

CHAPTER 7

Mid-Chapter Quiz

Lessons 7-1 through 7-4

Given $f(x) = 2x^2 - 5x + 3$ and $g(x) = 6x + 4$, find each function. (Lesson 7-1)

1. $(f + g)(x)$
2. $(f - g)(x)$
3. $(f \cdot g)(x)$
4. $\left(\frac{f}{g}\right)(x)$
5. $[f \circ g](x)$
6. $[g \circ f](x)$

DINING For Exercises 7 and 8, use the following information. (Lesson 7-1)

The Rockwell family goes out to dinner at Jack's Fancy Steak House. They have a coupon for 10% off their meal, but this restaurant adds an 18% gratuity.

7. Express the price of the meal after the discount and the price of the meal after the gratuity gets added using function notation. Let x represent the price of the meal, $p(x)$ represent the price after the 10% discount, and $g(x)$ represent the price after the gratuity is added to the bill.
8. Which composition of functions represents the price of the meal, $p[g(x)]$ or $g[p(x)]$? Explain your reasoning.

Determine whether each pair of functions are inverse functions. (Lesson 7-2)

9. $f(x) = x + 73$
 $g(x) = x - 73$
10. $g(x) = 7x - 11$
 $h(x) = \frac{1}{7}x + 11$

REMODELING For Exercises 11 and 12, use the following information. (Lesson 7-2)

Kimi is replacing the carpet in her 12-foot by 15-foot living room. The new carpet costs \$13.99 per square yard. The formula $f(x) = 9x$ converts square yards to square feet.

11. Find the inverse $f^{-1}(x)$. What is the significance of $f^{-1}(x)$ for Kimi?
12. What will the new carpet cost Kimi?

Graph each inequality. (Lesson 7-3)

13. $y < \sqrt{x + 3}$
14. $y \geq -5\sqrt{x}$

Graph each function. State the domain and range of each function. (Lesson 7-3)

15. $y = 3 - \sqrt{x}$
16. $y = \sqrt{5x}$
17. $y = \sqrt{2x - 7} + 4$
18. $y = -2\sqrt{6x - 1}$

19. MULTIPLE CHOICE What is the domain of $f(x) = \sqrt{5x - 3}$?

- A $\left\{x \mid x > \frac{3}{5}\right\}$
- B $\left\{x \mid x > -\frac{3}{5}\right\}$
- C $\left\{x \mid x \geq \frac{3}{5}\right\}$
- D $\left\{x \mid x \geq -\frac{3}{5}\right\}$

Simplify. (Lesson 7-4)

20. $\sqrt{36x^2y^6}$
21. $\sqrt[3]{-64a^6b^9}$
22. $\sqrt{4n^2 + 12n + 9}$
23. $\sqrt{\frac{x^4}{y^3}}$

24. MULTIPLE CHOICE The relationship between the length and mass of Pacific Halibut can be approximated by the equation $L = 0.46\sqrt[3]{M}$, where L is the length in meters and M is the mass in kilograms. Use this equation to predict the length of a 25-kilogram Pacific Halibut. (Lesson 7-4)

- F 1.03 m
- G 1.35 m
- H 1.97 m
- J 2.30 m

25. BASEBALL Refer to the drawing below. How far does the catcher have to throw a ball from home plate to second base? (Lesson 7-4)

