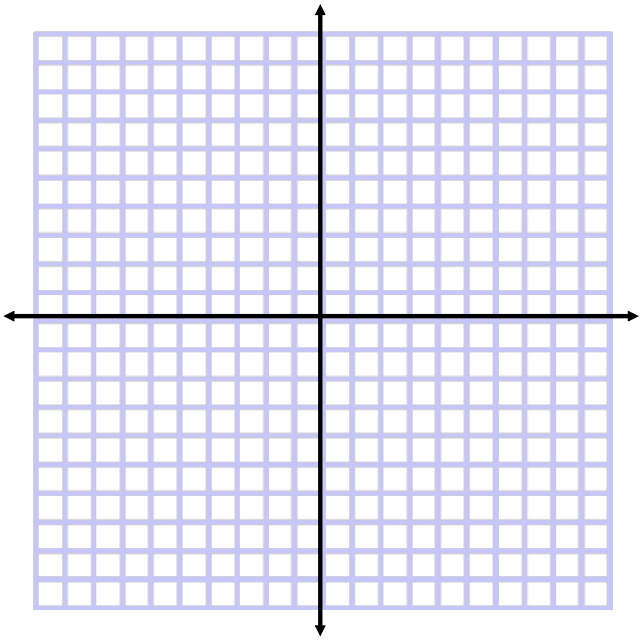
Warm Up

$f(x) = x^2$ base curve



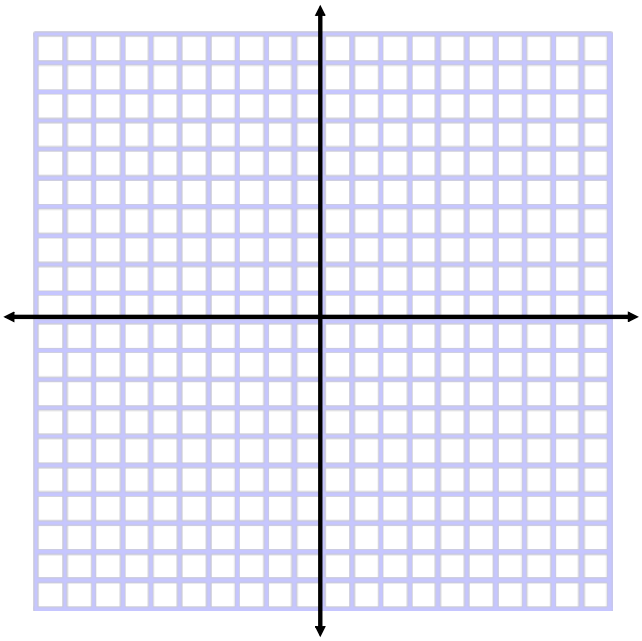
$g(x) = 2f(x)$

$g(x) = 2x^2$

Nov 29-1:49 PM

Warm Up

$f(x) = x^2$ base curve



$g(x) = -0.5\ f(x)$

$g(x) = -0.5x^2$

Nov 29-1:49 PM

Sec. 6.6 - Transformations of the Sine Function

Learning Goal:

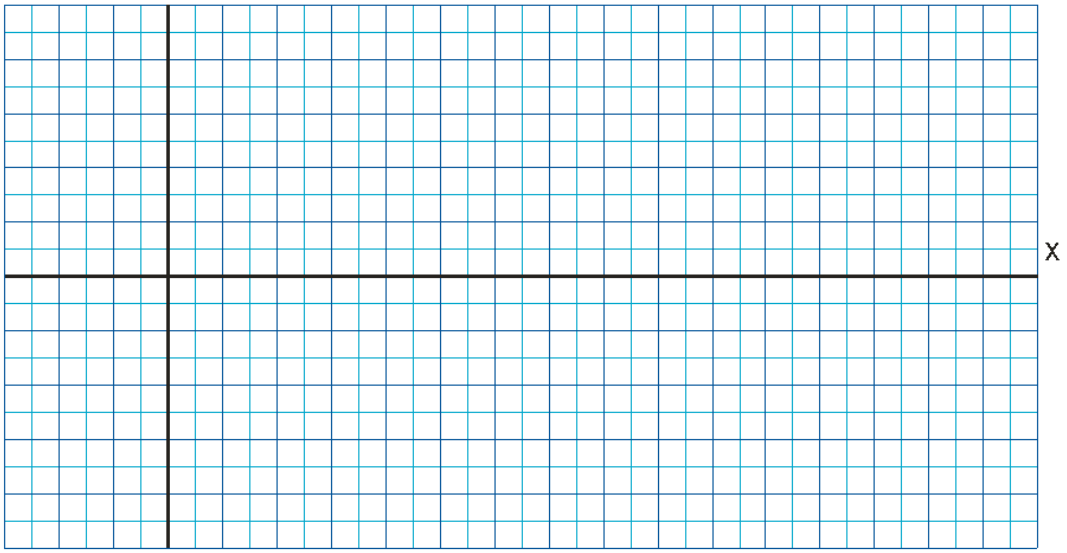
By the end of today, I will be able to transform a base curve Sine Function, using vertical stretches, compressions and reflections.

