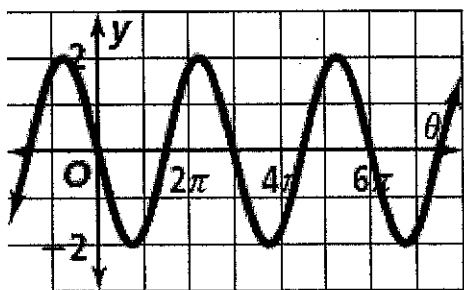
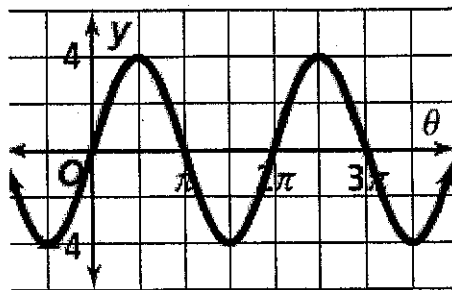


Find the amplitude and period of each sine curve. Then write an equation for the function.

6. Amp = 2
Period = 3π
 $y = -2 \sin \frac{2}{3}x$



7. Amp = 4
Period = 2π
 $y = 4 \sin x$



Write an equation for each translation.

8. The sine function translated 2 units down and reflected.

$$y = -2 - \sin x$$

9. The cosine function translated π units to the left with period 4π .

$$y = \cos\left(\frac{1}{2}x + \frac{1}{2}\pi\right)$$

or

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

10. The cosine function with amplitude 4 and period $\frac{\pi}{2}$.

$$y = 4 \cos 4x$$

Find the amplitude and period for each function. Describe any phase shift and vertical shift in the graph.

11. $y = 2 + 3 \cos x$
Amp = 3 No P.S.
Period = 2π Up 2 units

12. $y = -2 \sin\left(x + \frac{\pi}{2}\right)$
Amp = 2 Period 2π
Reflected over x-axis P.S.: left $\frac{\pi}{2}$

13. $y = 1 + \cos 2x$
Amp = 1 No P.S.
Period = π Up 1 unit

14. $y = -\sin\left(x - \frac{\pi}{3}\right)$
Amp = 1 Period = 2π
Reflect over x-axis P.S.: Right $\frac{\pi}{3}$

15. $y = \cos\left(\frac{1}{2}x\right) - 3$
Amp = 1
Period = 4π
No P.S.
Down 3 units

16. $y = 1 + 5 \sin(4x + 2\pi)$
Amp = 5
Period = $\frac{\pi}{2}$
P.S.: left $\frac{\pi}{2}$
Up 1 unit

For a review of lessons 4.7 and 4.8 complete the following exercises:

pages 365-366 #105-117 odd, 123-127 odd, 139-141 all and page 367 # 19