

10.5 Extra Practice

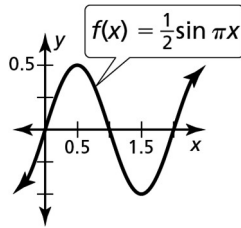
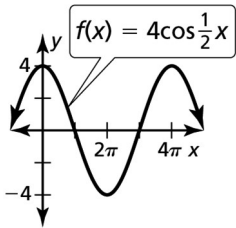
In Exercises 1–4, graph one period of the function. Describe the graph of g as a transformation of the graph of its parent function.

1. $g(x) = 2 \tan 4x$
2. $g(x) = 3 \cot \frac{1}{2}x$
3. $g(x) = \frac{1}{4} \tan 2\pi x$
4. $g(x) = \frac{1}{3} \cot \pi x$
5. Describe and correct the error in describing the transformation of $f(x) = \tan x$ represented by $g(x) = 4 \tan \frac{1}{2}x$.

✘ A vertical stretch by a factor of 4 and a horizontal shrink by a factor of $\frac{1}{2}$

In Exercises 6 and 7, graph g using the graph of f as a guide.

6. $g(x) = 4 \sec \frac{1}{2}x$
7. $g(x) = \frac{1}{2} \csc \pi x$



In Exercises 8–11, graph one period of the function. Describe the graph of g as a transformation of the graph of its parent function.

8. $g(x) = \frac{1}{3} \csc \pi x$
9. $g(x) = \frac{1}{2} \sec 6x$
10. $g(x) = \sec \frac{\pi}{2}x$
11. $g(x) = \csc \frac{\pi}{3}x$
12. You are standing 100 feet from the base of a 150-foot cliff. Your friend is rappelling down the cliff.
 - a. Write an equation that gives the distance d (in feet) your friend is from the top of the cliff as a function of the angle of elevation θ .
 - b. Graph the function found in part (a). Explain how to graph relates to the situation.

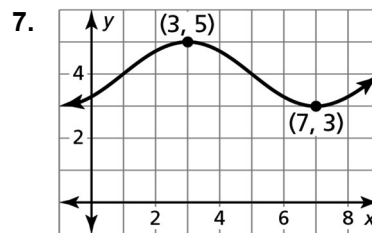
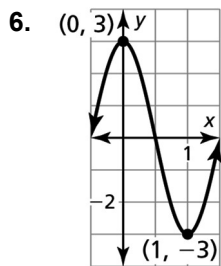
10.6 Extra Practice

In Exercises 1–4, find the frequency of the function.

1. $y = \cos 3x$
2. $y = -\cos 4x - 3$
3. $y = \sin \frac{\pi x}{2}$
4. $y = 4 \cos 0.4x - 3$

5. A sub-contra-octave A tuning fork (corresponds to the lowest note on a piano keyboard) vibrates with a frequency f of 27.5 hertz (cycles per second). You strike a sub-contra-octave A tuning fork with a force that produces a maximum pressure of 4 Pascals. Write and graph a sine model that gives the pressure P as a function of the time t (in seconds).

In Exercises 6 and 7, write a function for the sinusoid.



8. When you ride a Ferris wheel, your distance from the ground will vary with respect to the number of seconds that have elapsed since the wheel started. The table shows your height h (in meters) above the ground at time t as you ride the Ferris wheel.

t	0	1	2	3	4	5	6	7	8	9	10	11	12	15	20
h	1	2.3	5.8	10.2	13.7	15	13.7	10.2	5.8	2.3	1	2.3	5.8	15	1

- a. Use sinusoidal regression to find a model that gives h as a function of t .
- b. Predict your height above the ground after 42 seconds have elapsed.