Pre-Calculus Test Review
Unit 5 – No Calculator on Test

Name _____
Block _____ Date _____

1. Determine the amplitude:

a. $y = 3\sin\left(\frac{x}{2}\right)$ b. $y = -2\cos(x+3)$ c. $y = \frac{1}{2}\cos(x-1)$

2. Determine the period:

a. $y = 3\sin(4x)$ b. $y = 2\sin\left(\frac{1}{2}x\right)+1$ c. $y = \frac{1}{2}\sin\left(\frac{1}{4}x\right)$

d. $y = \tan(x)$ e. $y = \sec(x+\frac{\pi}{2})$ e. $y = \csc(x)$

3. Describe the transformations of the graph of g:

a. $g(x) = -4\cos\left(x-\frac{\pi}{4}\right)$

b. $g(x) = \frac{1}{2}\sin(x+\pi)$

c. $g(x) = -\sin\left(x-\frac{3\pi}{2}\right)$

d. $g(x) = \cos\left(x+\frac{3\pi}{4}\right)+1$

e. $g(x) = 2\sin(5x)+4$

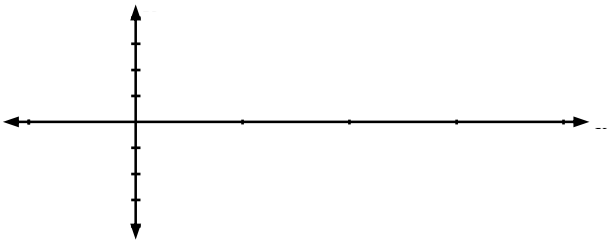
f. $g(x) = 4\cos(2x)-2$

g. $g(x) = \frac{1}{2}\sin\left(\frac{1}{3}x\right)-3$

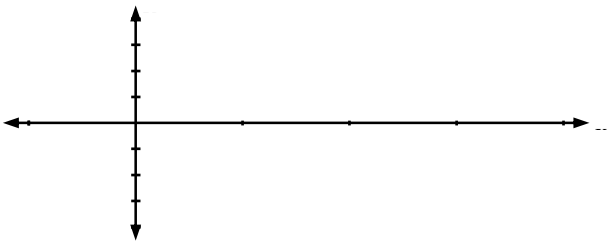
h. $g(x) = \cos\left(x-\frac{\pi}{2}\right)+1$

4. Draw graphs (label the axis and asymptotes). State the domain, range and period for:

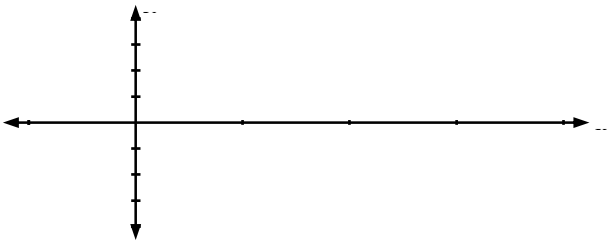
a. $y = \sin(x)$ domain: _____
range: _____
period: _____



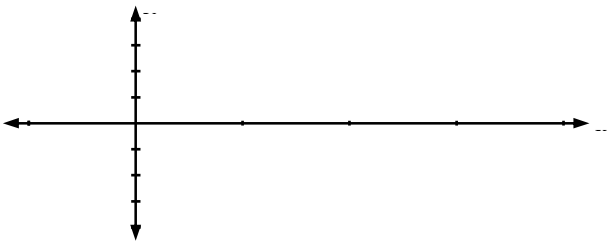
b. $y = \cos(x)$ domain: _____
range: _____
period: _____



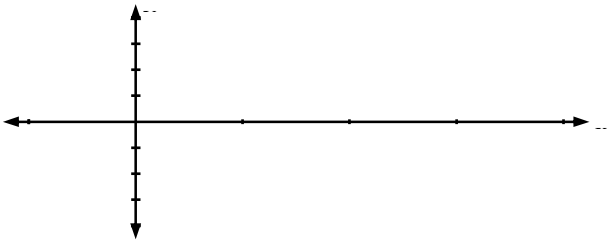
c. $y = \tan(x)$ domain: _____
range: _____
period: _____



