Lesson 11 Practice Problems

1. A line ℓ is defined by the equation $f(x) = 2x - 3$.

   a. Line m is the same as line l, but shifted 1 unit right. What is an equation for a function g that defines the line m?

   b. Line n is the same as line m, but shifted 2 units up. What is an equation for a function h that defines the line n?

   c. What is the relationship between f and h?

   (From Unit 5, Lesson 2.)

2. The functions g and f are related by the equation $g(x) = f(\text{-}x) + 3$. Which sequence of transformations will take the graph of f to the graph of g?

   (From Unit 5, Lesson 4.)

3. The function f is linear. Can f be an odd function? Explain how you know

   (From Unit 5, Lesson 5.)

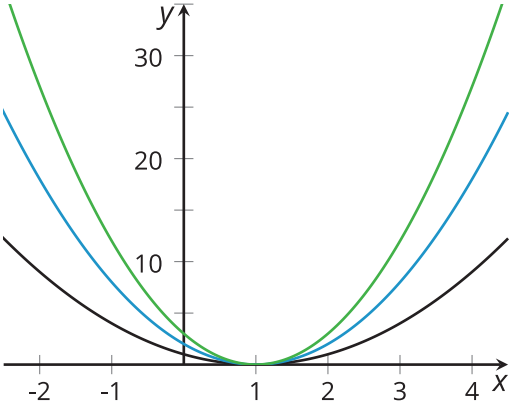
4. *Technology required*. The function f is given by $f(x) = x^3 + 1$. Kiran says that f is odd because $(\text{-}x)^3 = \text{-}x^3$.

   a. Do you agree with Kiran? Explain your reasoning.

   b. Graph f, and use the graph to decide whether or not f is an odd function.

(From Unit 5, Lesson 6.)

5. Here are graphs of three functions f, g, and h given by $f(x) = (x-1)^2$, $g(x) = 2(x-1)^2$ and $h(x) = 3(x-1)^2$.



Identify which function matches each graph. Explain how you know.

(From Unit 5, Lesson 8.)

6. *Technology required*. Describe how to transform the graph of $f(x) = x^2$ into the graph of $g(x) = 4(3x - 1)^2 + 5$. Check your response by graphing f and g.

(From Unit 5, Lesson 9.)

7. Let p be the price of a T-shirt, in dollars. A company expects to sell $f(p)$ T-shirts a day where $f(p) = 50 - 4p$. Write a function r giving the total revenue received in a day.

(From Unit 5, Lesson 10.)

8. A population of 80 single-celled organisms is tripling every hour. The population as a function of hours since it is measured, h, can be represented by $g(h) = 80 \cdot 3^h$.

   Which equation represents the population 10 minutes after it is measured?

   A. $g(10) = 80 \cdot 3^{10}$

   B. $g(0.1) = 80 \cdot 3^{0.1}$

   C. $g(\frac{1}{6}) = 80 \cdot 3^{\frac{1}{6}}$

   D. $g(6) = 80 \cdot 3^6$

(From Unit 4, Lesson 3.)