More Practice with Sine and Cosine Graphs

Determine the amplitude and period of each function.

1. $y = \sin 4x$

Amplitude 1

Period $\frac{\pi}{2}$

2. $y = \cos 5x$

Amplitude 1

Period $\frac{2\pi}{5}$

3. $y = 2 \sin x$

Amplitude 2

Period 2π

4. $y = -4 \sin 3x$

Amplitude 4

Period $\frac{2\pi}{3}$

5. $y = 2 \sin(-4x)$

Amplitude 2

Period $\frac{\pi}{2}$

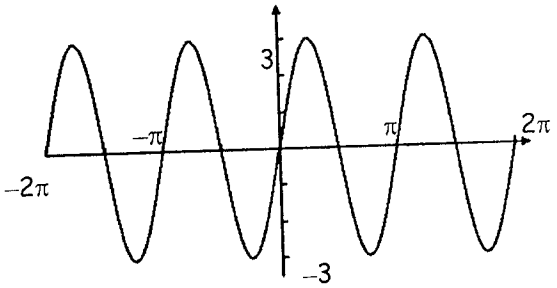
6. $y = 3 \sin \frac{2}{3}x$

Amplitude 3

Period 3π

Give the amplitude and period of each function graphed below. Then write an equation of each graph using either sine or cosine.

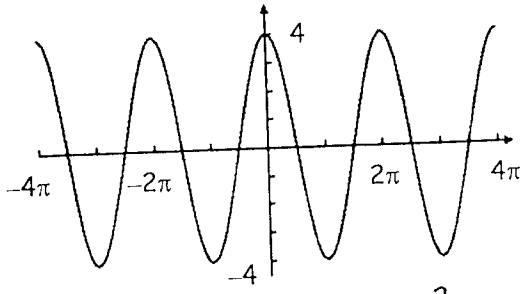
7.



Amplitude 3 **Period** π

Equation _____

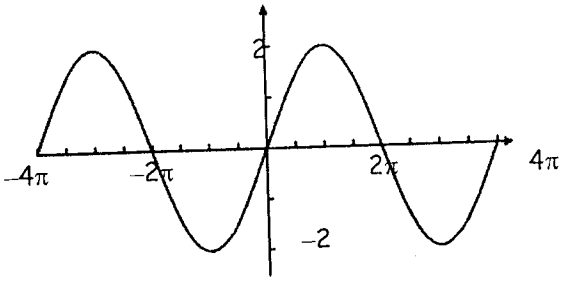
8.



Amplitude 4 **Period** 2π

Equation _____

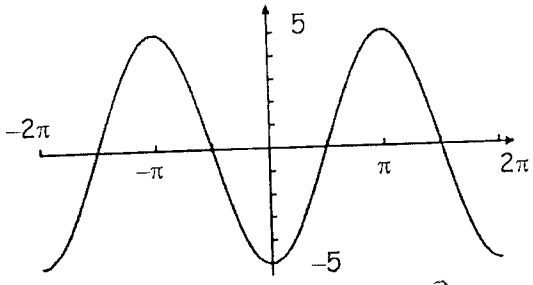
9.



Amplitude 2 **Period** 4π

Equation _____

10.



Amplitude 5 **Period** 2π

Equation _____

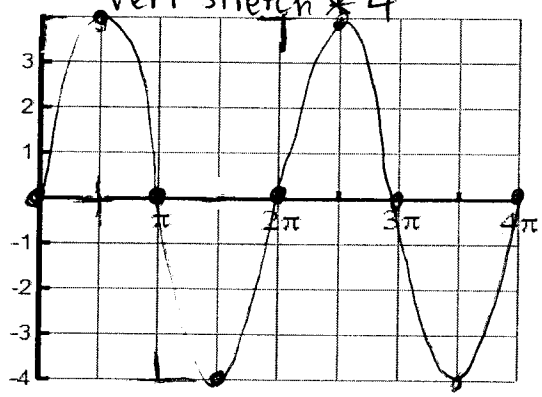
Sketch the graph of each function.

