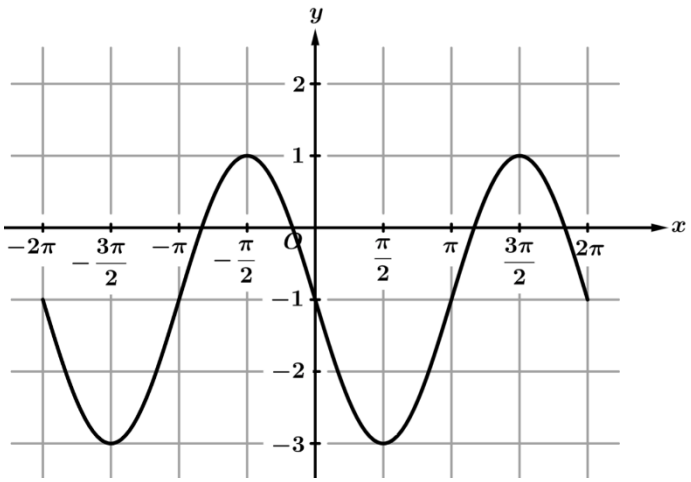
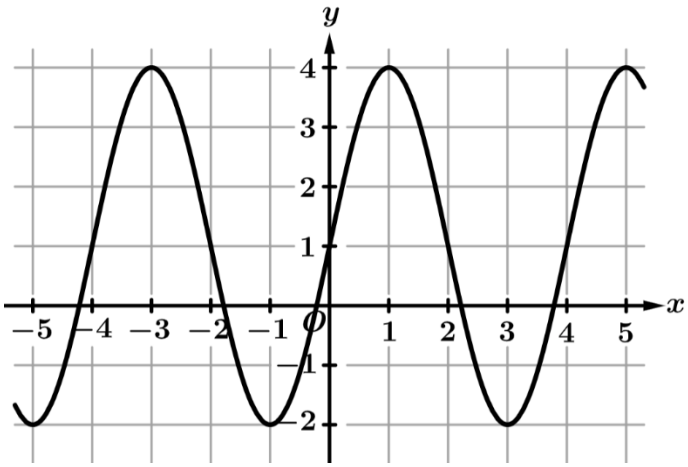


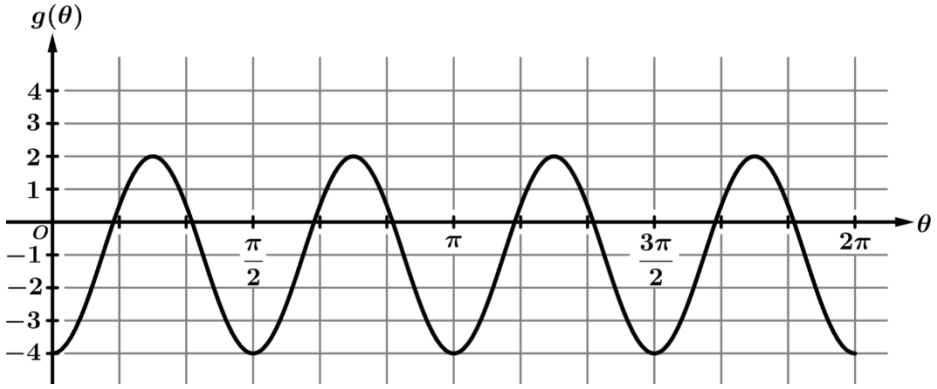
Graph of *h*

1. The graph of the sinusoidal function h is shown in the figure above. The function h can be written as $h(\theta) = a\sin(b\theta) + d$. Find the values of the constants $a, b,$ and d.



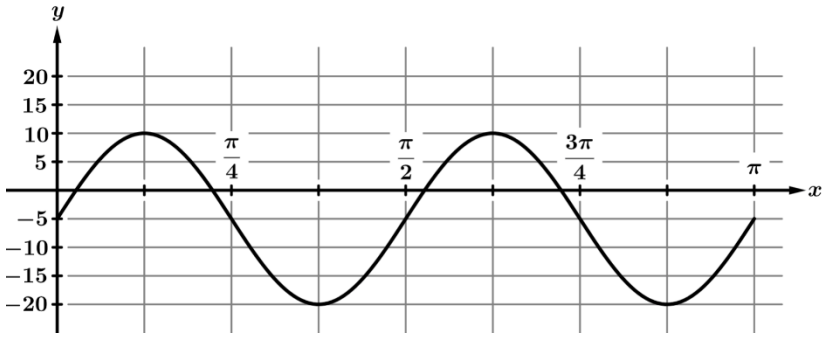
Graph of *f*

2. The graph of the sinusoidal function f is shown in the figure above. The function f can be written as $f(\theta) = a\sin(b\theta) + d$. Find the values of the constants $a, b,$ and d.



Graph of g

3. The graph of the sinusoidal function g is shown in the figure above. The function g can be written as $g(\theta) = a\cos(b\theta) + d$. Find the values of the constants a, b, and d.



Graph of h

4. The figure shows the graph of a sinusoidal function h. What are the values of the period and amplitude of h?

(A) The period is π, and the amplitude is 10.

