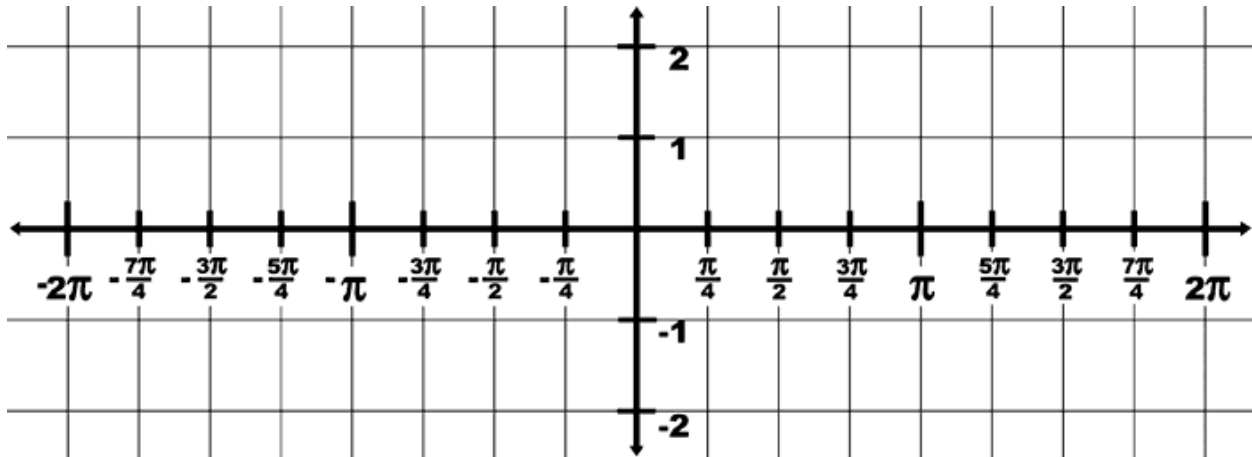


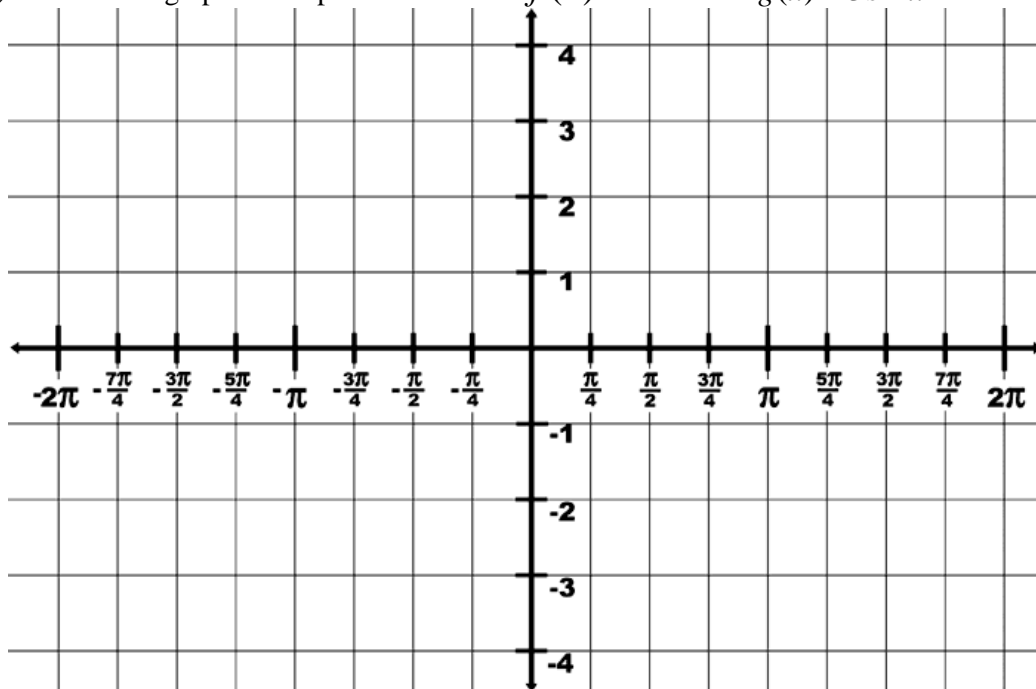
Graphs of Sine and Cosine Functions

- 1) On the graph below plot the functions  $f(x) = \sin x$  and  $g(x) = \cos x$ . Use the marks on the x-axis of the grid from  $-2\pi$  to  $2\pi$  as your input values. Make sure and label each graph so you know what each function is.

