

pg. 426 # 1-23, 35, 56

1. graph paper

9. 7.26% growth

$$\begin{array}{r} 100\% \text{ (current)} \\ + 7.26\% \text{ (growth)} \\ \hline 107.26\% \end{array}$$

a) $107.26\% = 1.0726$ growth factor

b) $y = ab^x$
 $\uparrow \quad \uparrow$ growth/decay

y-int

$y = 6.08(1.0726)^x$ $x=0$ is year 2000
 y is in billions

10. $y_1 = ab^{x_1}$
 $y_2 = ab^{x_2}$

$32 = ab^6$

$8 = ab^4$

$\uparrow \quad \uparrow \div$ ← simplify
 simplify

$\sqrt{4} = \sqrt{b^2}$

$2 = b \rightarrow$ substitute $\rightarrow 32 = a(2)^6$

$32 = 64a$ solve

$\frac{1}{2} = a$

substitute a & b

$y = ab^x$

$y = \frac{1}{2}(2)^x$

16. growth 1.63 > 1

35. find decay factor

$$\begin{array}{r} 100\% \text{ (current)} \\ - 14.3\% \text{ (depreciation)} \\ \hline 85.7\% = .857 \end{array}$$

a) $y = ab^x$ $y = 6500(0.857)^x$

b) $y = 6500(0.875)^3$
 $= 4091.25$

54. $y = ab^x$ $b = 0.75$ $y = 7500$ $x = 6$

$7500 = a(0.75)^6$

56. $y = ab^x$ $b = 0.75$ $x = 6$ $y = 7500$

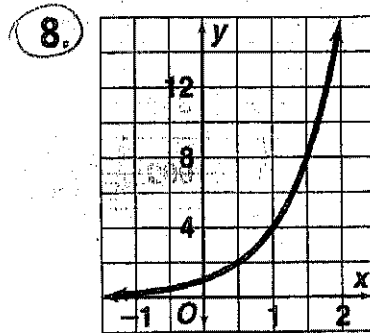
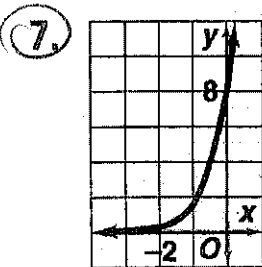
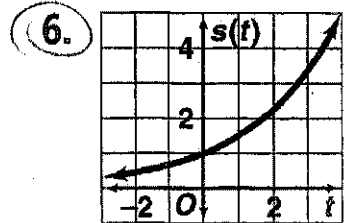
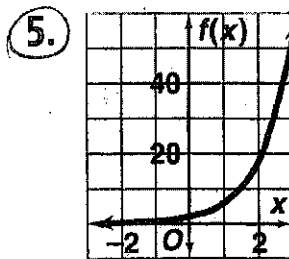
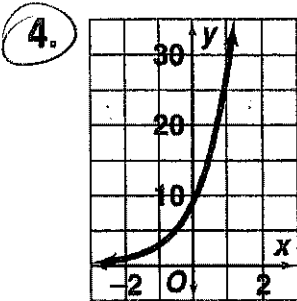
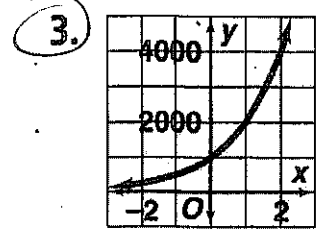
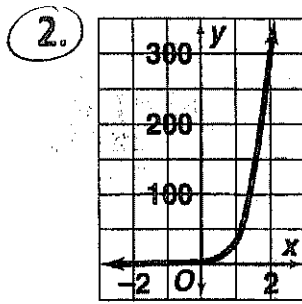
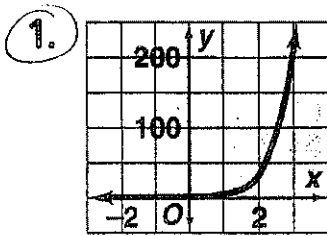
$$7500 = a(0.75)^6$$

