done in degrees so you must set the mode setting on your calculator to degrees. The suggested range will produce a graph with the same domain and range as the graph provided.

Xmin = -360 Ymin = -4
Xmax = 360 Ymax = 4
Xscl = 45 Yscl = 1

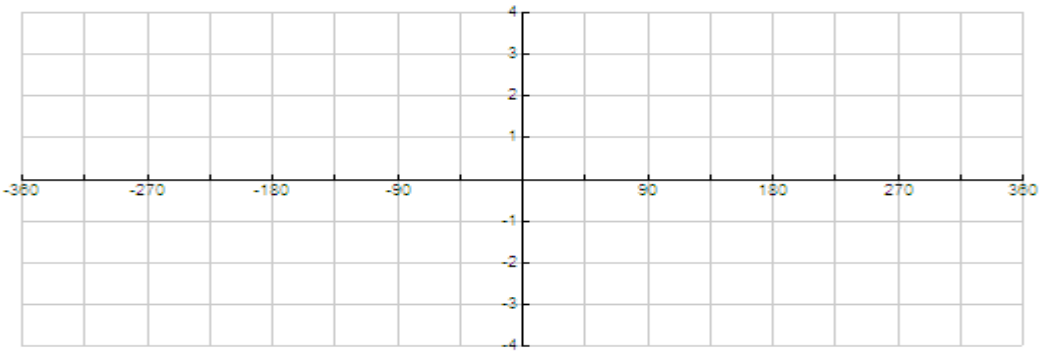
Period: Amplitude:

1. Use a graphing calculator to complete the chart below. Use different lines or different colors for the graphs of sine and cosine. The first entry has been done for you.

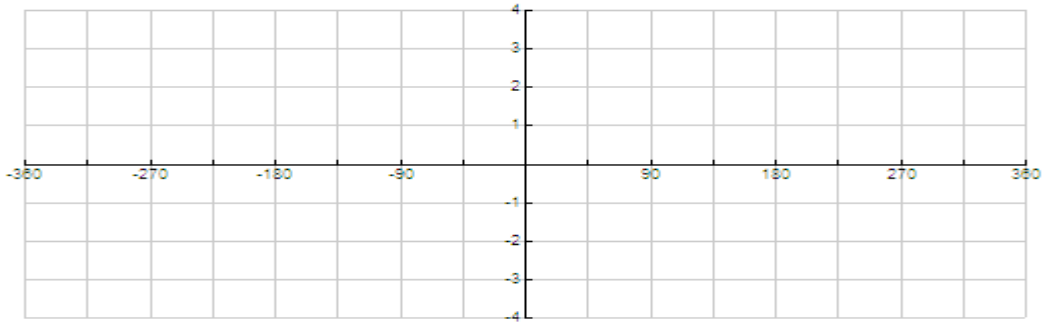
Equations	A	Amplitude	B	Period	Inc/dec from 0° to the right
$y = \sin x$ $y = \cos x$	1	1	1	360°	Increasing Decreasing



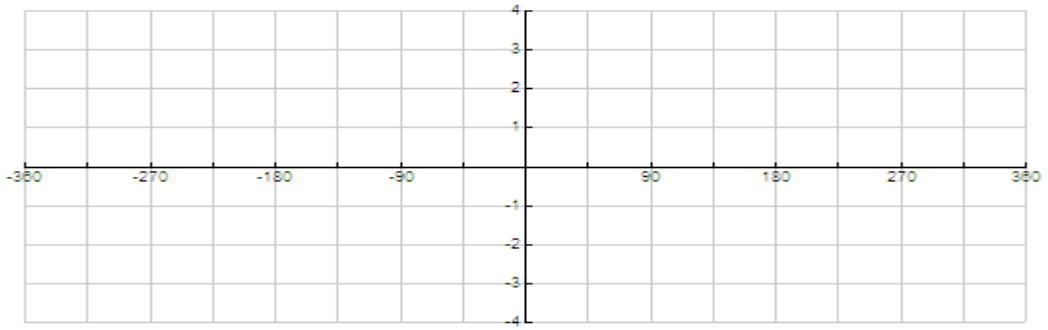
$y = 0.5\sin 2x$ $y = 0.5\cos 2x$					



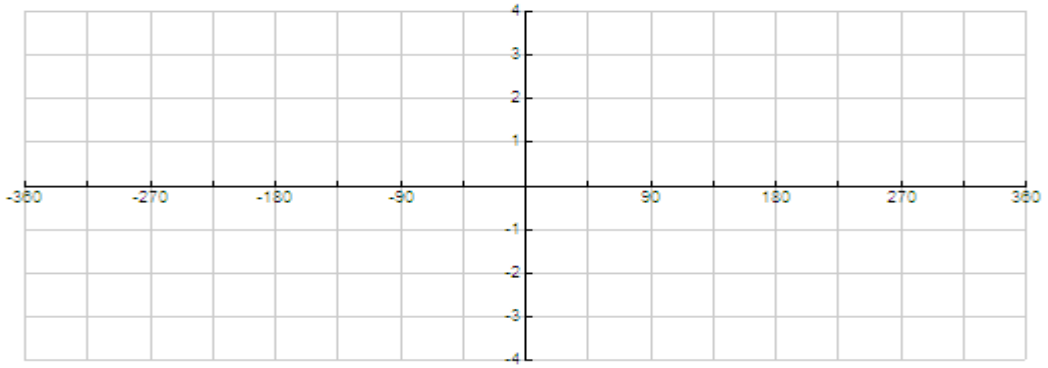
Equation	A	Amplitude	B	Period	Inc/dec from 0° to the right
$y=3\sin\frac{1}{2}x$ $y=3\cos\frac{1}{2}x$					



$y=-2\sin 4x$ $y=-2\cos 4x$					



$y=-\sin\frac{1}{4}x$ $y=-\cos\frac{1}{4}x$					



2. Use your graphs to answer the following questions pertaining to A and amplititude.
a.) Does the sign of A affect the value of the maximum, minimum or amplitude? If so, how?

b.) How does the graph of $y = A\sin x$ or $y = A\cos x$ change when A > 0 verses when A<0?

c.) Are the graphs of $y = A\sin x$ or $y = A\cos x$ when A > 0 verses when A<0 symmetric? If so, symmetric to what line?

d.) As |A| increases, does the graph become steeper or flatter?

e.) For any function $y = A\sin x$ or $y = A\cos x$, write a formula for the amplitude (remember that A can be either positive or negative).

**Amplitude =

3. Use your graphs to answer the following questions pertaining to B and the period.
a.) If B=1, the period of $y = \sin Bx$ or $y = \cos Bx$ is 360°. As B gets larger than 1, what happens to the period of the graph?

b.) As B gets smaller than 1 (but is still greater than 0), what happens to the period of the graph?

c.) What is the formula for the period of the function?

**Period =

d.) Write an equation of the form $y = \sin Bx$ and $y = \cos Bx$ for each of the following.

Period 180° Equations:_____

Period 120° Equations:_____

Period 60° Equations:_____

4. Graph y=tanx. What characteristics do you see in this function? Compare it to the graphs of sine and cosine.