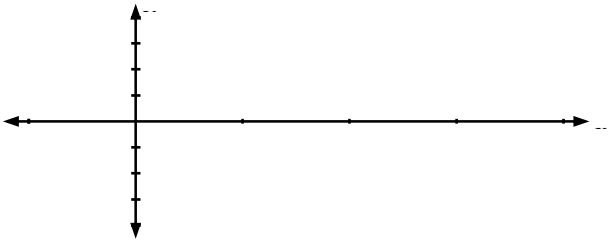
d. $y = \csc(x)$ domain: _____
range: _____
period: _____



e. $y = \sec(x)$ domain: _____
range: _____
period: _____



f. $y = \cot(x)$ domain: _____
range: _____
period: _____



5. Give the range of $y = -3\cos(2x)$.

6. Give the range for $y = 2\sin(x) - 1$.

7. Write the equation for a sine function that satisfies the following conditions:

   a. Amplitude: 2, Period: π, Vert. shift: up 1, Vertical Reflection

   b. Amplitude: 5, Period: 4π, Vert. shift: down 2

   c. Amplitude: 3, Period: $\frac{\pi}{4}$, Vert. shift: up 2, Vertical Reflection

   d. Period: $\frac{3\pi}{4}$ Vert. shift: down 4, Vertical Reflection

8. Write the equation of a cosine function that satisfies the following conditions:

   a. Amplitude: $\frac{1}{2}$ Period: π Vert. Reflection

   b. Amplitude: 3 Phase shift: π right Vert. Shift down 2

   c. Amplitude: 2, Phase shift: 2π left, Vert. Shift up 1

   d. Amplitude: 3 Period: $\frac{2\pi}{3}$ Vert. Shift up 2

9. Where are the asymptotes on the graph of $y = \tan x$?

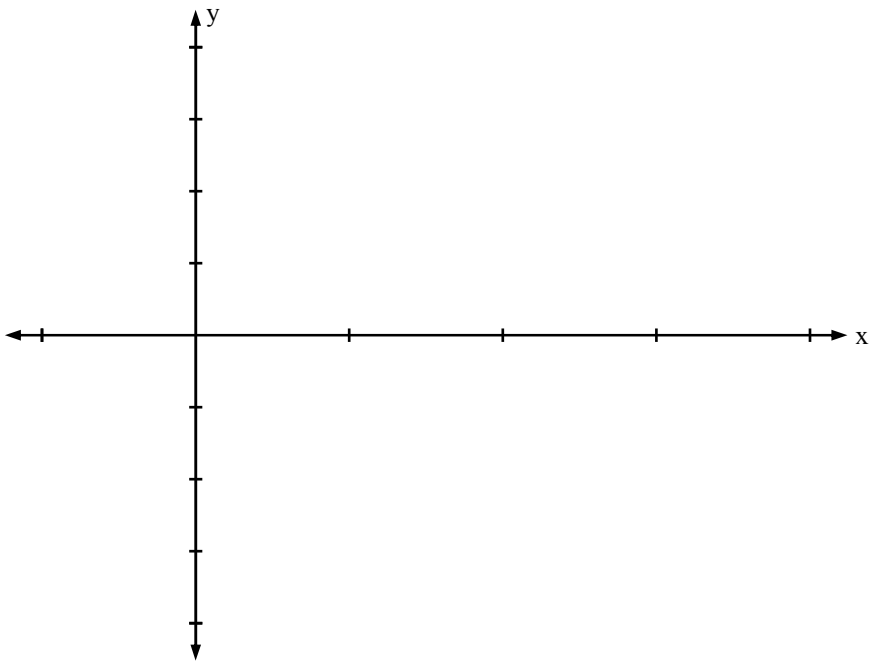
10. Where are the asymptotes on the graph of $y = \csc x$?