$$7500 = .178 a$$

$$\frac{7500}{.178} = \frac{.178 a}{.178}$$

$$42134.83 = a$$

Answers for Lesson 8-1, pp. 426–429 Exercises



9. a. 1.0126

b. $y = 6.08(1.0126)^x$, where $x = 0$ corresponds to 2000

10. $y = 0.5(2)^x$

11. $y = 2.5(7)^x$

12. $y = 8(1.5)^x$

13. $y = 5(0.6)^x$

14. $y = 3(0.5)^x$

15. $y = 24\left(\frac{1}{3}\right)^x$

16. exponential growth

17. exponential decay

18. exponential growth

19. exponential decay

20. exponential decay

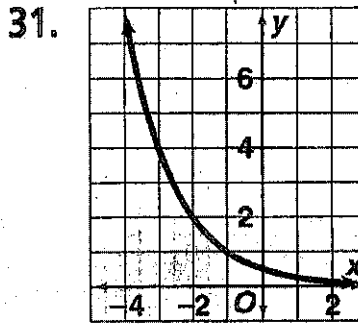
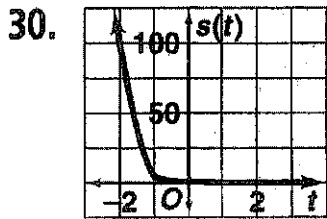
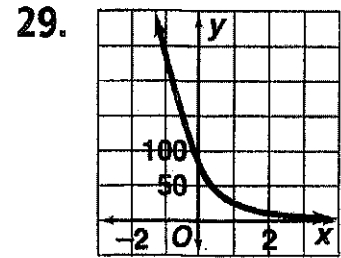
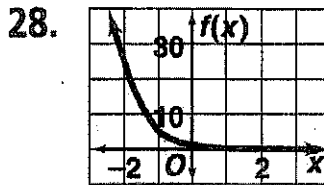
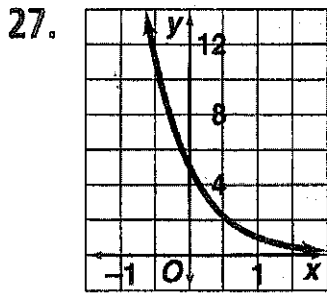
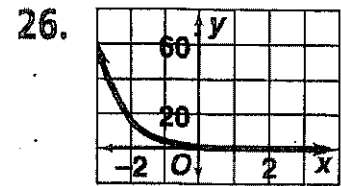
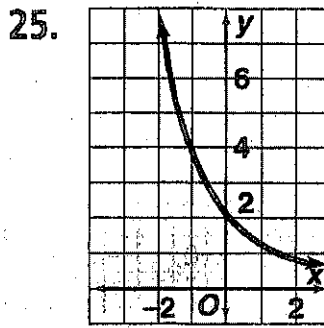
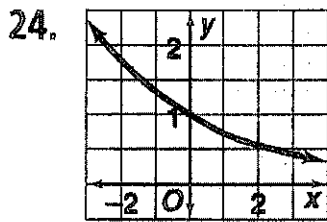
21. exponential growth

22. exponential growth

23. exponential decay

24–31. $y = 0$ is the horizontal asymptote.

Answers for Lesson 8-1, pp. 426–429 Exercises (cont.)



32. $y = 100(0.5)^x$; 1.5625

33. $y = 12,000(0.9)^x$; 6377

34. $y = 12,000(0.1)^x$; 0.012

35. (a) $y = 6500(0.857)^x$

(b) \$4091.25

36. a. Tokyo: 26,444,000, Mexico City: 18,850,649, Bombay: 23,148,579, São Paulo: 19,496,367

b. yes; Tokyo, Bombay, São Paulo, México City

37. 63% increase

38. 30% increase

39. 35% decrease

40. 70% increase

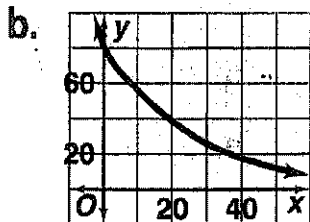
41. 87.5% decrease

42. 75% decrease

Answers for Lesson 8-1, pp. 426–429 Exercises (cont.)

43. a. 5.6%
 b. 0.0017%
44. a. $y = 30,000(0.7)^x$ for car 1
 $y = 15,000(0.8)^x$ for car 2; car 2 will be worth more.
 b. Check students' work.

45. a. $y = 80(0.965)^x$



about 47 years

46. 1.70 47. 6 48. 0.25 49. 0.45

50. 1.125 51. 0.999 52. 1.001 53. 2

54. $y = 34(1.26)^x$, where x represents the number of years since 1995.

55. Check students' work.

56. about \$42,140

57. C

58. B; the graph shows a decreasing function, so $b < 1$, which eliminates A. The $y =$ values are all positive, which eliminates C.

59. a. A negative growth rate would be represented by adding the negative rate to 1.

b. Armenia: $y = 9.2(1.06)^x$, Canada: $y = 688.3(1.03)^x$, Oman: $y = 18.6(.915)^x$, Paraguay: $y = 19.8(.995)^x$.
 x in each equation represents the number of years since 1998.

c. Armenia: \$13.8 billion, Canada: \$846.5 billion, Oman: \$10.0 billion, Paraguay: \$19.1 billion

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