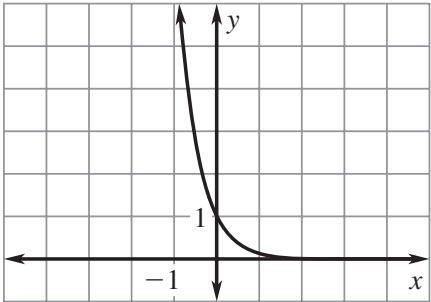


Answers for 7.3

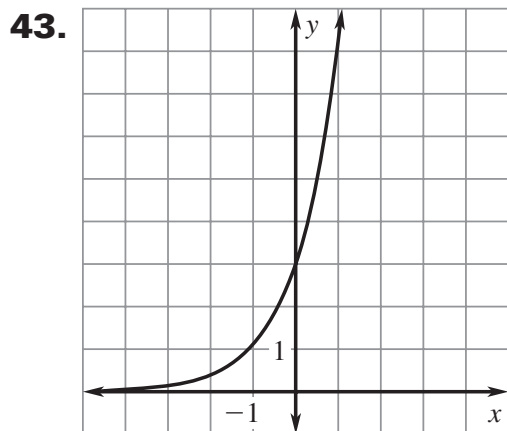
For use with pages 495–498

7.3 Skill Practice

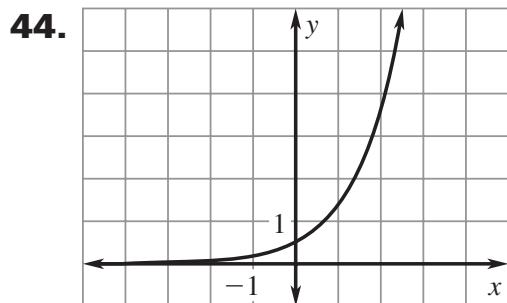
1. e
2. Exponential growth; the power is $4x$ and is greater than 0 therefore the function is an exponential growth function.
3. e^7 4. e^4 5. $8e^{9x}$
6. $\frac{e^8}{16}$ 7. $\frac{1}{3e^{5x}}$ 8. e^{-2x+4}
9. $3e^3$ 10. $5e^{2x+3}$ 11. $3e^{1-x}$
12. $\frac{4}{e^{3x}}$ 13. $2e^{3x}$ 14. $\frac{3e^{4x-1}}{4}$
15. C 16. D
17. The 3 should be raised to the second power also;
 $(3e^{5x})^2 = 3^2e^{(5x)(2)} = 9e^{10x}$.
18. $-2x$ should be subtracted;
 $e^{6x - (-2x)} = e^{8x}$.
19. about 20.086
20. about 0.472
21. about 9.025
22. about 1.649
23. about 0.670
24. about 73.700
25. about 1096.633
26. about 0.018
27. about 1.482
28. about 9.739
29. about -66.139
30. about 24.136
31. exponential decay
32. exponential growth
33. exponential decay
34. exponential growth
35. exponential decay
36. exponential growth
37. exponential growth
38. exponential decay
39. B 40. C 41. A
42. 

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

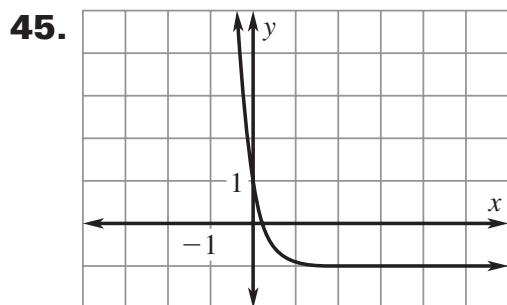
Answers for 7.3 *continued*
For use with pages 495–498



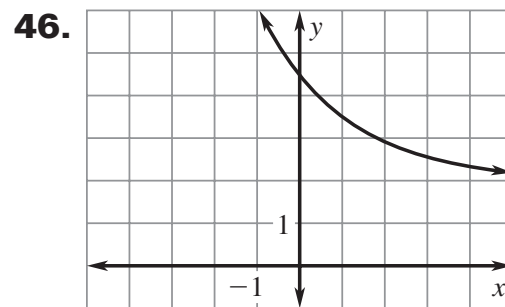
domain: all real numbers,
range: $y > 0$



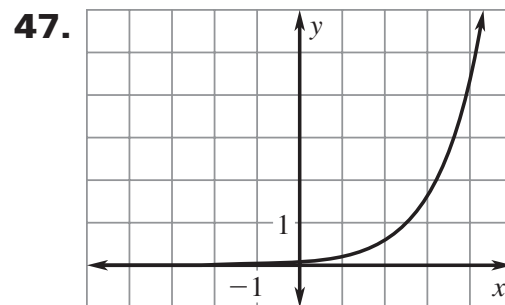
domain: all real numbers,
range: $y > 0$



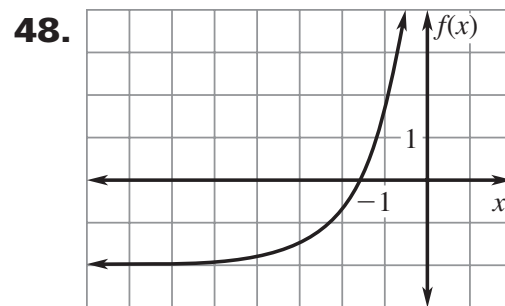
domain: all real numbers,
range: $y > -1$



domain: all real numbers,
range: $y > 2$



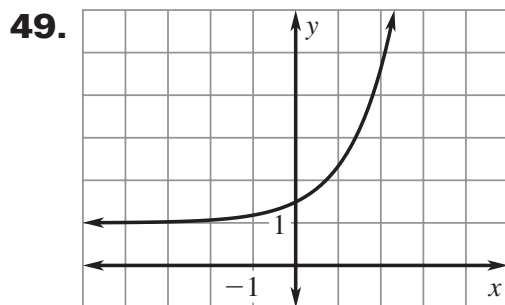
domain: all real numbers,
range: $y > 0$



