Answers for 7.4

For use with pages 503–506

7.4 Skill Practice

1. common

2. The functions are inverses of each other.

3. $4^2 = 16$ **4.** $7^3 = 343$

5. $6^{-2} = \frac{1}{36}$ **6.** $64^0 = 1$

7. *Sample answer:* The -3 and $\frac{1}{8}$ are switched around; $\log_2 \frac{1}{8} = -3$.

8. 1 **9.** 2 **10.** 3

11. 6 **12.** 0 **13.** -3

14. -3 **15.** $-\frac{1}{2}$ **16.** -2

17. 3 **18.** 4 **19.** 2

20. about 1.146

21. about 1.792

22. about -0.844

23. about 0.793

24. about 1.431

25. about 1.683

26. about -0.127

27. about 4.700

28. x **29.** x **30.** 4

31. 8 **32.** $2x$ **33.** $4x$

34. $3x$ **35.** $5x$ **36.** B

37. $y = 8x$ **38.** $y = \log_7 x$

39. $y = \log_{0.4} x$ **40.** $y = \left(\frac{1}{2}\right)^x$

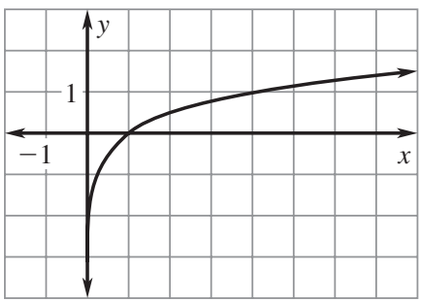
41. $y = \ln x - 2$

42. $y = \log_2(x + 3)$

43. $y = e^x - 1$

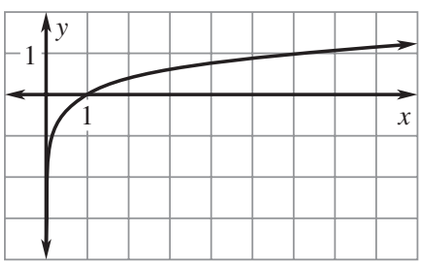
44. $y = 10^{x-6}$

45.



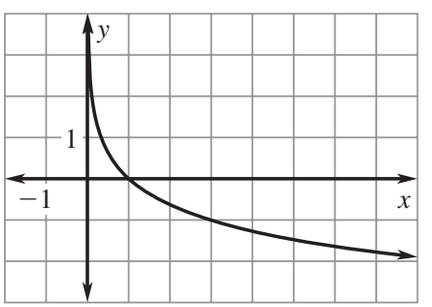
domain: $x > 0$,
range: all real numbers

46.



domain: $x > 0$,
range: all real numbers

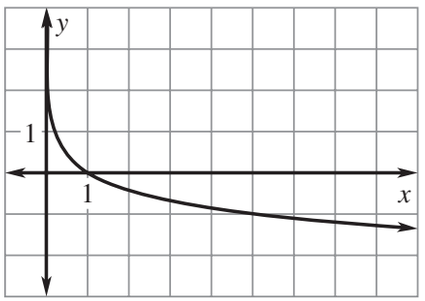
47.



domain: $x > 0$,
range: all real numbers

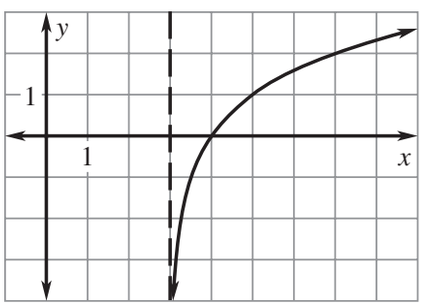
Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

48.



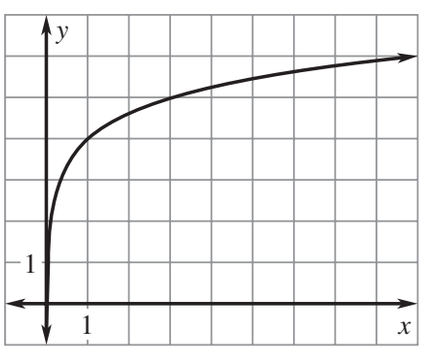
domain: $x > 0$,
range: all real numbers

49.