11. $y = 4 \sin x$

amp = 4 per = 2π

$\frac{1}{4}(2\pi) = \frac{\pi}{2}$

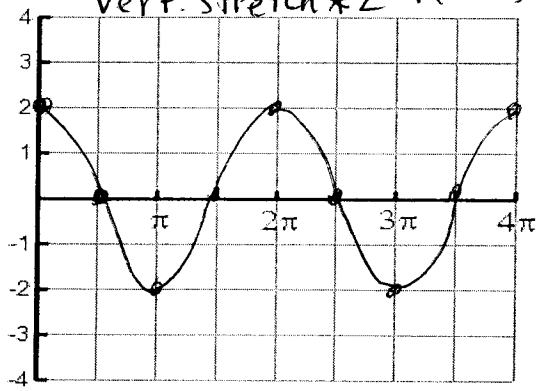
vert stretch * 4



12. $y = 2 \cos x$

amp = 2 per = 2π

vert. stretch * 2 $\frac{1}{4}(2\pi) = \frac{\pi}{2}$



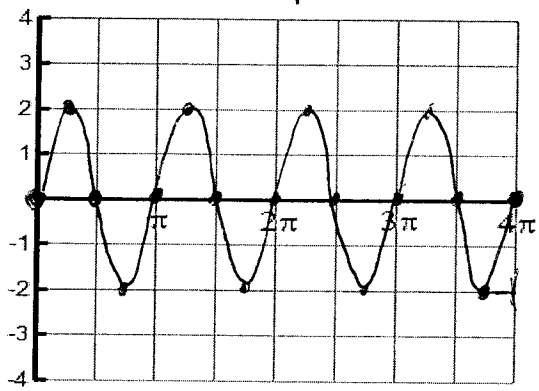
13. $y = 2 \sin 2x$

vert stretch * 2

horiz shrink * $\frac{1}{2}$

amp = 2 per = π

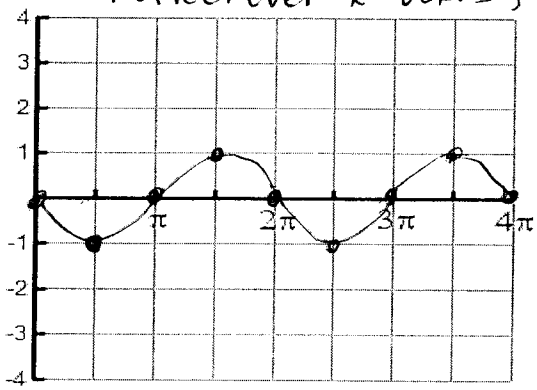
$\frac{1}{4}(\pi) = \frac{\pi}{4}$



14. $y = -\cos (x - \frac{\pi}{2})$

amp = 1 per = 2π $\frac{1}{4}(2\pi) = \frac{\pi}{2}$

reflect over x-axis, shift rt. $\frac{\pi}{2}$



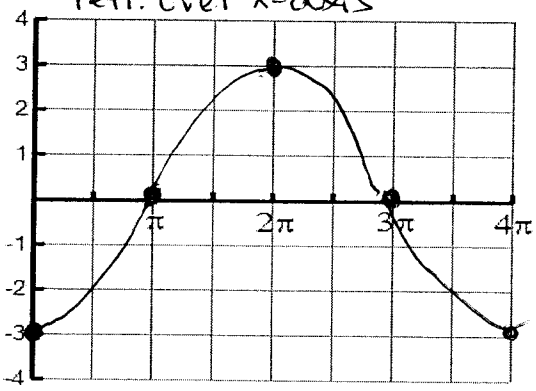
15. $y = -3 \cos \frac{1}{2} x$

amp = 3 per = 4π

horiz. stretch * 2

vert stretch * 3 $\frac{1}{4}(4\pi) = \pi$

refl. over x-axis



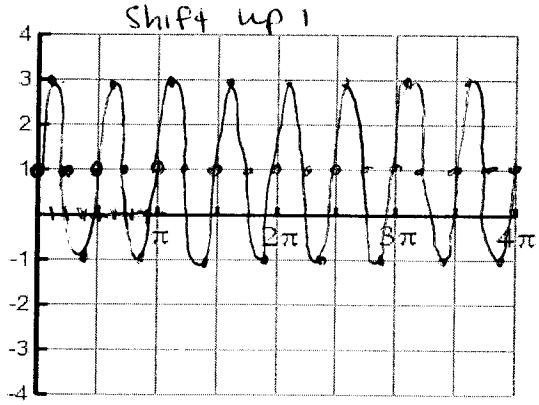
16. $y = 2 \sin (4x) + 1$

amp = 2 per = $\frac{2\pi}{4} = \frac{\pi}{2}$ $\frac{1}{4}\left(\frac{\pi}{2}\right) = \frac{\pi}{8}$