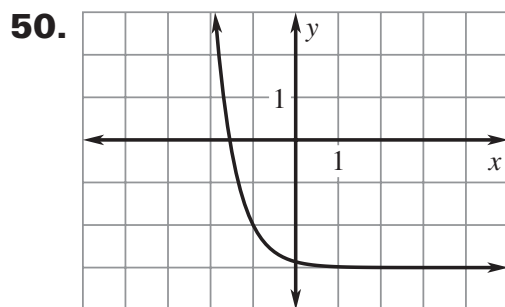
domain: all real numbers,
range: $y > -2$

Answers for 7.3 *continued*

For use with pages 495–498



domain: all real numbers,
range: $y > 1$



domain: all real numbers,
range: $y > -3$

51. 10,000,000,000; *Sample answer:* Since small values of n were increasing the function very slowly, I checked larger intervals. I noticed that every power of 10 gave an answer one digit closer to the actual value of e .

52. No; e is an irrational number which is defined to be a number that cannot be expressed as a ratio of 2 integers.

53. *Sample answer:* $f(x) = \frac{1}{2}e^{-3x}$,
 $g(x) = \frac{2}{3}e^{-5x}$

54. Let $m = \frac{n}{r}$, so $n = mr$ and $\frac{r}{n} = \frac{1}{m}$.

Substituting into

$$A = P\left(1 + \frac{r}{n}\right)^{nt} \text{ gives}$$

$$A = P\left(1 + \frac{1}{m}\right)^{mrt} \text{ which can}$$

be written as

$$A = P\left(\left(1 + \frac{1}{m}\right)^m\right)^{rt}. \text{ By}$$

definition, $\left(1 + \frac{1}{m}\right)^m$ approaches

e as m approaches $\pm\infty$. Thus the equation becomes $A = Pe^{rt}$.

7.3 Problem Solving

55. about 8.95 million camera phones

56. about 23,247 termites

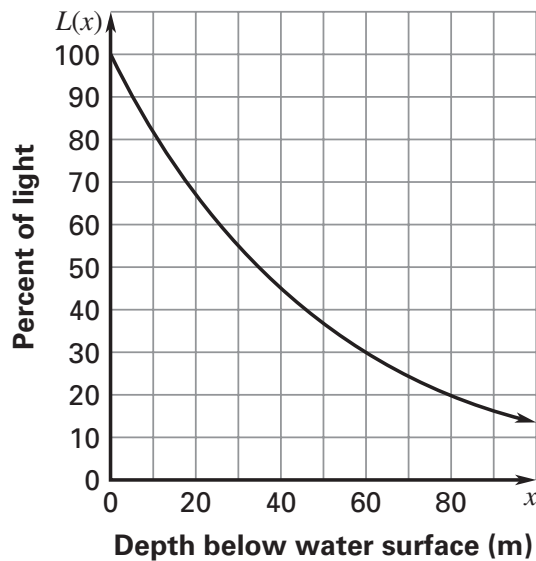
57. \$2442.81

58. \$1114.17

Answers for 7.3 *continued*

For use with pages 495–498

59. a. $L(x) = 100e^{-0.02x}$

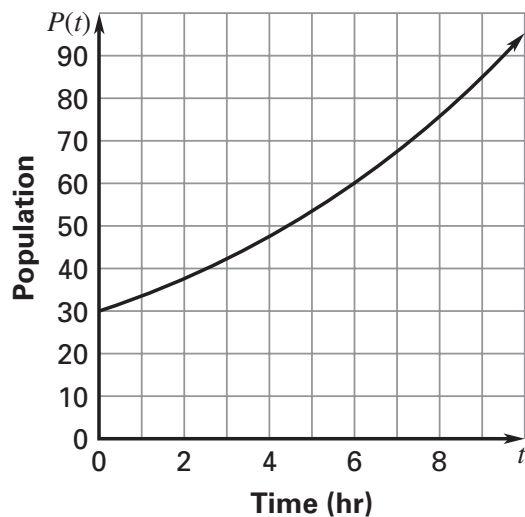


b. about 61%

c. about 35 m

60. a. $P(t) = 30e^{0.116t}$

b.



c. about 48 bacteria

d. Let $t = 2.75$ and evaluate $P(2.75)$.

61. about 1.986 cm^2

62. a. 630 ft

b. about 630 ft

7.3 Mixed Review

63. 5, -21 64. $-\frac{1}{3}, -11$

65. $\frac{2 \pm i\sqrt{14}}{2}$ 66. $-6 \pm \sqrt{39}$

67. 8 68. 1, 2

69. $y = \frac{1}{2}x$ 70. $y = \frac{1}{5}x + \frac{3}{5}$

71. $y = -\frac{1}{4}x + \frac{7}{2}$

72. $y = 3x - 12$

73. $y = -\frac{1}{12}x - \frac{1}{2}$

74. $y = -4x + 28$