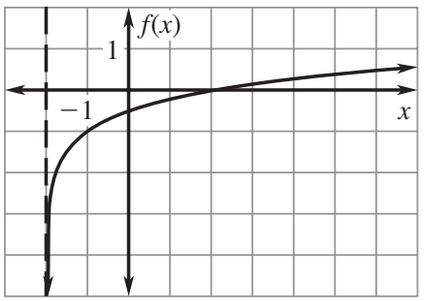
domain: $x > 3$,
range: all real numbers

50.



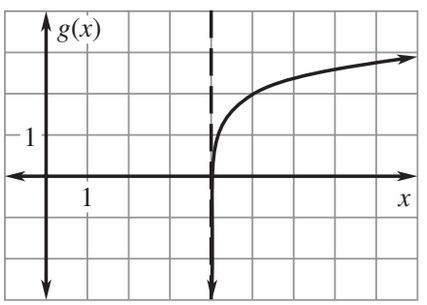
domain: $x > 0$,
range: all real numbers

51.



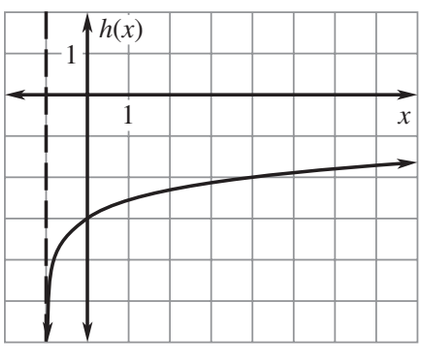
domain: $x > -2$,
range: all real numbers

52.



domain: $x > 4$,
range: all real numbers

53.



domain: $x > -1$,
range: all real numbers

54. $\frac{2}{3}$ **55.** $\frac{5}{3}$

56. $\frac{4}{3}$ **57.** $\frac{7}{2}$

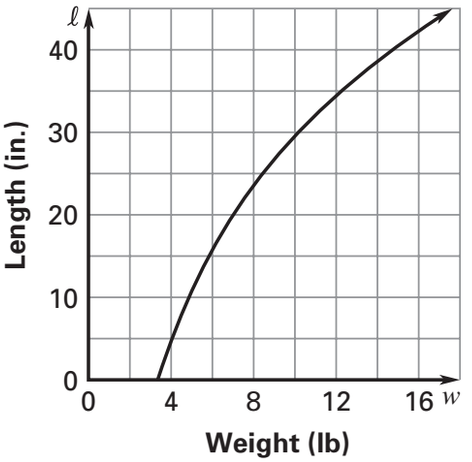
7.4 Problem Solving

58. about 4603 m

Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

59. 2.3

60.

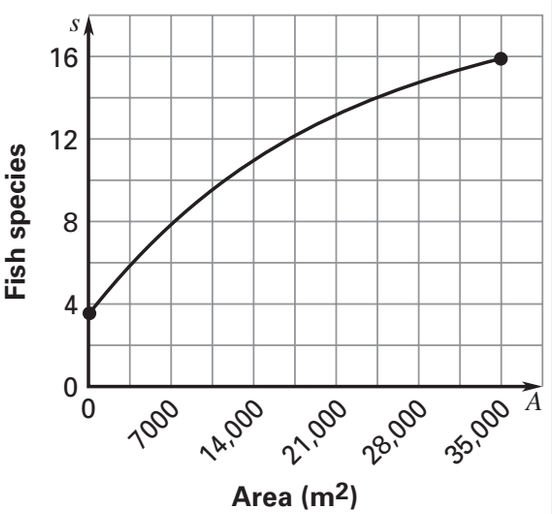


about 281 lb

61. a. about 8.4

b. $E = e^{(M - 1.17)/0.291}$; the inverse represents the amount of energy released, in ergs, as a function of the moment magnitude.

62. a.



b. about 15 species

c. about 4000 m^2

d. The number of fish species increases; the larger the area in a pool or lake, the more room there is for more varieties of fish to thrive.

