Exploring Trigonometric Graphs-2

Class XI

Teacher Reference

Aim: To explore effect of 'a' and 'b' on the graph of functions asin(bx) and a cos(bx)

Material: GeoGebra applet, student activity sheet

Instructions:

Task 1:

In the given applet keep the sine function checkbox selected and cosine function checkbox unselected.

Function	Amplitude	Period	Normal/Reflected/Srech/Shrink
Keep slider 'b' at 1 and change 'a' to observe and answer			
$f(x) = 2sinx$			
$f(x) = -2sinx$			
$f(x) = 1.5\ sinx$			
$f(x) = -0.5\ sinx$			
Keep slider 'a' at 1 and change 'b' to observe and answer			
$f(x) = sin2x$			
$f(x) = sin(-2x)$			
$f(x) = sin(3.5\ x)$			
$f(x) = sin\ (-0.5x)$			
Change slider 'a' and 'b' both to get the following curves and answer			
$f(x) = 0.5\ sin2x$			
$f(x) = -2sin(-2x)$			
$f(x) = 3sin(2x)$			

From your observation above, what is the effect of 'a' and 'b' on the graph of the function $f(x) = a\ sin(bx)$

Task 2:

In the given applet keep the cosine function checkbox selected and sine function checkbox unselected.

Function	Amplitude	Period	Normal/Reflected/Sr ech/Shrink
Keep slider 'b' at 1 and change 'a' to observe and answer			
$f(x) = 2cosx$			
$f(x) = \ -2cosx$			
$f(x) = 1.5\ cosx$			
$f(x) = \ -0.5\ cosx$			
Keep slider 'a' at 1 and change 'b' to observe and answer			
$f(x) = cos2x$			
$f(x) = \ cos(-2x)$			
$f(x) = \ cos(\ 3.5\ x)$			
$f(x) = \ cos\ (-0.5x)$			
Change slider 'a' and 'b' both to get the following curves and answer			
$f(x) = 0.5\ cos2x$			
$f(x) =-\ 2cos(-2x)$			
$f(x) = 3cos(2x)$			

From your observation above, what is the effect of 'a' and 'b' on the graph of the function $f(x) = \ a\ sin(bx)$