11. Find the value of:

    a. $\sin\left(\frac{11\pi}{6}\right)$ b. $\cos\left(\frac{4\pi}{3}\right)$ c. $\tan\left(\frac{3\pi}{4}\right)$ d. $\sec\left(\frac{\pi}{2}\right)$

    e. $\csc\left(\frac{\pi}{3}\right)$ f. $\cos\left(\frac{3\pi}{2}\right)$ g. $\tan(\pi)$ h. $\cot\left(\frac{7\pi}{6}\right)$

12. Graph $y = \sin\left(x + \frac{\pi}{2}\right) - 2$



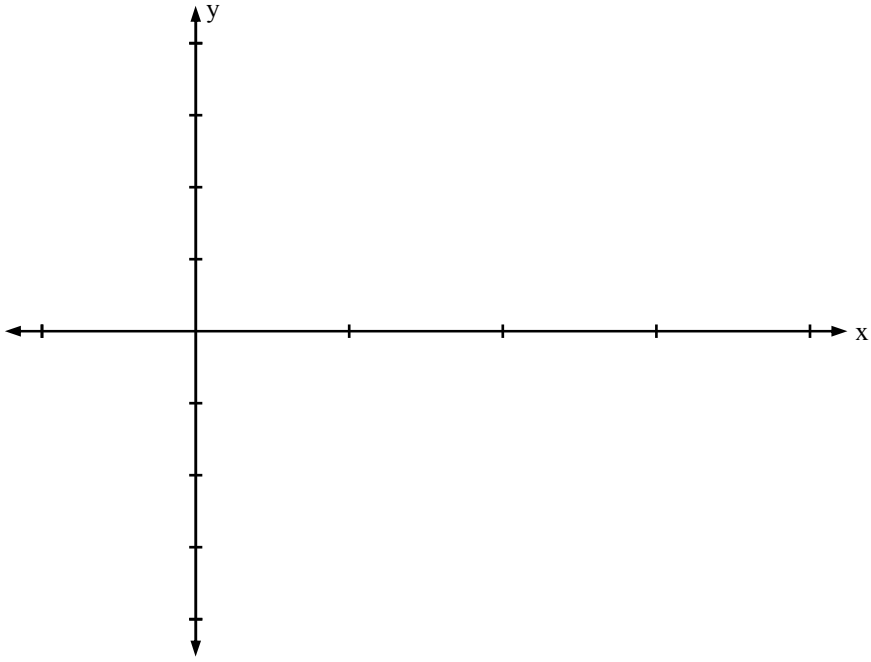
Domain:_____

