Kerry Ojakian's MTH 30 Class Class Assignment #21

1. Graph $y = 2\cos(x)$. What is its amplitude and period?

2. Graph $y = -4\cos(x)$. What is its amplitude and period?

- 3. For the following sinusoidal functions, find the amplitude, the period, and the phase shift. You do not have to graph the functions.
 - (a) $f(x) = (\frac{1}{2}) \sin\left(4(x \frac{\pi}{6})\right)$ (b) $g(x) = -5\cos\left(10(x \pi)\right)$
- 4. For the following sinusoidal functions, find the amplitude, the period, and the phase shift. You do not have to graph the functions.

(a)
$$f(x) = \frac{2}{3}\cos\left(\pi x - \frac{\pi}{2}\right)$$
 (b) $f(x) = 4\sin\left(3x + \frac{3\pi}{4}\right)$

5. Graph $f(x) = \sin(x)$ and $g(x) = 2 + \sin(x - \pi)$ on the same axes (graph g(x) by using graph transformations - describe them).

6. Graph $f(x) = \cos(x)$ and $g(x) = -2 + \cos(4x)$ on the same axes (graph g(x) by using graph transformations - describe them).

7. Graph $f(x) = \sin(x)$ and $g(x) = 5 - 2\sin(2x)$ on the same axes (graph g(x) by using graph transformations - describe them).

- 8. (a) Consider sin with some phase shift, i.e. $f(x) = \sin(x k)$. For what choice of k does $f(x) = \cos(x)$?
 - (b) Consider cos with some phase shift, i.e. $f(x) = \cos(x k)$. For what choice of k does $f(x) = \sin(x)$?

9. Consider the function $f(x) = 3\cos\left(2(x-\frac{\pi}{2})\right)$. Find the a) amplitude, b) the period, and c) the phase shift, of f(x). Then use that information to graph f(x) (indicate how (a), (b), and (c) are used to make the graph).

10. Consider the function $h(x) = -4\sin(x - 2\pi)$. Find the a) amplitude, b) the period, and c) the phase shift, of h(x). Then use that information to graph h(x) (indicate how (a), (b), and (c) are used to make the graph).

11. Consider the function $h(x) = \sin(4x - 4\pi)$. Find the a) amplitude, b) the period, and c) the phase shift, of h(x). Then use that information to graph h(x) (indicate how (a), (b), and (c) are used to make the graph).

12. Consider the function $h(x) = \tan\left(x + \frac{\pi}{2}\right)$. Find the period of h(x). Then graph h(x), showing the asymptotes.

13. Consider the function $f(x) = \tan(2x)$. Find the period of f(x). Then graph f(x), showing the asymptotes.

14. Consider the function $f(x) = \tan\left(2(x-\frac{\pi}{2})\right)$. Find the period of f(x). Then graph f(x), showing the asymptotes.