Lesson 12 Practice Problems

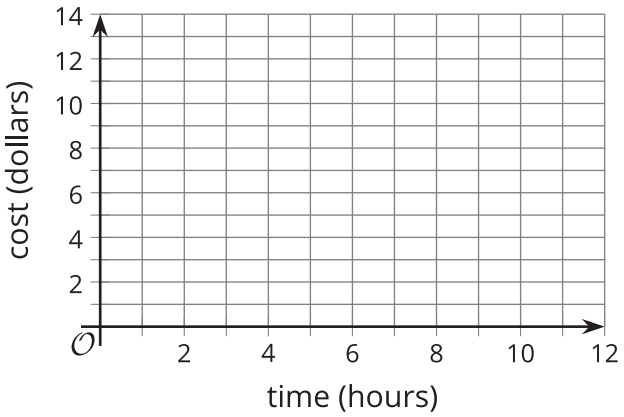
Problem 1

Statement

A parking garage charges \$5 for the first hour, \$10 for up to two hours, and \$12 for the entire day. Let G be the dollar cost of parking for t hours.

a. Complete the table.

b. Sketch a graph of G for $0 \leq t \leq 12$.



t (hours)	G (dollars)
0	
$\frac{1}{2}$	
1	
$1\frac{3}{4}$	
2	
5	

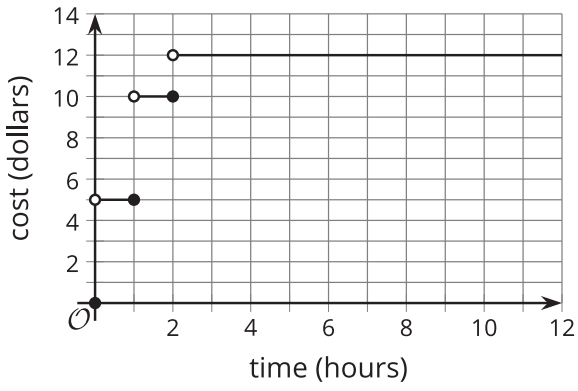
c. Is G a function of t? Explain your reasoning.

d. Is t a function of G? Explain your reasoning.

Solution

a.

t (hours)	G (dollars)
0	0
$\frac{1}{2}$	5
1	5
$1\frac{3}{4}$	10
2	10
5	12



b. See graph.

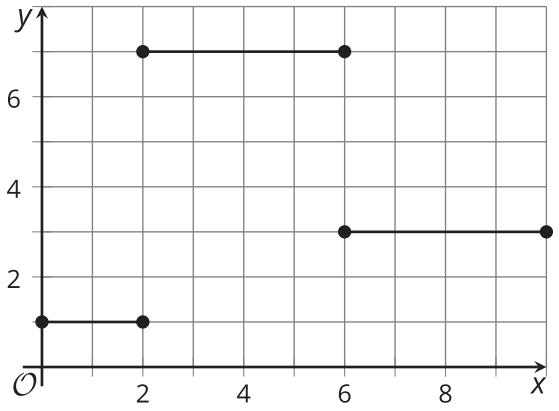
c. G is a function of t because there is one cost for each duration of parking.

d. t is not a function of G because there are multiple possible durations of parking for each cost.

Problem 2

Statement

Is this a graph of a function? Explain your reasoning.



Solution

No. Sample reasoning: There are two values of outputs when the input is 2 and when it is 6.

Problem 3

Statement

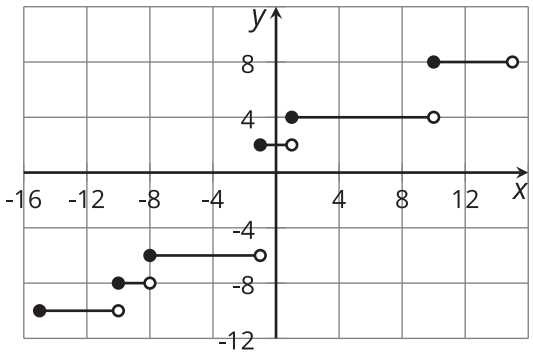
Use the graph of function g to answer these questions.

a. What are the values of $g(1)$, $g(-12)$, and $g(15)$?

b. For what x-values is $g(x) = -6$?

c. Complete the rule for $g(x)$ so that the graph represents it.

$$g(x) = \begin{cases} -10, & -15 \le x < -10 \\ \_\_\_\_, & -10 \le x < -8 \\ -6, & \_\_\_\_ \le x < -1 \\ \_\_\_\_, & -1 \le x < 1 \\ 4, & \_\_\_\_ \le x < \_\_\_\_ \\ 8, & 10 \le x < 15 \end{cases}$$



Solution

a. $g(1) = 4$, $g(-12) = -10$, and $g(15) =$ undefined.