Range:_____

Period:_____

Amplitude:_____

13. Graph $y = -2\cos\left(\frac{1}{2}x\right) + 1$



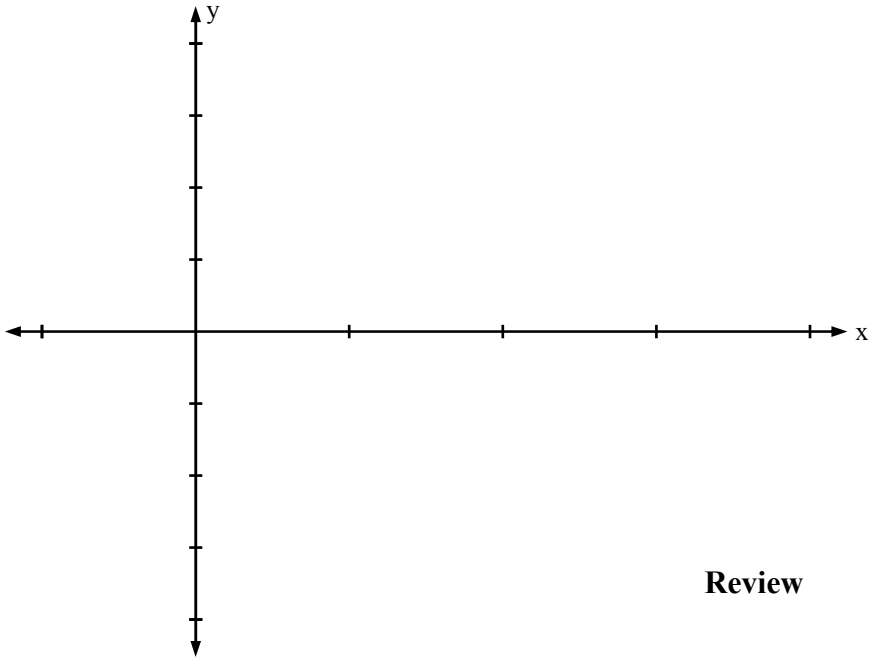
Domain:_____

Range:_____

Period:_____

Amplitude:_____

14. Graph $y = 3\cos\left(x - \frac{\pi}{3}\right) - 1$



Domain:_____

Range:_____

Period:_____

Amplitude:_____

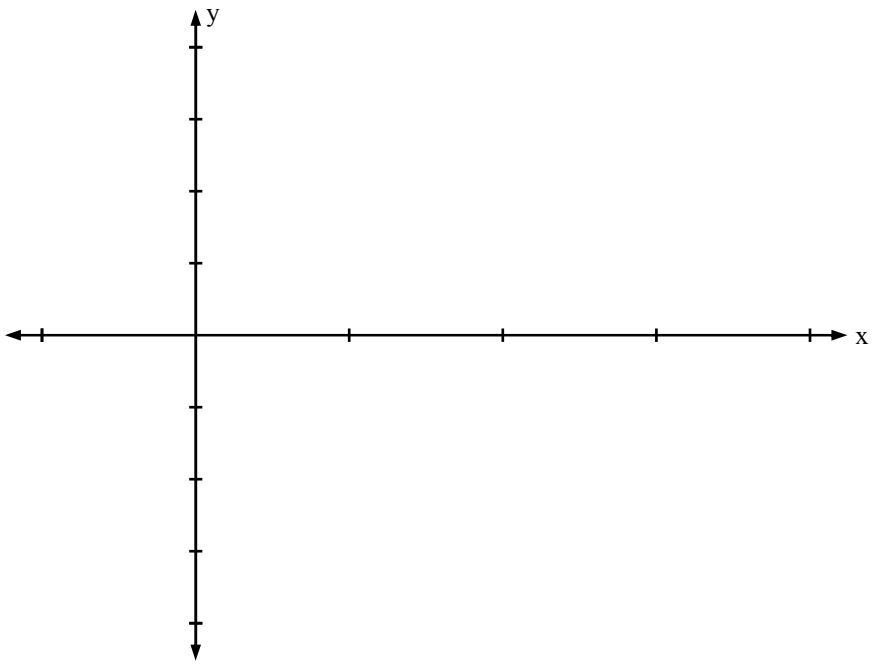
15. Graph $y = \sin\left(\frac{1}{3}x\right) - 1$