horiz. shrink * $\frac{1}{4}$

vert. stretch * 2

shift up 1



Determine the amplitude, period, phase shift, and vertical shift for each.

17. $y = 2 + 3\sin\left(4x + \frac{\pi}{2}\right) = 2 + 3\sin\left(4\left(x + \frac{\pi}{8}\right)\right)$

Amplitude 3

Period $\frac{\pi}{2}$

Phase Shift $-\frac{\pi}{8}$ (left $\frac{\pi}{8}$)

Vertical Shift 2 (up 2)

18. $y = 2\cos(x - \pi)$

Amplitude 2

Period 2π

Phase Shift π (right π)

Vertical Shift none

19. $y = \frac{1}{2}\cos 2x - 4$

Amplitude $\frac{1}{2}$

Period π

Phase Shift none

Vertical Shift -4 (down 4)

20. $y = 4\sin(x - \pi) - 3$

Amplitude 4

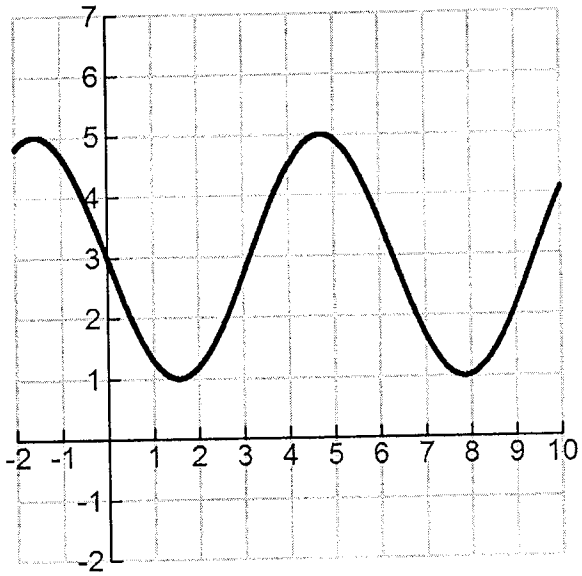
Period 2π

Phase Shift π (right π)

Vertical Shift -3 (down 3)

Identify the equation of the graphs below for each Sine and Cosine.

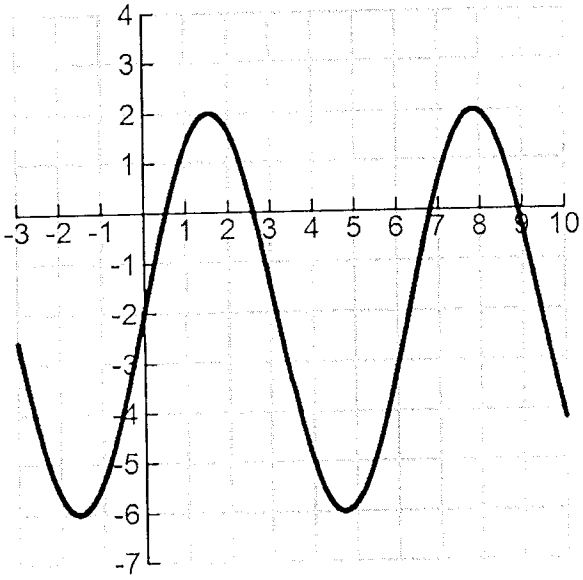
21.



Sine Equation _____

Cosine Equation _____

22.



Sine Equation _____

Cosine Equation _____