

Answers for Lesson 7-6 Exercises

1. $x^2 + 3x + 5$

2. $x^2 - 3x - 5$

3. $-x^2 + 3x + 5$

4. $3x^3 + 5x^2$

5. $\frac{3x + 5}{x^2}$

6. $\frac{x^2}{3x + 5}$

7. $x^2 + 3x + 5$

8. $-x^2 + 3x + 5$

9. $x^2 - 3x - 5$

10. $3x^3 + 5x^2$

11. $\frac{3x + 5}{x^2}$

12. $\frac{x^2}{3x + 5}$

13. $2x^2 + 2x - 4$; domain: all real numbers

14. $-2x^2 + 2$; domain: all real numbers

15. $2x^2 - 2$; domain: all real numbers

16. $2x^3 - x^2 - 4x + 3$; domain: all real numbers

17. $2x + 3$; domain: all real numbers except 1

18. $\frac{1}{2x + 3}$; domain: all real numbers except $-\frac{3}{2}$ and 1

19. $27x^2$, domain: all real numbers; 3, domain: all real numbers except 0

20. $2x + 3$; 9, -1

21. $x^2 + 5$; 14, 9

22. 8

23. 104

24. 20

25. 16

26. 8

27. 10

28. 12

29. 68

30. 404

31. 1

32. 25

33. -3

34. 9

35. 9.25

36. 0.25

37. 6.25

38. -2.75

39. $c^2 - 6c + 9$

40. $c^2 - 3$

41. $a^2 + 6a + 9$

42. $a^2 - 3$

Answers for Lesson 7-6 Exercises (cont.)

43. a. $f(x) = 0.9x$

b. $g(x) = x - 2000$

c. \$14,200

d. \$14,400

44. a. $(g \cdot f)(x) = 1.0968x$

b. 16.45 pesos

45. $x^2 - x + 7$

46. $6x + 13$

47. $x^2 - 5x - 3$

48. $-2x^2 + 8x + 1$

49. $-x^2 + 5x + 13$

50. $2x^2 + 2x + 24$

51. $-3x^2 + 2x + 16$, domain: all real numbers

52. $3x^2 - 12$, domain: all real numbers

53. $3x^3 + 8x^2 - 4x - 16$, domain: all real numbers

54. $-9x^3 - 24x^2 + 12x + 48$, domain: all real numbers

55. $3x - 4$, domain: all real numbers except -2

56. $15x - 20$, domain: all real numbers except -2

57. 7; answers may vary. Sample: First evaluate $f(3)$ since the expression is $(g \cdot f)(3)$, and that means $g(f(3))$. Then evaluate $g(6)$.

58. 1

59. -4

60. 0

61. 2

62. a. ≈ 1963 ; the area after 2 seconds is about 1963 in.².

b. ≈ 7854 in.².

63. $3x^2, 9x^2$

64. $x - 2, x - 2$

65. $12x^2 + 2, 6x^2 + 4$

66. $x - 3, x - 6$

67. $-4x - 7, -4x - 28$

68. $\frac{x^2 + 5}{2}, \frac{x^2 + 10x + 25}{4}$

Answers for Lesson 7-6 Exercises (cont.)

69. Answers may vary. Sample:

a. $g(x) = 0.12x$

b. $f(x) = 9.50x$

c. $(g \cdot f)(x) = 1.14x$; your savings will be \$1.14 for each hour you work.

70. a. $f(x)$ and $g(x)$

b. 0, 15, 30; 3, 28, 103

c. $3x^2 + 9$

d. $3 \cdot 1^2 + 9$, 9, 84, 309

e. $9x^2 + 3$

f. $9 \cdot 1^2 + 3$, 3, 228, 903

71. a. $P(x) = 5295x - 1000$

b. \$157,850

72. a. $g(x)$ is the bonus earned when x is the amount of sales over \$5000. $h(x)$ is the excess of x sales over \$5000.

b. $(g \circ h)(x)$ because you first need to find the excess sales over \$5000 to calculate the bonus.

73. $(f + g)(x) = f(x) + g(x)$ Def. of Function Add.

$$= 3x - 2 + (x^2 + 1)$$

Substitution

$$= x^2 + 3x - 2 + 1$$

Comm. Prop.

$$= x^2 + 3x - 1$$

arithmetic

74. $(f - g)(x) = f(x) - g(x)$ def. of function subtraction

$$= 3x - 2 - (x^2 + 1)$$

substitution

$$= 3x - 2 - x^2 - 1$$

Opp. of Sum Prop.

$$= -x^2 + 3x - 2 - 1$$

Comm. Prop.

$$= -x^2 + 3x - 3$$

arithmetic

Answers for Lesson 7-6 Exercises (cont.)

75. $(f \cdot g)(x) = f(g(x))$ def. of comp. functions
 $= f(x^2 + 1)$ substitution
 $= 3(x^2 + 1) - 2$ substitution
 $= 3x^2 + 3 - 2$ Dist. Prop.
 $= 3x^2 + 1$ arithmetic

- 76. a.** $f(x) = x + 10$; $g(x) = 1.09x$
b. Each grade is increased 9% before adding the 10-point bonus; 91.75.
c. Add the 10-point bonus and then increase the sum by 9%; 92.65.
d. no

77. $x^7 - x^6 - 16x^5 + 10x^4 + 85x^3 - 25x^2 - 150x$; domain: all real numbers

78. $\frac{x^2 + 2x}{x - 3}$; domain: all real numbers except $3, \sqrt{5}$, and $-\sqrt{5}$

79. $\frac{x - 3}{x^2 + 2x}$; domain: all real numbers except $0, -2, \sqrt{5}$, and $-\sqrt{5}$

80. x **81.** $\frac{1}{x}$ **82.** $\frac{6 - x}{8}$ **83.** 2

84. 4