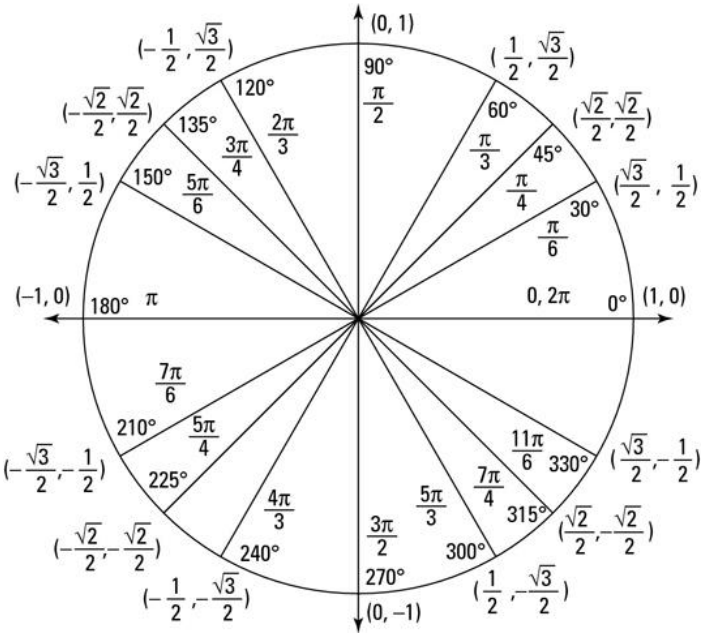
Name _____

Graphs of Sine and Cosine Functions

I can graph the parent functions for sine and cosine.
I can apply my knowledge of transformations to sine and cosine functions.

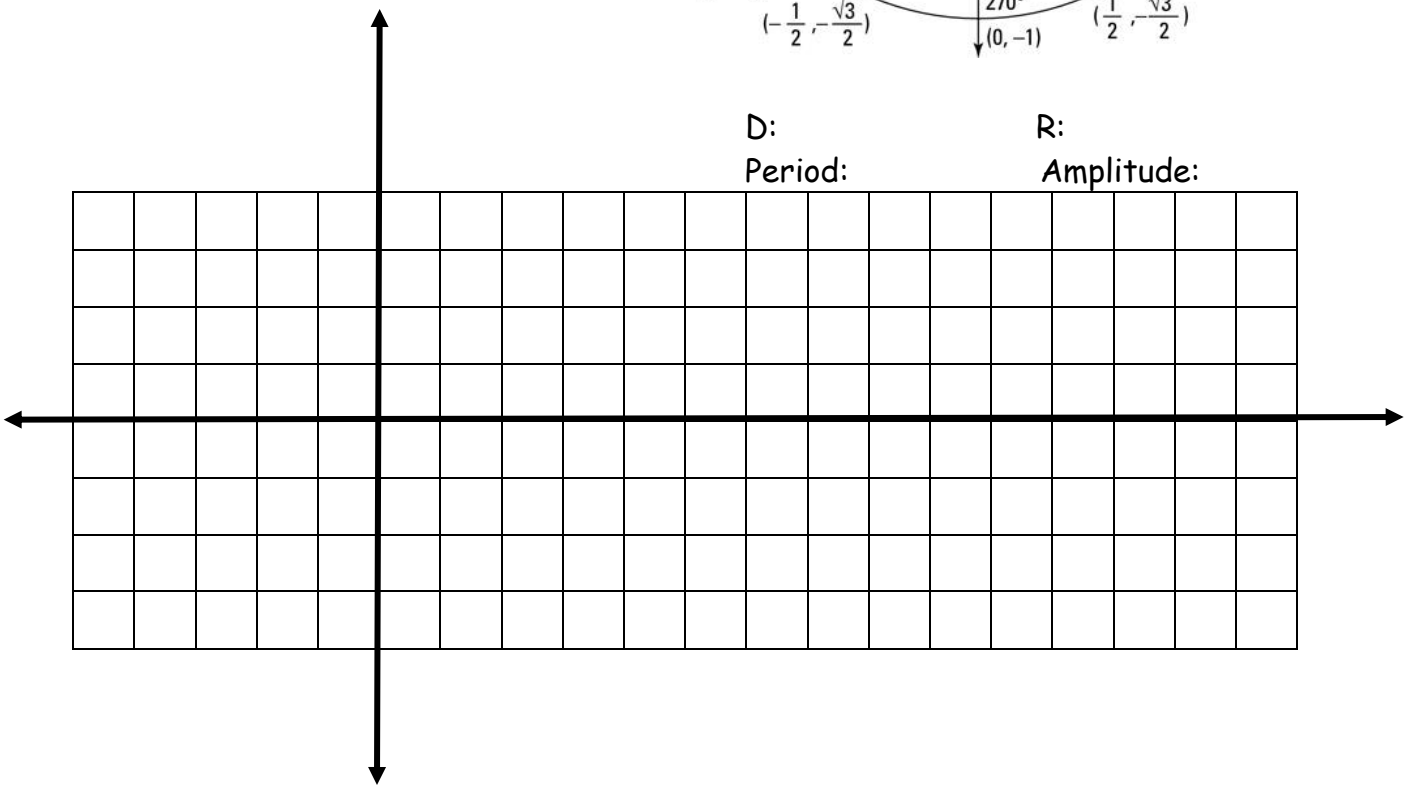
http://www.mathsisfun.com/algebra/trigonometry-index.html

