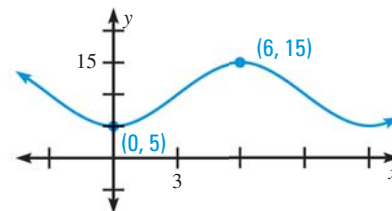


19. **TAKS REASONING** What is an equation of the graph shown at the right?

- (A) $y = -3 \cos \frac{\pi}{6}x + 12$ (B) $y = -5 \cos \frac{\pi}{6}x + 10$
 (C) $y = 3 \sin \frac{\pi}{6}x + 12$ (D) $y = -5 \sin \frac{\pi}{6}x + 10$

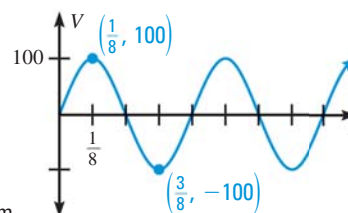


20. **WRITING** Any sinusoid can be modeled by both a sine function and a cosine function. Therefore, you can choose the type of function that is more convenient. *Explain* which type of function you would choose to model a sinusoid whose y -intercept occurs at the minimum value of the function.
21. **REASONING** Model the sinusoid in Example 1 on page 941 with a cosine function of the form $y = a \cos b(x - h) + k$. Use identities to show that the model you found is equivalent to the sine model in Example 1.
22. **CHALLENGE** Write a sine function for the sinusoid with a minimum at $(\frac{\pi}{2}, 3)$ and a maximum at $(\frac{\pi}{4}, 8)$.

PROBLEM SOLVING

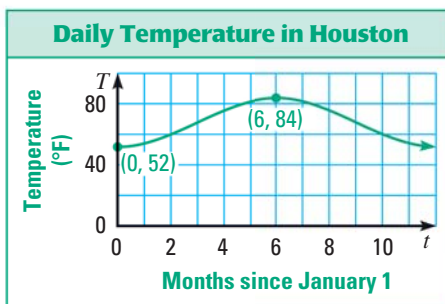
EXAMPLE 1
 on p. 941
 for Exs. 23–24

23. **CIRCUITS** A circuit has an alternating voltage of 100 volts that peaks every 0.5 second. Use the graph shown at the right to write a sinusoidal model for the voltage V as a function of the time t (in seconds).



TEXAS @HomeTutor for problem solving help at classzone.com

24. **CLIMATOLOGY** The graph below shows the average daily temperature of Houston, Texas. Write a sinusoidal model for the average daily temperature T (in degrees Fahrenheit) as a function of time t (in months).



TEXAS @HomeTutor for problem solving help at classzone.com

EXAMPLE 2
 on p. 942
 for Ex. 25

25. **CIRCULAR MOTION** One of the largest sewing machines in the world has a *flywheel* (which turns as the machine sews) that is 5 feet in diameter. Write a model for the height h (in feet) of the handle at the edge of the flywheel as a function of the time t (in seconds). Assume that the wheel makes a complete turn every 2 seconds and the handle is at its minimum height of 4 feet above the ground when $t = 0$.