(B) The period is π, and the amplitude is 15.

(C) The period is $\frac{\pi}{2}$, and the amplitude is 10.

(D) The period is $\frac{\pi}{2}$, and the amplitude is 15.

5. The trigonometric function k has a maximum at the point $(0, 20)$. After this maximum, the next minimum occurs at the point $(4\pi, 10)$. Which of the following could be an expression for $k(x)$?

(A) $5\cos(4x)+15$ (B) $5\cos\left(\frac{1}{4}x\right)+15$ (C) $10\cos\left(\frac{1}{4}x\right)+15$ (D) $10\cos\left(\frac{1}{2}x\right)+15$

6. The trigonometric function k has a maximum at the point $\left(\frac{\pi}{2}, 6\right)$. After this maximum, the next minimum occurs at the point $(\pi, -2)$. Which of the following could be an expression for $k(x)$?

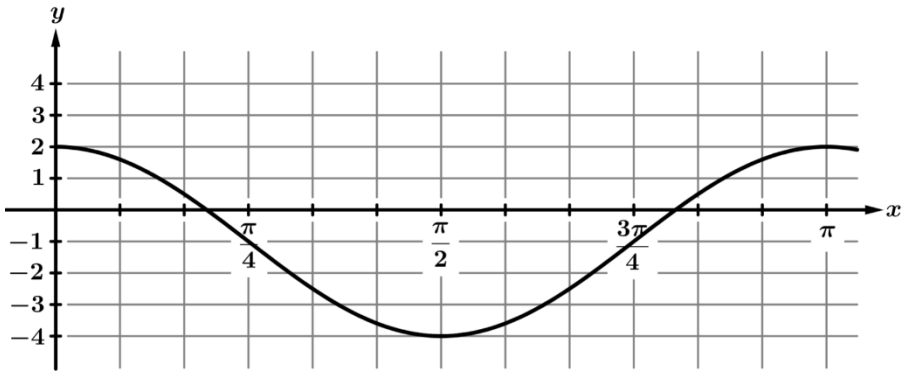
(A) $4\sin(x)+2$ (B) $3\sin(2x)+2$ (C) $4\sin(2x)+2$ (D) $4\sin\left(\frac{1}{2}x\right)+2$

7. The trigonometric function k has a minimum at the point $(0, -10)$. After this minimum, the next maximum occurs at the point $(\pi, 20)$. Which of the following could be an expression for $k(x)$?

(A) $-15\cos(x)+5$ (B) $-5\cos(x)+15$ (C) $15\cos(x)+5$ (D) $5\cos(x)+15$

8. In Seattle, the number of daylight hours is dependent on the day of the year. The number of daylight hours D can be modeled by the sinusoidal function $D(t)=4.1\sin(0.024(t-79))+11.7$, where t is the day of the year from $t=1$ to $t=365$. Based on this model, which of the following statements is correct?

(A) The minimum number of daylight hours in Seattle is 11.7 hours.
(B) The maximum number of daylight hours in Seattle is 15.8 hours.
(C) The minimum number of daylight hours in Seattle occurs on day 79.
(D) The maximum number of daylight hours in Seattle occurs on day 79.

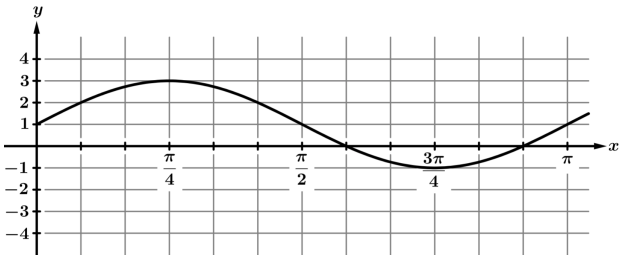


Graph of g

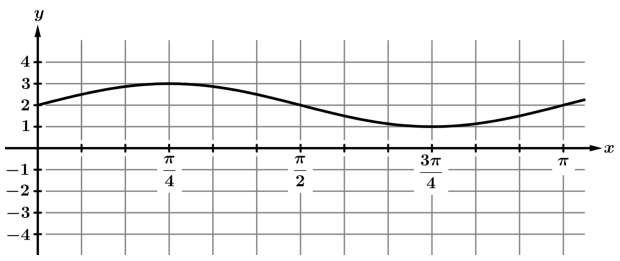
9. The figure shows the graph of a sinusoidal function g. Write an equation for g.

