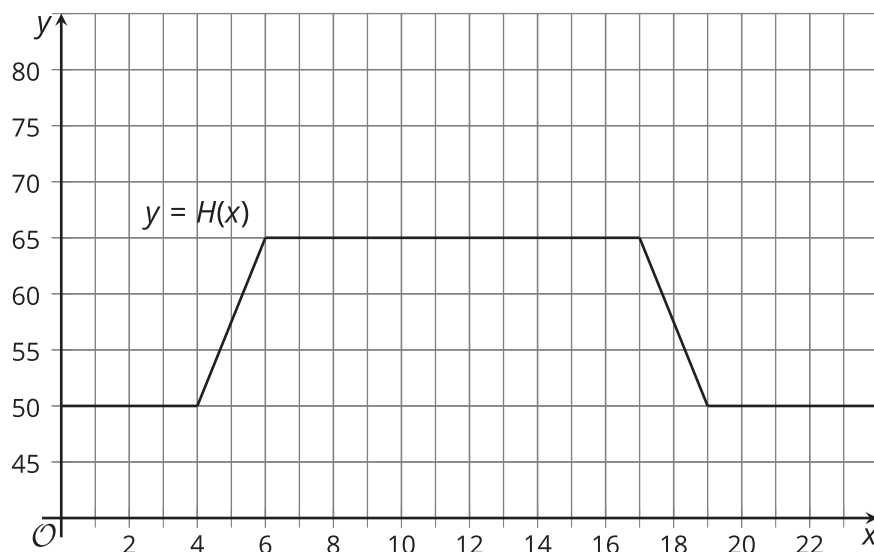


Lesson 2 Practice Problems

1. The thermostat in an empty apartment is set to 65°F from 4:00 a.m. to 5:00 p.m. and to 50°F from 5:00 p.m. until 4:00 a.m. Here is a graph of the function H that gives the temperature $H(x)$ in degrees Fahrenheit in the apartment x hours after midnight.



- The owner of the apartment decides to change to a new schedule and they set the thermostat to change 3 hours later in the morning and the evening. On the same axes, sketch a graph of the new function, G , giving the temperature as a function of time.
- Explain what $H(6.5) = 65$ means in this context. Why is this a reasonable value for the function?
- If $H(6.5) = 65$, then what is the corresponding point on the graph of G ? Use function notation to describe the point on the graph of G .
- Write an expression for G in terms of H .

2. A pumpkin pie recipe says to bake the pie at 425°F for 15 minutes, and then to adjust the temperature down to 350°F for 45 additional minutes. The function P gives the oven temperature setting $P(t)$, in degrees Fahrenheit, t minutes after the pie is placed in the oven.

a. Explain what $P(30) = 350$ means in this context.

b. Diego discovers that the temperature inside the oven is always 25 degrees warmer than the oven's temperature setting. The function B gives the actual temperature of Diego's oven. If $P(30) = 350$, then what is the corresponding point on the function B ?

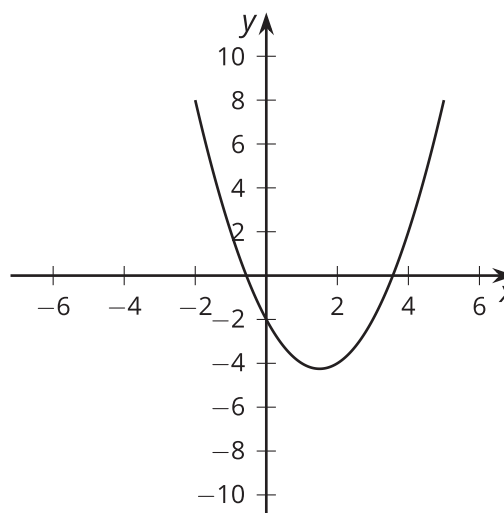
c. Write an expression for B in terms of P .

3. Here is the graph of $y = f(x)$ for a function f .

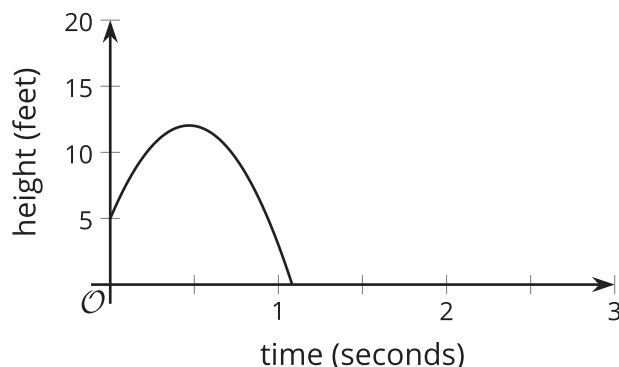
a. On the same axes, sketch a graph of $g(x) = f(x) + 2$.

b. On the same axes, sketch a graph of $h(x) = f(x + 2)$.

c. How do the graphs of g and h compare to f ?



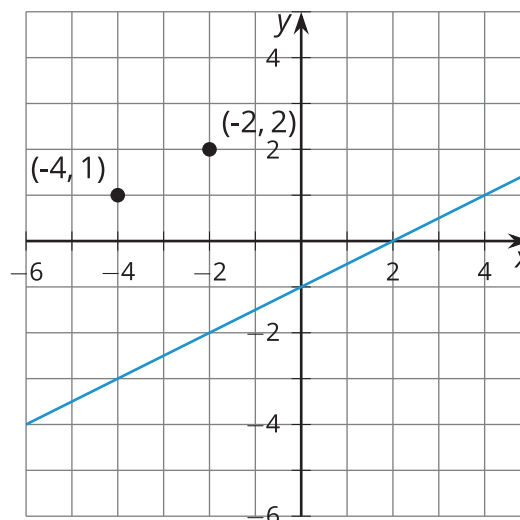
4. The graph shows the height of a tennis ball t seconds after it has been hit.



The function f given by $f(t) = 5 + 30t - 32t^2$ models the height of the ball in feet.

- a. How high was the ball when it was hit? Where do you see this in the equation?
- b. Suppose a second ball follows the same trajectory but is hit from 7 feet off the ground. Sketch the graph of the height of the second ball on the same axes.
- c. Write an equation for a function g that defines the height $g(t)$, in feet, of the second ball hit from 7 feet off the ground in terms of $f(t)$.

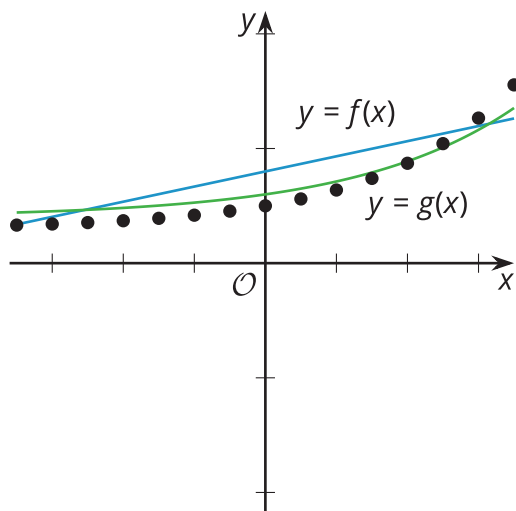
5. a. Describe a horizontal translation of the line to a line that contains the two labeled points.



- b. Describe a vertical translation of the line to a line that contains the two labeled points.

(From Unit 5, Lesson 1.)

6. Does the function f or the function g fit the data better? Explain your reasoning.



(From Unit 5, Lesson 1.)