

Answers

5.6 Extra Practice

1. 6 2. 9 3. 21 4. 30

5. 6 6. 9 7. 9 8. 2

9. 3 10. 5 11. -9 12. -2

13. 4 14. 33 15. -9 16. 1

17. a. $f(g(x)) = 6x - 12$; all real numbers

b. $g(f(x)) = 6x - 2$; all real numbers

c. $f(f(x)) = 36x$; all real numbers

18. a. $f(g(x)) = |x - 9| + 7$; all real numbers

b. $g(f(x)) = |x - 2|$; all real numbers

c. $f(f(x)) = x + 14$; all real numbers

19. a. $f(g(x)) = 4x^2 - 16x + 16$; all real numbers

b. $g(f(x)) = 4x^2 - 2$; all real numbers

c. $f(f(x)) = 64x^4$; all real numbers

20. a. $f(g(x)) = 4x^2 - 12x + 11$; all real numbers

b. $g(f(x)) = 2x^2 + 1$; all real numbers

c. $f(f(x)) = x^4 + 4x^2 + 6$; all real numbers

21. a. $f(g(x)) = \frac{2}{3x - 9}$; all real numbers except $x = 3$

b. $g(f(x)) = \frac{6}{x} - 9$; all real numbers except $x = 0$

c. $f(f(x)) = x$; all real numbers except $x = 0$

22. a. $f(g(x)) = -\frac{3}{x^2 - 4}$; all real numbers except $x = -2$ and $x = 2$

b. $g(f(x)) = \frac{9}{x^2} - 4$; all real numbers except $x = 0$

c. $f(f(x)) = x$; all real numbers except $x = 0$

23. a. $f(g(x)) = 2\sqrt{x - 3} + 5$; $x \geq 3$

b. $g(f(x)) = \sqrt{2x + 2}$; $x \geq -1$

c. $f(f(x)) = 4x + 15$; all real numbers

24. a. $f(g(x)) = 3\sqrt{2x - 2} - 2$; $x \geq 1$

b. $g(f(x)) = \sqrt{6x - 6}$; $x \geq 1$

c. $f(f(x)) = 9x - 8$; all real numbers

25. a. $f(g(x)) = x^2 + 3x - 5$; all real numbers

b. $g(f(x)) = x^2 + 7x + 3$; all real numbers

c. $f(f(x)) = x + 4$; all real numbers

26. a. $f(g(x)) = 2x^2 - 6x + 3$; all real numbers

b. $g(f(x)) = 4x^2 - 10x + 6$; all real numbers

c. $f(f(x)) = 4x - 3$; all real numbers

27. The functions were applied in the wrong order;

$$f(g(x)) = f(5x) = (5x)^2 + 2 = 25x^2 + 2$$

28. The 2 should also be multiplied by 5;

$$g(f(x)) = g(x^2 + 2) = 5(x^2 + 2) = 5x^2 + 10$$

29. a. $C(x(t)) = 50t + 85$

b. 2085; The cost of producing 200 handbags in 40 hours is \$2085.

5.6 Reteach

1. 5 2. 22 3. 32 4. 16

5. 16 6. 0 7. -38 8. 70

9. a. $f(g(x)) = 3x - 21$; all real numbers

b. $g(f(x)) = 3x - 7$; all real numbers

c. $f(f(x)) = 9x$; all real numbers

10. a. $f(g(x)) = |x + 3| - 4$; all real numbers

b. $g(f(x)) = |x - 1|$; all real numbers

c. $f(f(x)) = x - 8$; all real numbers