Nov 29-1:42 PM

$f(x) = \sin(x)$ The Five Key points of the SINE Function.

base curve
Y

Amplitude: _____ Period: _____



Shift the 5 key points when graphing transformed sine functions.

Nov 29-1:49 PM

Graphing Strategies for the Sine Function

1. Describe/list the transformations BEFORE graphing
2. Decide on an appropriate scale BEFORE graphing
3. Plot your base sine curve
4. Plot your transformed sine curve in multiple steps

Nov 29-2:02 PM

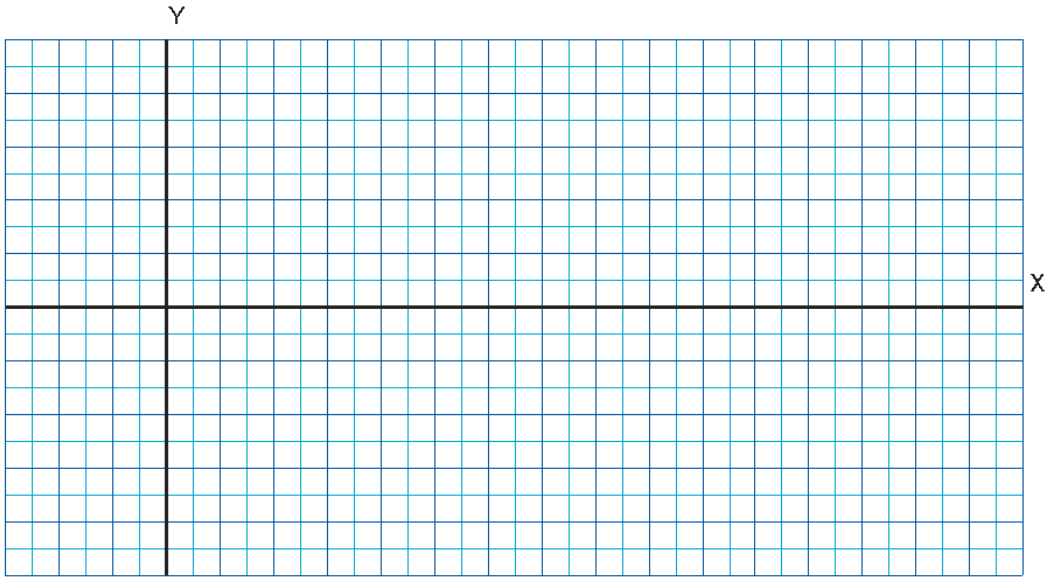
$f(x) = \sin(x)$ base curve

$g(x) = 3\, f(x)$

$g(x) = 3 \sin(x)$

Graphing Strategies for the Sine Function

1. Describe/list the transformations BEFORE graphing
2. Decide on an appropriate scale BEFORE graphing
3. Plot your base sine curve
4. Plot your transformed sine curve in multiple steps



