

CHECK FOR UNDERSTANDING

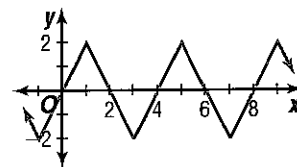
Communicating Mathematics

Read and study the lesson to answer each question.

1. **Counterexample** Sketch the graph of a periodic function that is neither the sine nor cosine function. State the period of the function.
2. **Name** three values of x that would result in the maximum value for $y = \sin x$.
3. **Explain** why the cosine function is a periodic function.
4. **Math Journal** Draw the graphs for the sine function and the cosine function. Compare and contrast the two graphs.

Guided Practice

5. **Determine** if the function is periodic. If so, state the period.



Find each value by referring to the graph of the sine or the cosine function.

6. $\cos\left(-\frac{\pi}{2}\right)$

7. $\sin\frac{5\pi}{2}$

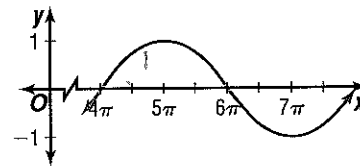
8. Find the values of θ for which $\sin \theta = -1$ is true.

Graph each function for the given interval.

9. $y = \cos x, 5\pi \leq x \leq 7\pi$

10. $y = \sin x, -4\pi \leq x \leq -2\pi$

11. Determine whether the graph represents $y = \sin x, y = \cos x$, or neither. Explain.

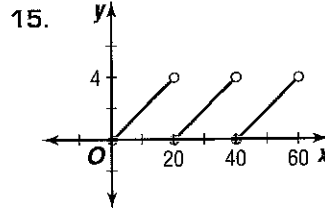
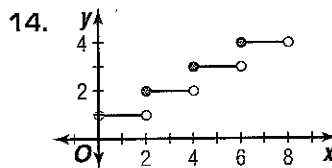
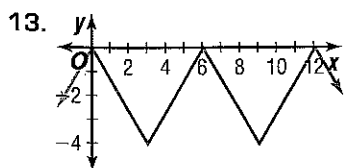


12. **Meteorology** The equation $y = 49 + 28 \sin\left[\frac{\pi}{6}(t - 4)\right]$ models the average monthly temperature for Omaha, Nebraska. In this equation, t denotes the number of months with January represented by 1. Compare the average monthly temperature for April and October.

EXERCISES

Practice

Determine if each function is periodic. If so state the period.



16. $y = |x + 5|$

17. $y = x^2$

18. $y = \frac{1}{x}$