Domain:_____

Range:_____

Period:_____

Amplitude:_____



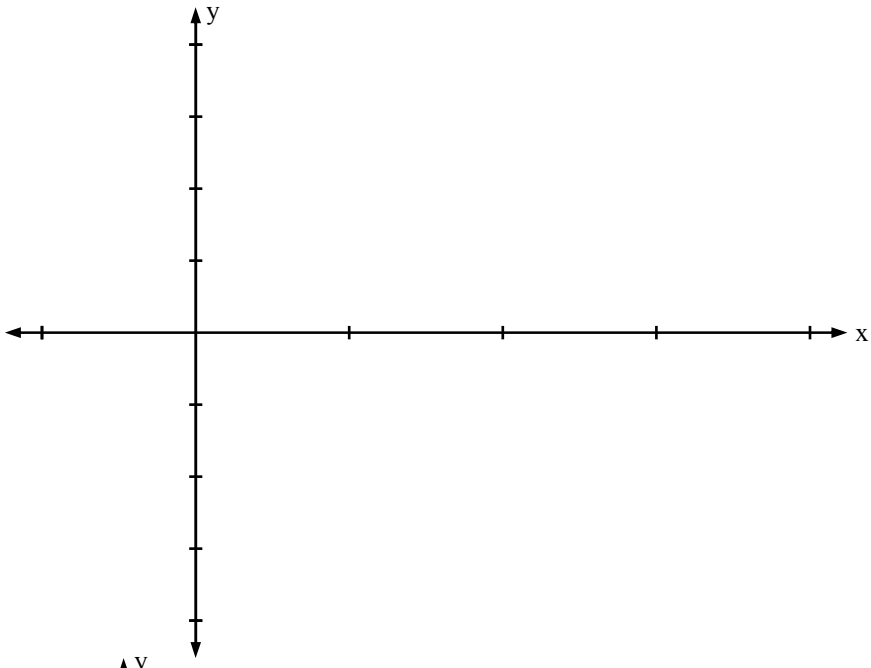
16. Graph $y = -2\sin(4x) + 1$

Domain:_____

Range:_____

Period:_____

Amplitude:_____



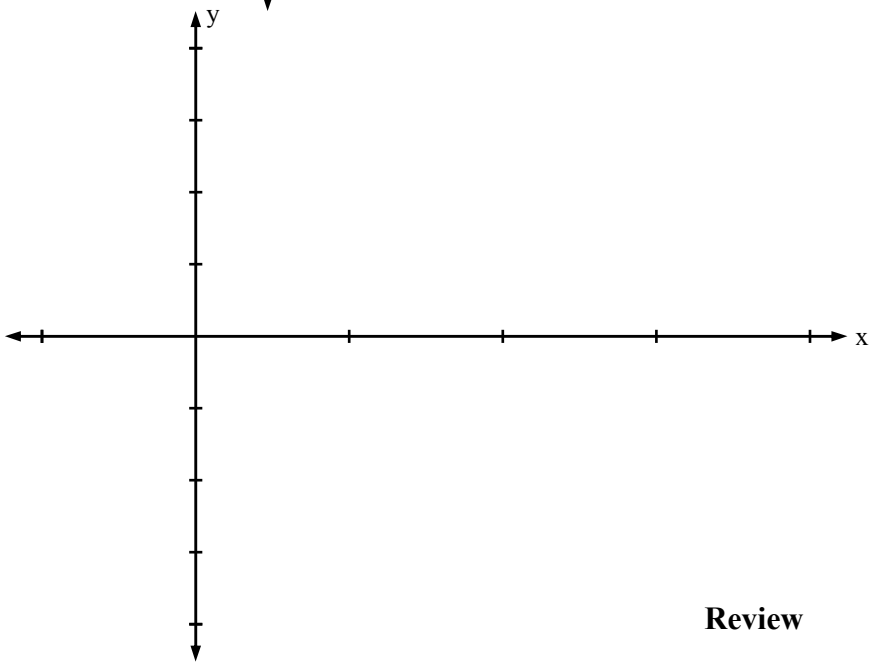
17. Graph $y = -\cos\left(x - \frac{\pi}{4}\right) - 3$

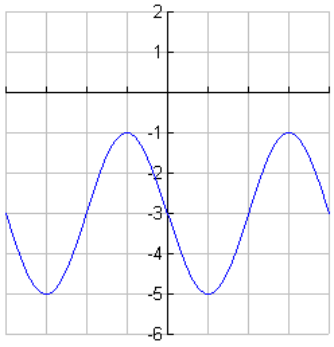
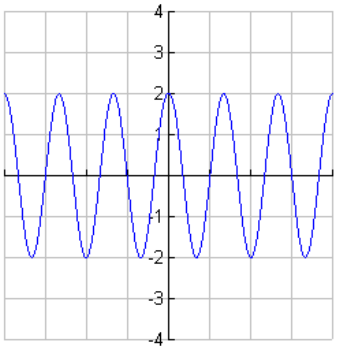
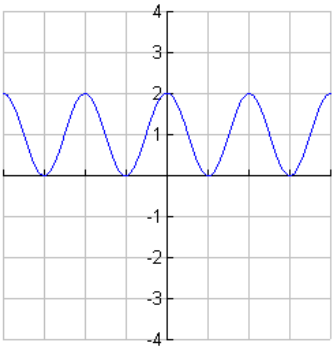
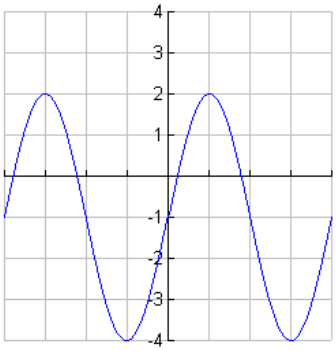
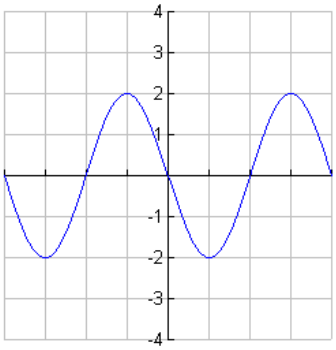
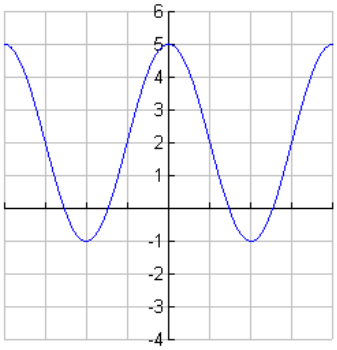
Domain:_____