Nov 29-1:49 PM

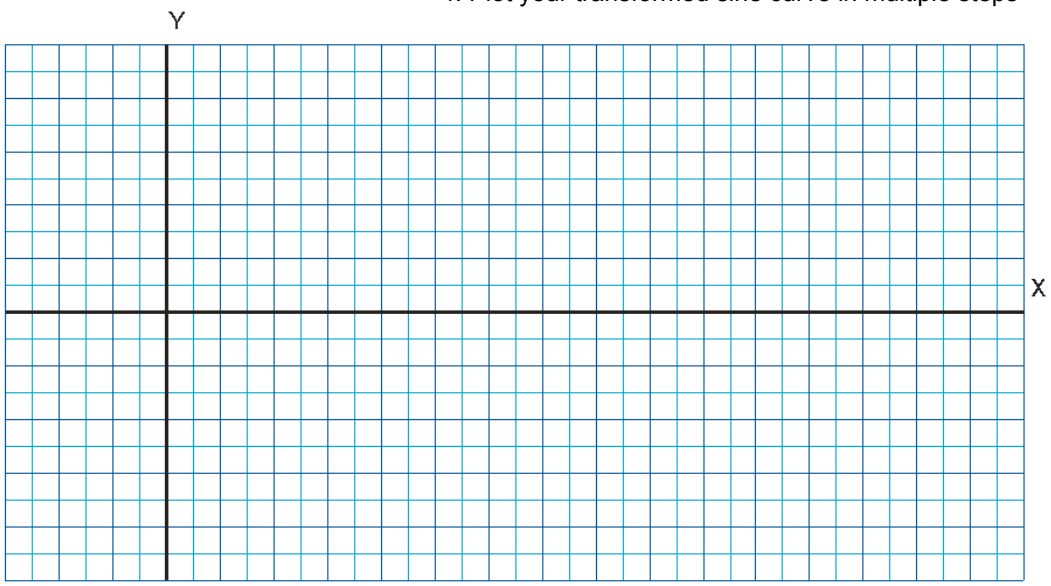
$f(x) = \sin(x)$ base curve

$g(x) = -0.8\, f(x)$

$g(x) = -0.8 \sin(x)$

Graphing Strategies for the Sine Function

1. Describe/list the transformations BEFORE graphing
2. Decide on an appropriate scale BEFORE graphing
3. Plot your base sine curve
4. Plot your transformed sine curve in multiple steps



Nov 29-1:49 PM

Horizontal Stretches and Compressions are controlled by the multiplier "inside" the function.

$$y = a\, f(x)$$

where "a" controls the vertical stretch or compression.

