

## Lesson 14 Practice Problems

1. The absolute value function can be defined using piecewise notation.

$$A(x) = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

Use this notation to find the following values:

- $A(10)$
  - $A(0)$
  - $A(-3)$
  - $A(3.14159)$
  - $A(x) = 7$
  - $A(x) = -5$
2. Here are four equations of absolute value functions and three coordinate pairs. Each coordinate pair represents the vertex of the graph of an absolute value function.

Match the equation of each function with the coordinates of the vertex of its graph. The vertex coordinates of the graph of one equation are not shown.

- |                     |              |
|---------------------|--------------|
| A. $p(x) =  x - 9 $ | 1. $(-9, 0)$ |
| B. $q(x) =  x  + 9$ | 2. $(9, 0)$  |
| C. $r(x) =  x + 9 $ | 3. $(0, -9)$ |
| D. $t(x) =  x  - 9$ |              |

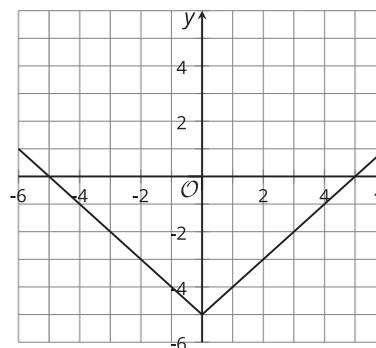
3. Function  $G$  is defined by the equation  $G(x) = |x|$ .

Function  $R$  is defined by the equation  $R(x) = |x| + 2$ .

Describe how the graph of function  $R$  relates to the graph of  $G$ , or sketch the graphs of the two functions to show their relationship.

4. Here is the graph of a function.

Select the equation for the function represented by the graph.

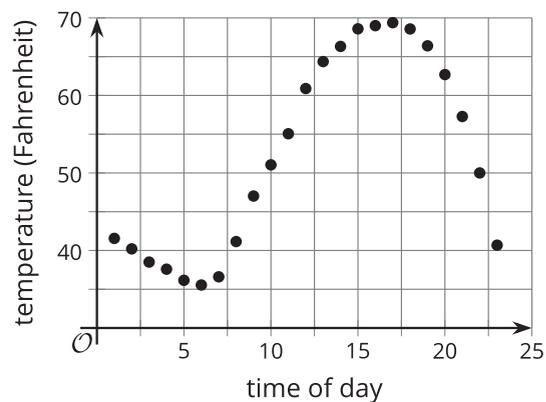


- A.  $y = |x| - 5$
- B.  $y = |x| + 5$
- C.  $y = |x - 5|$
- D.  $y = |x + 5|$

5. The temperature was recorded at several times during the day. Function  $T$  gives the temperature in degrees Fahrenheit,  $n$  hours since midnight.

Here is a graph for this function.

- a. Pick two consecutive points and connect them with a line segment. Estimate the slope of that line. Explain what that estimated value means in this situation.



- b. Pick two non-consecutive points and connect them with a line segment. Estimate the slope of that line. Explain what that estimated value means in this situation.

(From Unit 4, Lesson 7.)

6. A tennis ball is dropped from an initial height of 30 feet. It bounces 5 times, with each bounce height being about  $\frac{2}{3}$  of the height of the previous bounce.

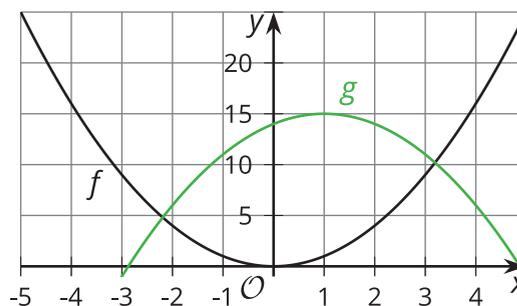
Sketch a graph that models the height of the ball over time. Be sure to label the axes.



(From Unit 4, Lesson 8.)

7. Here are two graphs representing functions  $f$  and  $g$ .

Identify at least two values of  $x$  at which the inequality  $g(x) > f(x)$  is true.



(From Unit 4, Lesson 9.)