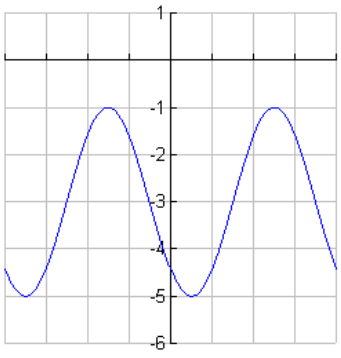
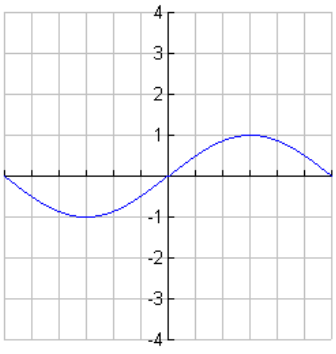
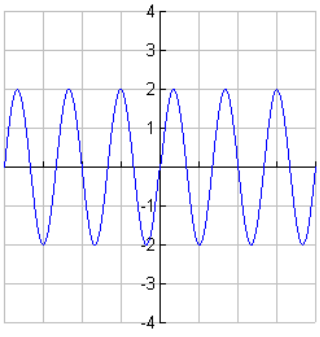
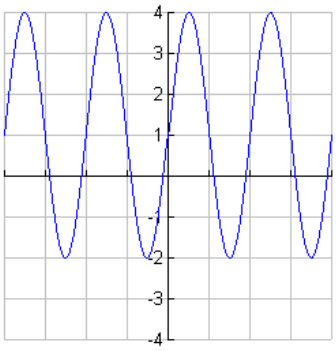
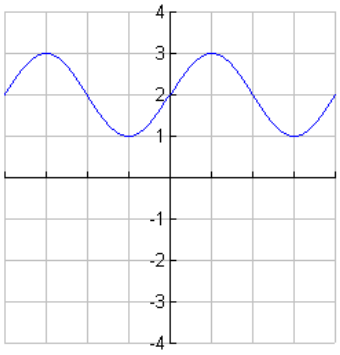
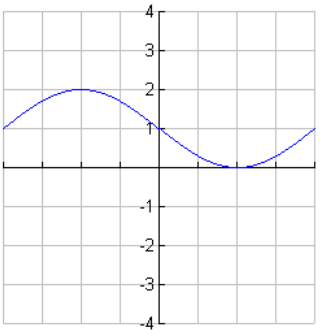
Range:_____

Period:_____

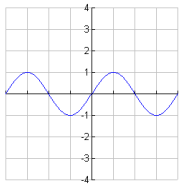
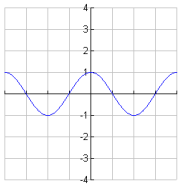
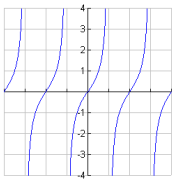
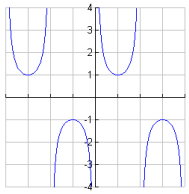
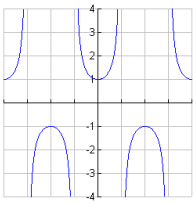
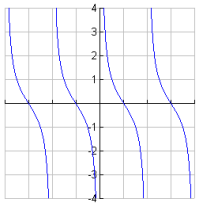
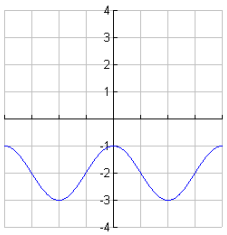
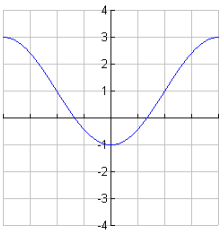
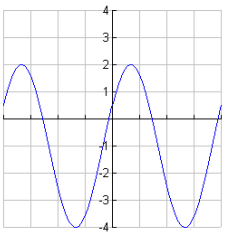
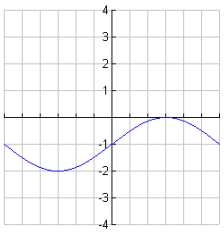
Amplitude:_____