$y = \sin x$

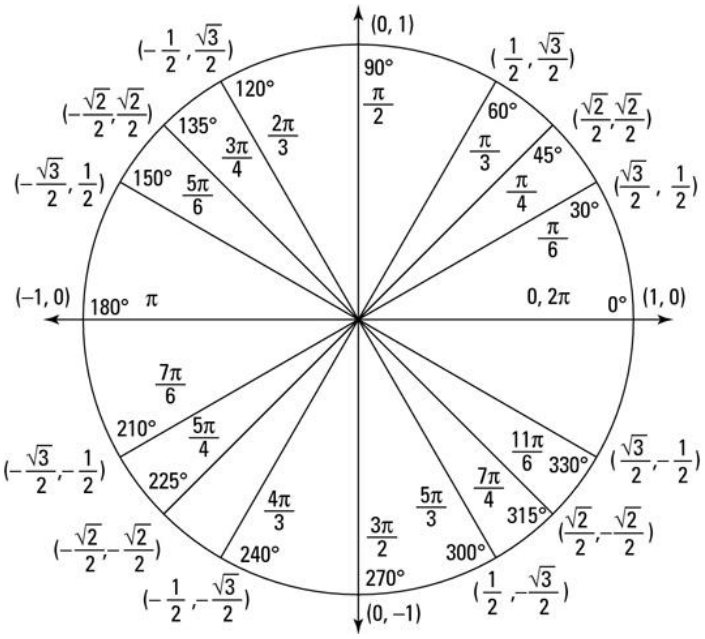


D: R:

Period: Amplitude:

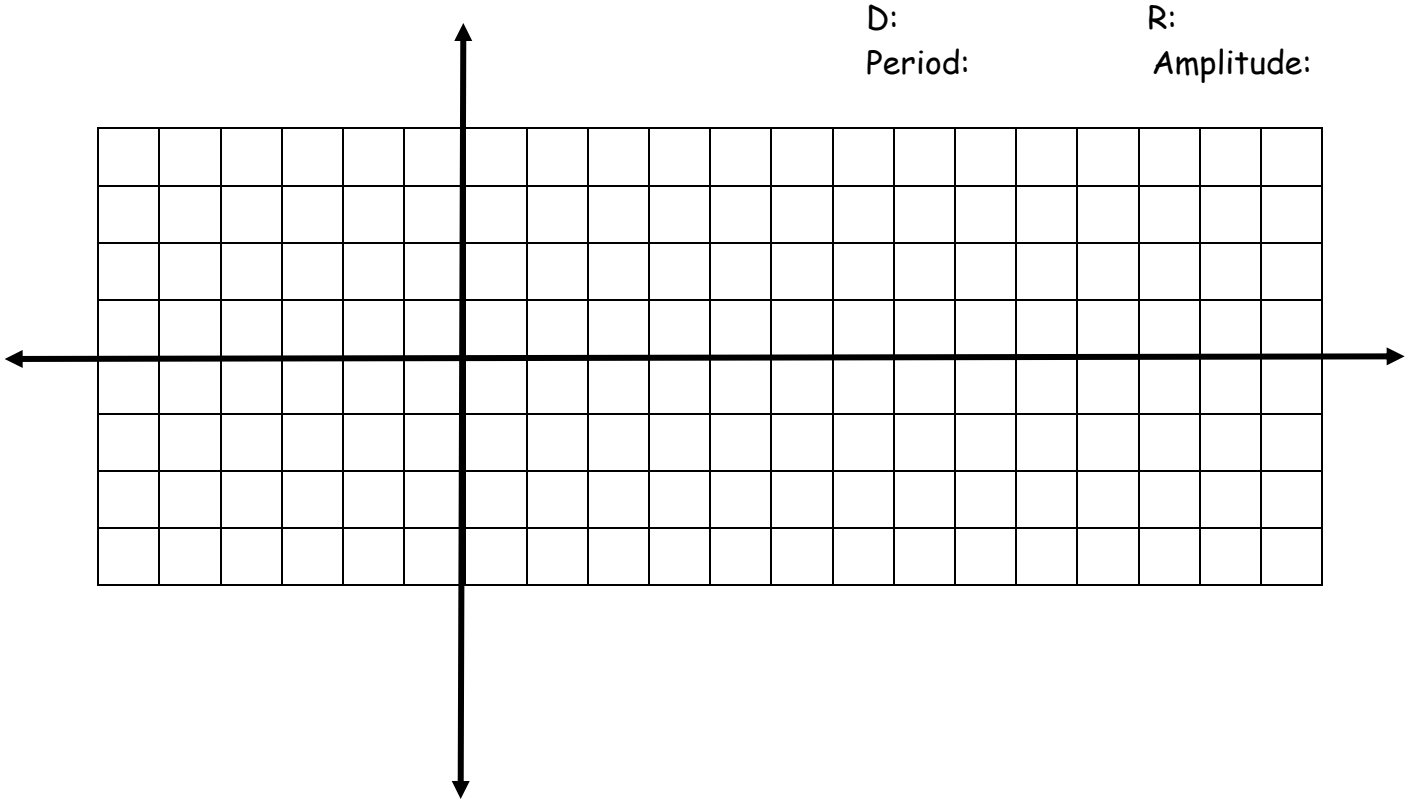


$y = \cos x$

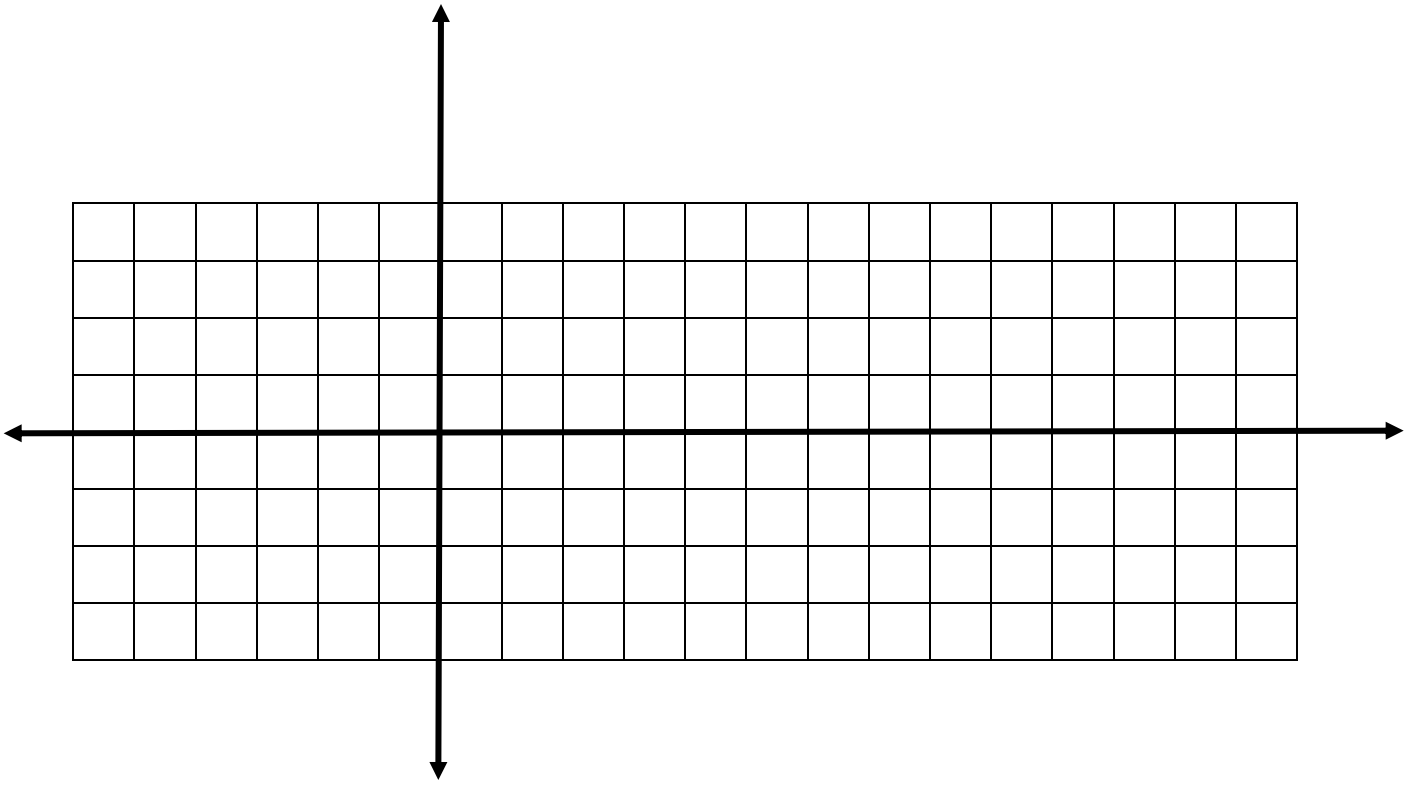


D: R:

Period: Amplitude:



Sketch the graph of $y = 3\sin x$ on the interval $\left[-\frac{\pi}{2}, \frac{9\pi}{2}\right]$.