10. The function f is given by $f(x)=2\sin(2x)+1$. Which of the following could be the graph of $f(x)$?

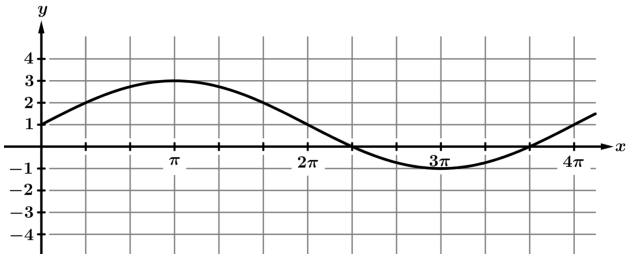
(A)



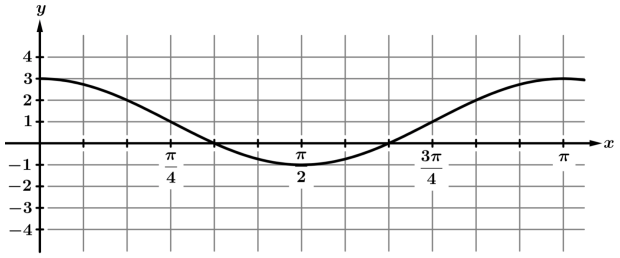
(B)

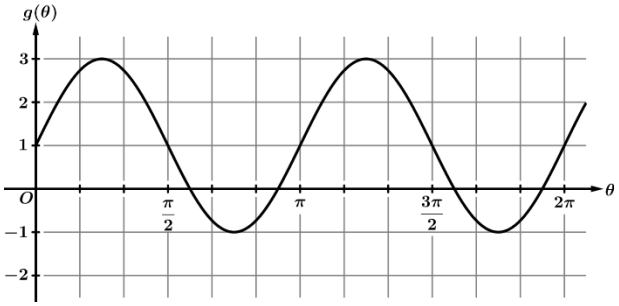


(C)



(D)

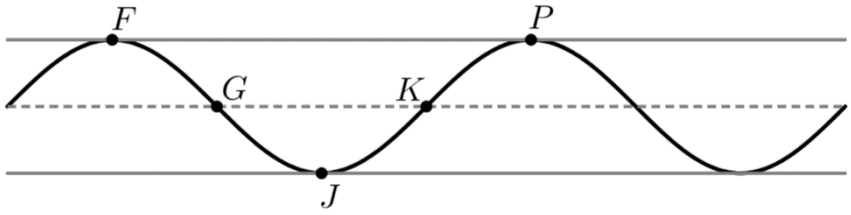




Graph of g

11. The figure shows the graph of a trigonometric function g. Which of the following could be an expression for $g(x)$

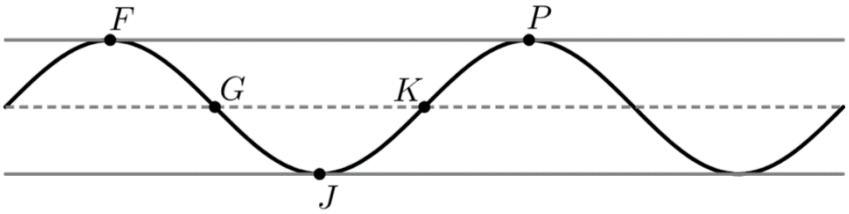
(A) $2\sin(x)+1$ (B) $2\sin\left(2\left(x-\frac{\pi}{2}\right)\right)+1$ (C) $-2\sin\left(2\left(x-\frac{\pi}{2}\right)\right)+1$ (D) $-2\sin(2(x-\pi))+1$



12. The graph of h and its dashed midline for two full cycles is shown. Five points, $F, G, J, K,$ and P are labeled on the graph. No scale is indicated, and no axes are presented.

The coordinates for the five points: $F, G, J, K,$ and P are: $F(0,7)$, $G(3,3)$, $J(6,-1)$, $K(9,3)$, $P(12,7)$.

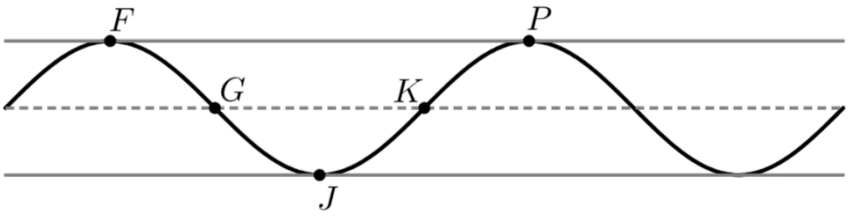
The function h can be written in the form $h(t)=a\sin(b(t+c))+d$. Find values of constants $a, b, c,$ and d.



13. The graph of h and its dashed midline for two full cycles is shown. Five points, $F, G, J, K,$ and P are labeled on the graph. No scale is indicated, and no axes are presented.

The coordinates for the points $F, G, J, K,$ and P are $F(0, 20),\ G(\pi, 16),\ J(2\pi, 12),\ K(3\pi, 16),\ P(4\pi, 20).$

The function h can be written in the form $h(t) = a\sin\big(b(t+c)\big)+d.$ Find values of constants $a, b, c,$ and d.



14. The graph of h and its dashed midline for two full cycles is shown. Five points, $F, G, J, K,$ and P are labeled on the graph. No scale is indicated, and no axes are presented.

The coordinates of $F, G, J, K,$ and P are $F\left(\frac{\pi}{2}, 2\right),\ G\left(\frac{3\pi}{4}, -1\right),\ J(\pi, -4),\ K\left(\frac{5\pi}{4}, -1\right),\ P\left(\frac{3\pi}{2}, 2\right).$

The function h can be written in the form $h(t) = a\sin\big(b(t+c)\big)+d.$ Find values of constants $a, b, c,$ and d.