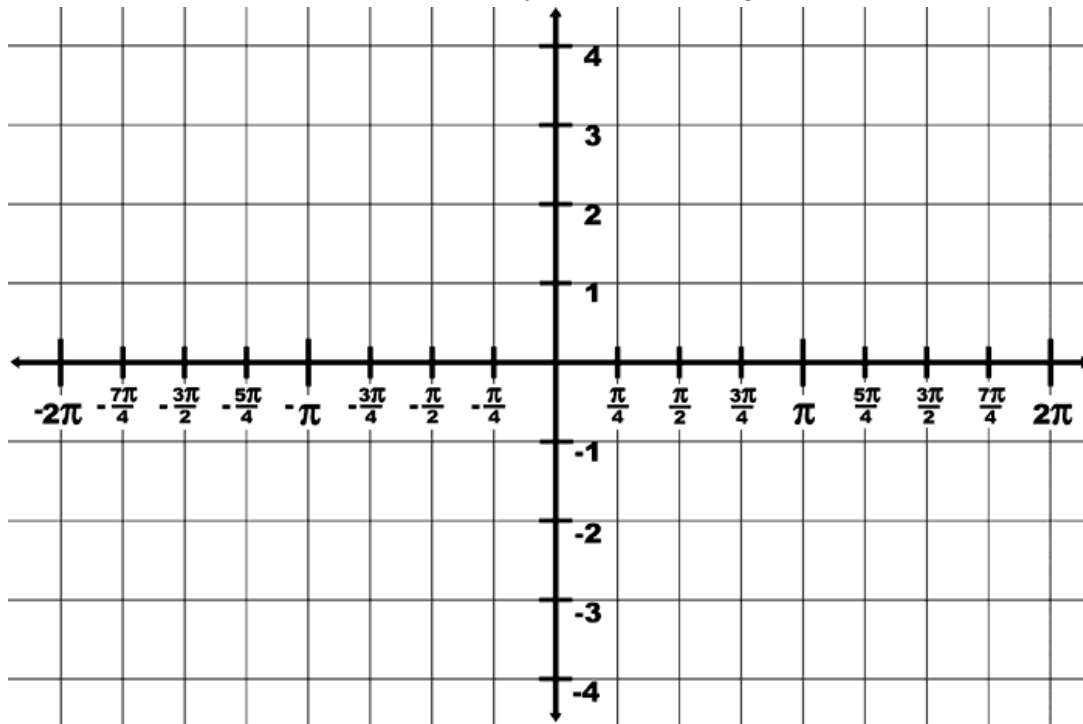


- 2) **Amplitude is defined as half the difference between the maximum output and the minimum output values of the function.** Using this definition what is the amplitude of these two functions?
- 3) **The Period is the distance between two maximum values, or how long it takes for one complete cycle (in reference to input values).** Using this definition what is the period of these two functions?

- 4) On the graph below plot the function  $f(x) = \sin x$  and  $g(x) = 3 \sin x$ .