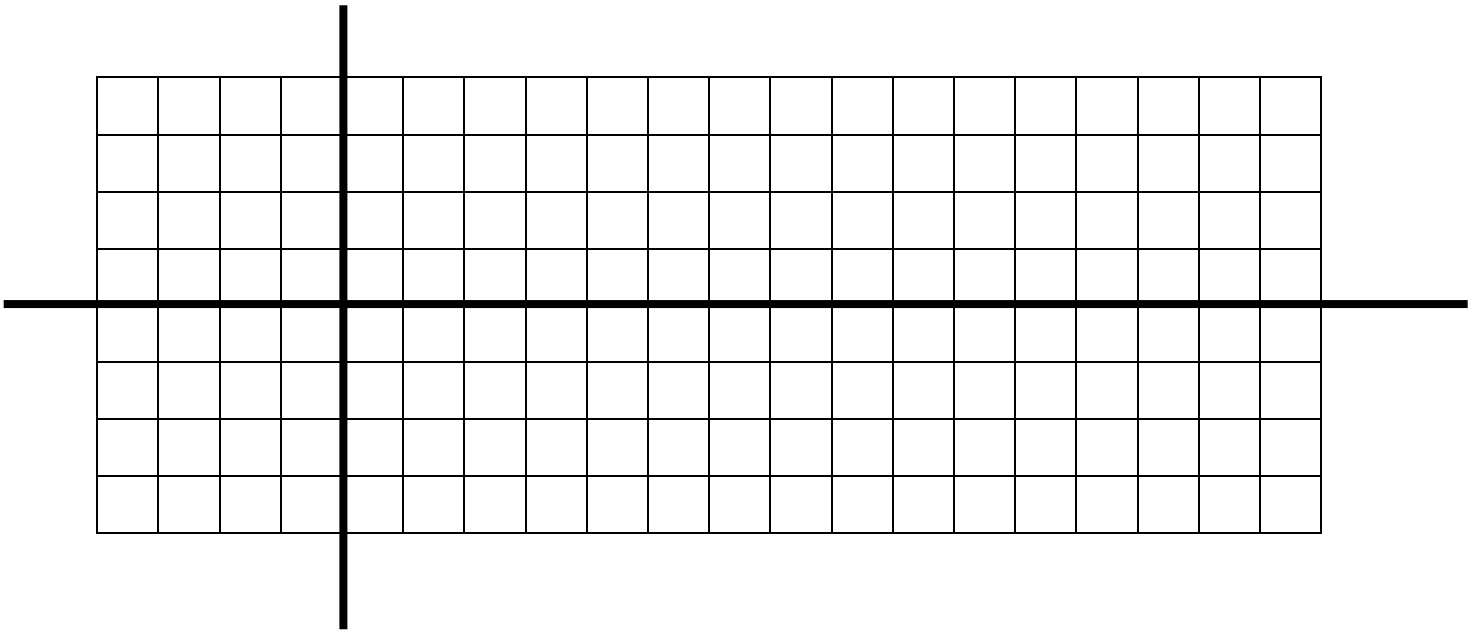
The <u>amplitude</u> of a function is half the distance between the maximum and minimum values of the function.

What is the amplitude of $y = 3\sin x$?