63. $d = 10^{(s - 0.159)/0.118}$; about 2.23 mm

7.4 Mixed Review

64. 256 **65.** $\frac{1}{15{,}625}$ **66.** $\frac{1}{8}$

67. $\frac{27}{125}$ **68.** 100 **69.** 36

70. $\frac{1}{64}$ **71.** 49 **72.** $x^{7/6}$

73. $m^{-3/2}$ **74.** $3x^2y\sqrt[3]{2}$

75. $n^{13/45}$ **76.** $\frac{y^{5/2}}{x^{9/4}}$

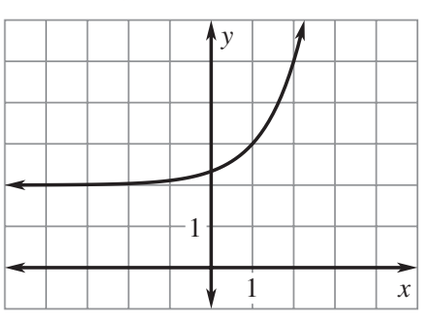
77. $\frac{x^4}{y^3}$ **78.** x^{10}

79. $\frac{\sqrt[3]{4x^2}}{2x^2}$

7.1–7.4 Mixed Review of Problem Solving

1. a. $y = \log_3 (x - 2) + 1$

b.



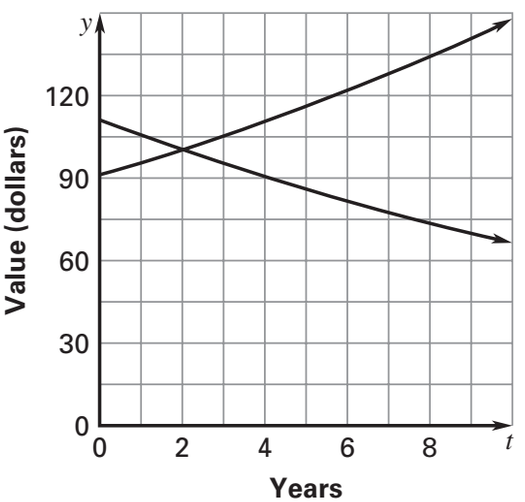
Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

2. a.

Fold number	0	1	2	3	4
Number of regions	1	2	4	8	16
Fractional area of each region	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$

b. $R(n) = 2^n$, exponential growth; $A(n) = 2^{-n}$, exponential decay

3. *Sample answer:* $y_I = 90.70(1.05)^t$, $y_D = 110.8(0.95)^t$;



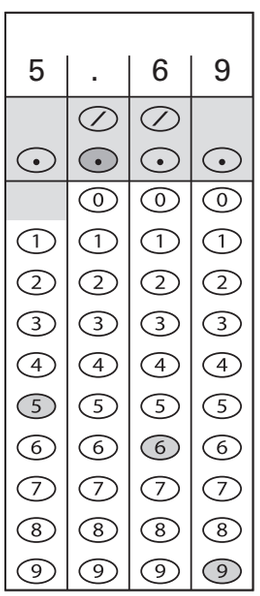
4. $2166.57; 3 yr. *Sample answer:* I used my graphing calculator and entered $y = 2000e^{0.04t}$ and then checked the table to determine the first y-value that was greater than 2250.

5. a. $1592.68, $2323.23; $92.68, $323.23

b. $230.55

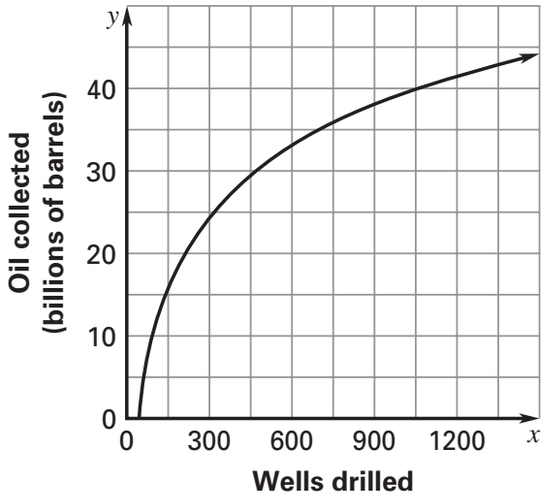
c. *Sample answer:* The 3-yr CD is a shorter period of time for your money to be tied up and it requires less money to start, but it earns less interest in its time frame; the 5-yr CD earns more interest faster, but it requires a larger amount of money to start and it ties your money up for a longer period of time.

6. 5.69 mg;



Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

7. a.



b. about 39 billion barrels

c. about 2387 wells

Copyright © by McDougal Littell, a division of Houghton Mifflin Company.