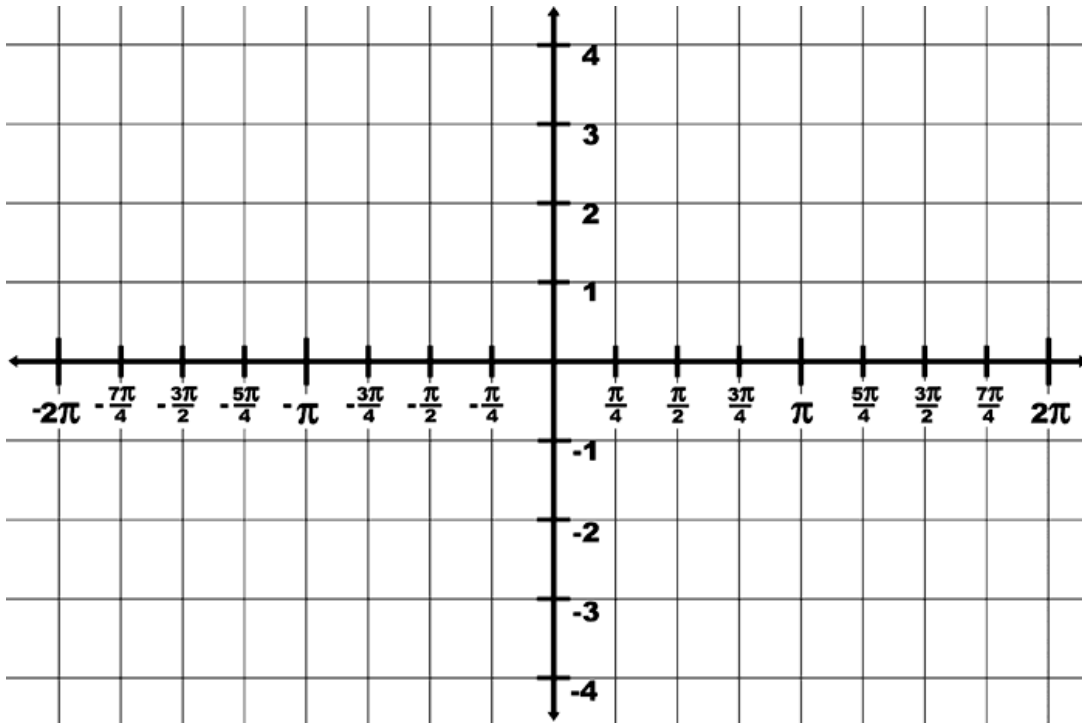
- 5) On the graph below plot the function  $f(x) = \cos x$  and  $g(x) = -2\cos x$ .



- 6) How were the period and the amplitude affected by placing a three or negative two in front of the function? If  $f(x) = a \cdot \sin(x)$ , how does the ***a-value*** affect the shape of the graph compared to  $f(x) = \sin(x)$ ?

What is the amplitude and period?

- 7) On the graph below plot the function  $f(x) = \sin x$ ,  $g(x) = \sin(x) - 2$ , and  $h(x) = \sin(x) + 3$

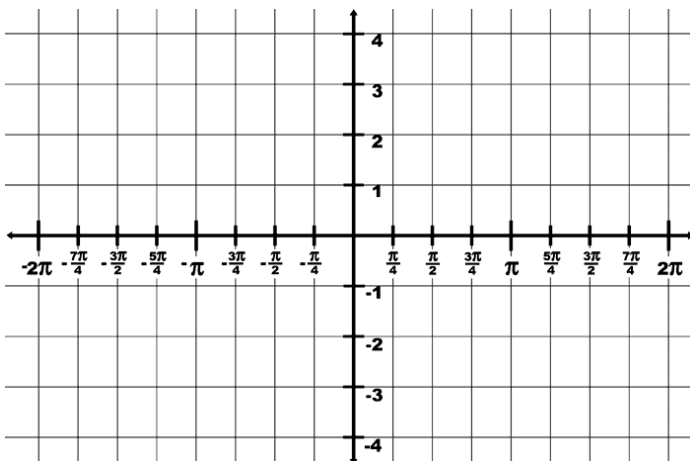


- 8) How did subtracting two, or adding the three outside of the function affect the sine graph?

If  $f(x) = \sin(x) + d$ , how does the *d-value* affect the graph compared to  $f(x) = \sin(x)$ ?

- 9) Based on what you have learned, make a prediction what the graph of the function  $h(x) = 3\sin(x) + 1$  would look like. After you have made your guess verify your answer and graph it beside your guess.

Guess



Actual