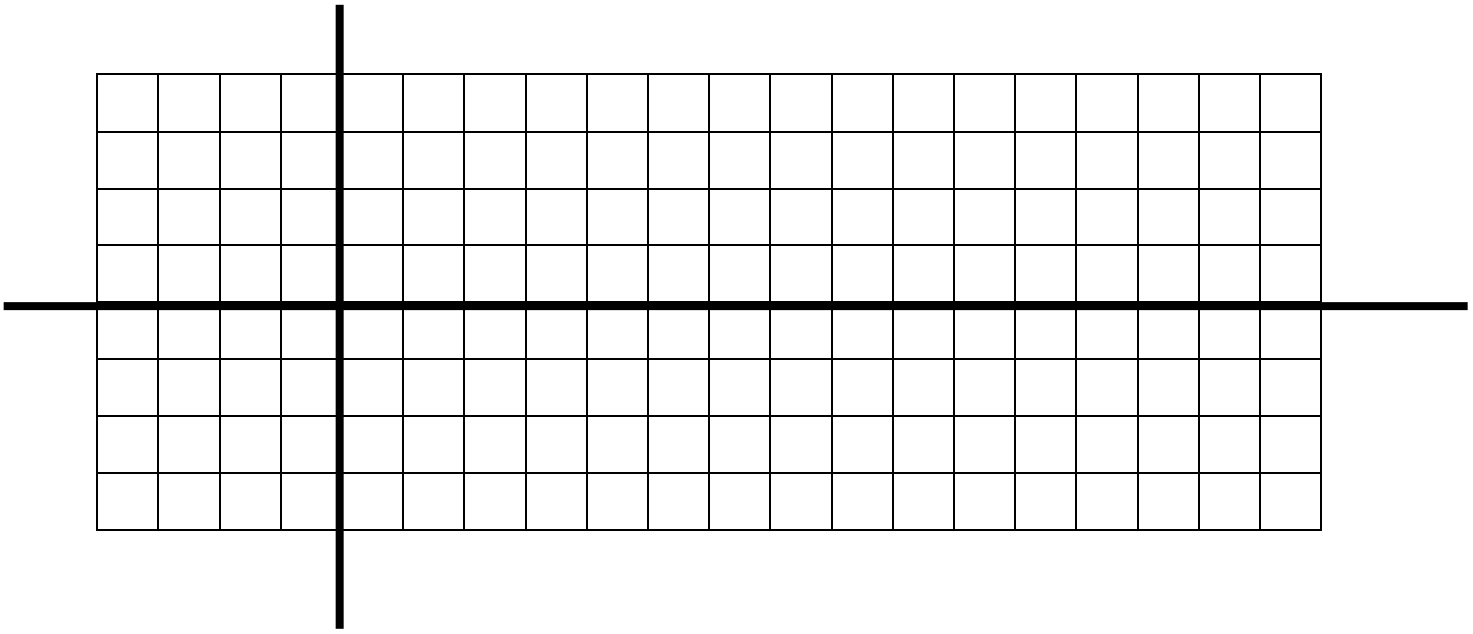
How is the amplitude related to the function?

Now that we have determined how the "a-value" is going to transform our graphs, let's investigate the "d-value". (This can also be called the "k-value", but your authors use *d*.)

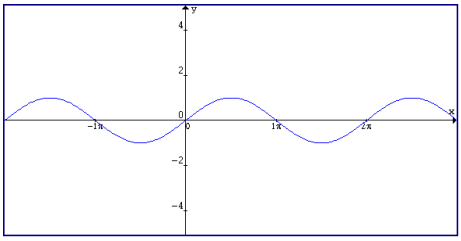
$y = 2 + \sin x$



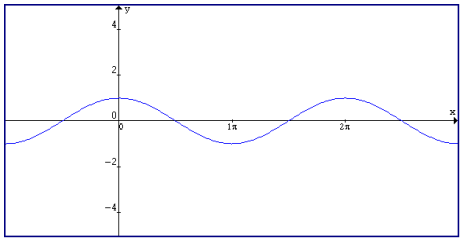
$y = 2 + \frac{1}{2}\sin x$



For each of the following equations, identify *a* and *d* values. Use these values to describe how the graph of the equation changes from the parent sine or cosine curve, given below.



$y = \sin(x)$



$y = \cos(x)$

1) $y = -3 + \frac{1}{4}\sin(x)$

2) $y = -2 - 3\sin(x)$

3) $y = -3 + \cos(x)$

4) $y = 1 + \frac{1}{2}\cos(x)$

5) $y = 3\sin(x) + 2$

6) $y = -2\cos(x+1)$

Vocabulary Bank: vertical stretch, vertical shrink, multiple of, shift up, shift down, by so many units, reflection