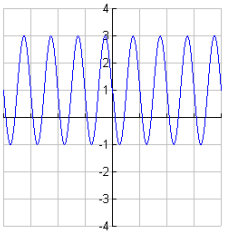
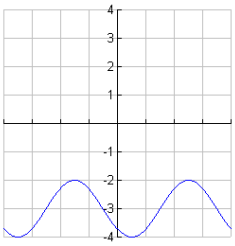


	Match the graph with its function.
	A.)  B.)  C.) 
	D.)  E.)  F.) 
18.	$f(x) = 3\sin(x) - 1$
19.	$f(x) = -2\sin(x) - 3$
20.	$f(x) = \cos(2x) + 1$
21.	$f(x) = -3\cos(x + \pi) + 2$
22.	$f(x) = 2\sin(x + \pi)$
23.	$f(x) = 2\cos(3x)$

	Match the graph with its function.
	A.)  B.)  C.) 
	D.)  E.)  F.) 
24.	$f(x)=3\sin(2x)+1$
25.	$f(x)=-2\sin\left(x+\frac{\pi}{4}\right)-3$
26.	$f(x)=-\sin\left(\frac{x}{2}\right)+1$
27.	$f(x)=-\sin(x+\pi)+2$
28.	$f(x)=\sin\left(\frac{x}{3}\right)$
29.	$f(x)=2\sin(3x)$

Answer Key

1a. 3	1b. 2	1c. $\frac{1}{2}$	2a. $\frac{\pi}{2}$	2b. 4π
2c. 8π	2d. π	2e. 2π	2f. 2π	3a. Amplitude 4 Shift right $\frac{\pi}{4}$ Vert. Reflection
3b. Amplitude $\frac{1}{2}$ Shift left π	3c. Shift Right $\frac{3\pi}{2}$ Vert. Reflection	3d. Shift left $\frac{3\pi}{4}$ Shift up 1	3e. Amplitude 2 Period $\frac{2\pi}{5}$ Shift up 4	3f. Amplitude 4 Period π Shift down 2
3g. Amplitude $\frac{1}{2}$ Period 6π Shift down 3	3h. Shift right $\frac{\pi}{2}$ Shift up 1	4a. 	4b. 	4c. 
4d. 	4e. 	4f. 	5. $[-3,3]$	6. $[-3,1]$
7a. $y=-2\sin(2x)+1$	7b. $y=5\sin\left(\frac{1}{2}x\right)-2$	7c. $y=-3\sin(8x)+2$	7d. $y=-\sin(\frac{8}{3}x)-4$	8a. $y=-\frac{1}{2}\cos(2x)$
8b. $y=3\cos(x-\pi)-2$	8c. $y=2\cos(x+2\pi)+1$	8d. $y=3\cos(3x)+2$	9. odd multiples of $\frac{\pi}{2}$	10. multiples of π
11a. $-\frac{1}{2}$	11b. $-\frac{1}{2}$	11c. -1	11d. undefined	11e. $\frac{2\sqrt{3}}{3}$
11f. 0	11g. 0	11h. $\sqrt{3}$		
	12. 	13. 	14. 	15. 

16. 	17. 	18. D	19. A	20. C
21. F	22. E	23. B	24. D	25. A
26. F	27. E	28. B	29. C	
1. $y = 2\cos(x) + 1$	2. $y = 2\cos(x) - 1$	3. $y = 4\cos(x) + 4$	4. $y = -\cos(x) - 3$	5. $y = 3\sin(x) + 2$
6. $y = -2\sin(x) - 3$	7. $y = 3\sin(2x) - 2$	8. $y = 3\sin\left(\frac{x}{2}\right) - 2$		