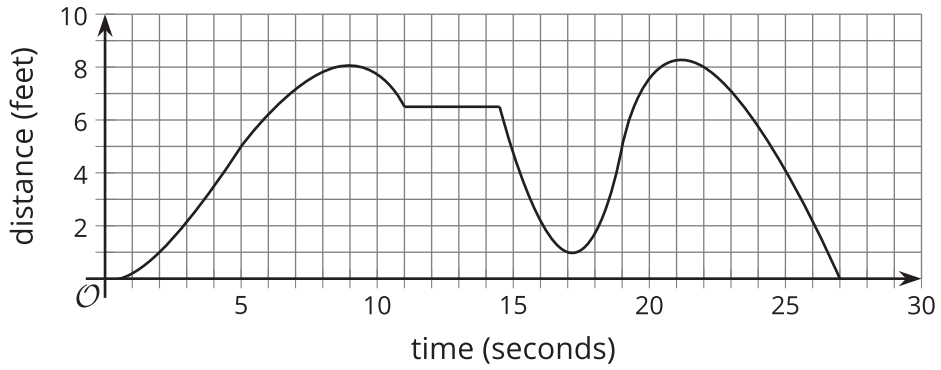
b. $-8 \leq x < -1$

c. The missing outputs are -8 and 2. The missing inputs are -8, 1, and 10.

Problem 4

Statement

This graph represents Andre's distance from his bicycle as he walks in a park.



a. For which intervals of time is the value of the function decreasing?

b. For which intervals is it increasing?

c. Describe what Andre is doing during the time when the value of the function is increasing.

Solution

a. Between 9 and 11 seconds, between 14.5 and 17 seconds, and between 21 and 27 seconds.

b. Between 0 and 9 seconds and between 17 and 21 seconds.

c. Andre is moving away from his bicycle.

(From Unit 4, Lesson 6.)

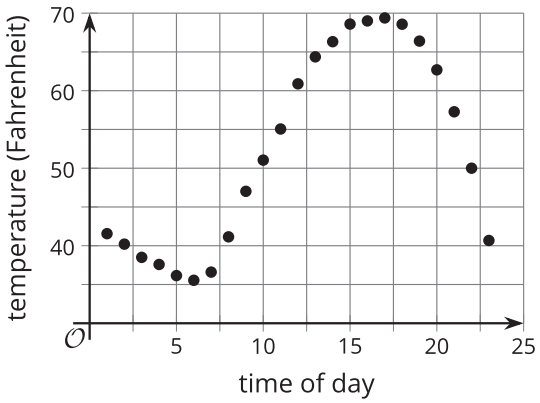
Problem 5

Statement

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. Describe the overall trend of temperature throughout the day.



b. Based on the graph, did the temperature change more quickly between 10:00 a.m. and noon, or between 8:00 p.m. and 10:00 p.m.? Explain how you know.

Solution

a. Sample response: The temperature decreased between midnight and dawn, increased until 4:00 pm, and then it decreased again.

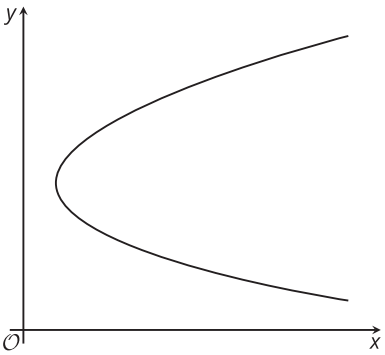
b. Between 8:00 p.m. and 10:00 p.m. the temperature changed more quickly. Sample reasoning: Between 10:00 a.m. and noon, the temperature changed about 10 degrees compared to the 13 degree change between 8:00 and 10:00pm. Both temperature changes occurred over two hours.

(From Unit 4, Lesson 7.)

Problem 6

Statement

Explain why this graph does not represent a function.



Solution

Sample response: In a large part of the graph, there are two possible y-values for each x-value. A function has only one output for each input.

(From Unit 4, Lesson 8.)