a > 1 then it is a vertical stretch

0<a<1 then it is a vertical compression

Note: inline with your logical thinking

Nov 29-2:32 PM

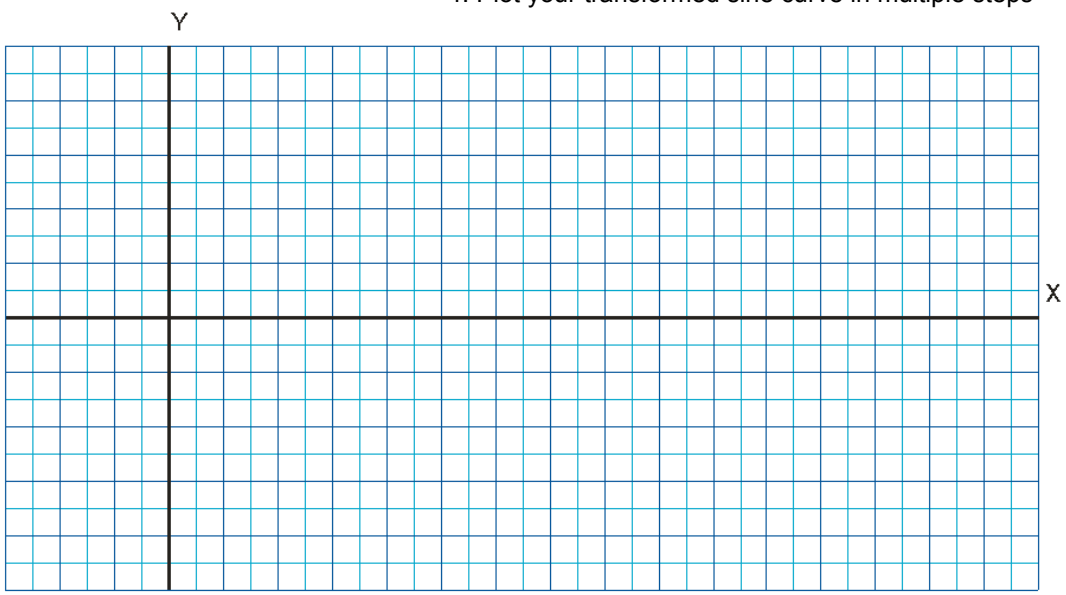
$f(x) = \sin(x)$ base curve

$g(x) = - f(x+60^o) - 1$

$g(x) = - \sin(x+60^o) - 1$

Graphing Strategies for the Sine Function

1. Describe/list the transformations BEFORE graphing
2. Decide on an appropriate scale BEFORE graphing
3. Plot your base sine curve
4. Plot your transformed sine curve in multiple steps



Nov 29-1:49 PM

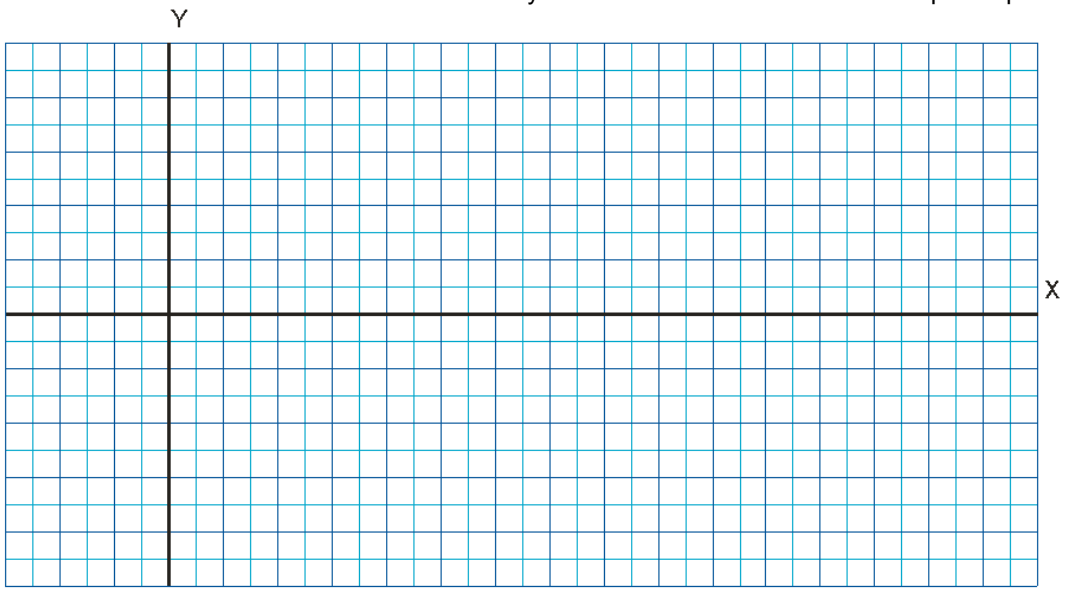
$f(x) = \sin(x)$ base curve

$g(x) = 3\ f(x+45^o) - 2$

$g(x) = 3\ \sin(x+45^o) - 2$

Graphing Strategies for the Sine Function

1. Describe/list the transformations BEFORE graphing
2. Decide on an appropriate scale BEFORE graphing
3. Plot your base sine curve
4. Plot your transformed sine curve in multiple steps



Nov 29-1:49 PM

Learning Goal:

By the end of today, I will be able to transform a base curve Sine Function, using vertical stretches, compressions and reflections.

Homework:

Page 373 - 75 #1, 5abc, 6abc, 7, 13abf

Nov 29-2:07 PM

Extending: Horizontal Stretches and Compressions

Compare the following with graphing technology:

Case 1

y = sin(x)

y = sin(2x)

$(x-5)^2$

Case 2

y = sin(x)

y = sin(0.5x)

Nov 29-2:30 PM

Horizontal Stretches and Compressions are controlled by the multiplier "inside" the function.

$$y = f(k (x))$$

where "k" controls the horizontal stretch or compression.

k > 1 then it is a horizontal compression

0<k<1 then it is a horizontal stretch

Note: backwards to your logical thinking

Nov 29-2:32 PM