SM2 1.4: Function Notation

Use the following functions for problems 1-6:

$$f(x) = \frac{1}{2}x - 2, \qquad g(x) = 2x^2 - 3x + 5, \qquad h(x) = -|x + 2| - 3$$

Evaluate each function.

1) $f(2)$

2) $g(0)$

3) $h(4)$

4) $g(-1)$

5) $h(-8)$

6) $f\left(\frac{2}{3}\right)$

Use the following functions for problems 7-26:

$$f(x) = 2x, \qquad g(x) = x^2, \qquad h(x) = 2^x$$

Evaluate each function.

7) $f(-1)$

8) $g(-1)$

9) $h(-1)$

10) $f(0)$

11) $g(0)$

12) $h(0)$

13) $f(1)$

14) $g(1)$

15) $h(1)$

16) $f(2)$

17) $g(2)$

18) $h(2)$

19) $f(10)$

20) $g(10)$

21) $h(10)$

22) $f(100)$

23) $g(100)$

24) $h(100)$

25) Which function has the largest y-intercept?

26) Which of the above functions is growing the fastest?

Given $f(x) = 2x + 5$ and $g(x) = 3x - 2$, simplify the expressions:

27) $(f + g)(x)$ 28) $(f - g)(x)$ 29) $(fg)(x)$

30) $(f + g)(2)$ 31) $(f - g)(0)$ 32) $(fg)(3)$

Given $a(x) = 7x - 1$ and $b(x) = 10x + 4$, simplify the expressions:

33) $(a + b)(x)$ 34) $(a - b)(x)$ 35) $(ab)(x)$

36) $(a + b)(-2)$ 37) $(a - b)(6)$ 38) $(ab)(0)$

39) Zane is a textiles designer. His latest project is to design a rectangular area rug for a hotel lobby. The dimensions of the lobby are such that one set of walls is twice the length of the other set of walls. The rug must lay centered in the lobby, with each edge of the rug exactly 3 feet from each wall.

     a. Write a function that describes the area of the lobby.

     b. Write a function that describes the area of the rug.

     c. Write a function that describes the area of the lobby left uncovered by the rug.