

LOGARITHMS

1. Change $r^s = t$ to logarithmic form.

- A. $r = \log_s t$
- B. $s = \log_r t$
- C. $t = \log_r s$
- D. $s = \log_r t$

2. Evaluate: $\log_4 135$ (Accurate to 2 decimal places.)

- A. 0.53
- B. 1.53
- C. 2.13
- D. 3.54

3. Determine the range of the function $y = 3^x + 2$.

- A. $y > -2$
- B. $y > 2$
- C. $y > 0$
- D. all real numbers

4. Which expression is equivalent to $3 \log a + \log b - \frac{1}{2} \log c$?

- A. $\log \left(\frac{6ab}{c} \right)$
- B. $\log \left(\frac{a^3 b}{\sqrt{c}} \right)$
- C. $\log \left(3a + b - \frac{1}{2}c \right)$
- D. $\log \left(\frac{a^3 + b}{\sqrt{c}} \right)$

5. Solve: $\log_2 x - \log_2 4 = 3$

- A. 2
- B. 12
- C. 32
- D. 36

6. If $\log_9 5 = x$ and $\log_{27} 2 = y$, express $\log_3 100$ in terms of x and y .

- A. $2(9^x + 27^y)$
- B. $9x + 27^y$
- C. $24xy$
- D. $4x + 6y$

LOG-1

7. Given the function $f(x) = 7^{\frac{x}{2}} - 3$, determine its inverse, $f^{-1}(x)$.

- A. $f^{-1}(x) = 2 \log_7 x - 6$
- B. $f^{-1}(x) = 2 \log_7 (x - 6)$
- C. $f^{-1}(x) = 2 \log_7 (x + 3)$
- D. $f^{-1}(x) = 2 \log_7 x + 3$

8. The population of a city is increasing at a rate of 6.5% each year. If the present population is 12 000, how long will it take for the population to reach 32 000? (Accurate to at least 1 decimal place.) (3 marks)

JUN 1997

9. Change $\log_a b = c$ to exponential form.

- A. $b = a^c$
- B. $b = c^a$
- C. $c = a^b$
- D. $c = b^a$

10. Evaluate: $\log_8 16$

- A. $\frac{1}{2}$
- B. $\frac{3}{4}$
- C. $\frac{4}{3}$
- D. 2

11. Determine the inverse of $f(x) = x - 2$.

- A. $f^{-1}(x) = x + 2$
- B. $f^{-1}(x) = \frac{1}{x} - \frac{1}{2}$
- C. $f^{-1}(x) = -\frac{x}{2}$
- D. $f^{-1}(x) = \frac{1}{x - 2}$

12. Solve: $2^{\log x} = \frac{1}{4}$

- A. -2
- B. $\frac{1}{100}$
- C. 2
- D. 100

13. If $\log_a b = 0.5$, evaluate $\log_a \sqrt{b} + \log_a \left(\frac{a}{b} \right)$.

- A. 0.5
- B. 0.75
- C. 1
- D. 1.5

14. Simplify: $\frac{1}{\log_a x} + \frac{1}{\log_b x}$

- A. $-\log_{ab} x$
- B. $-\log_x ab$
- C. $\log_{ab} x$
- D. $\log_x ab$

15. To the nearest power of 10, determine the difference between 10^{600} and 10^{200} .

- A. 10^3
- B. 10^{200}
- C. 10^{400}
- D. 10^{600}

~~15~~ $10^{600} - 10^{200} = 10^{400} (10^{200} - 1) \approx 10^{600}$

LOG-2

Given $\log 6 = x$ and $\log 8 = y$, determine an expression for $\log 3$ in terms of x and y .

- A. $\frac{x-y}{3}$
 B. $x - \frac{y}{3}$
 C. $\frac{y}{3} - x$
 D. $y - \frac{x}{3}$

17. Solve for x : $2 \log(4-x) - \log 3 = \log(10-x)$ (3 marks)

JAN 1998

18. Evaluate: $\log_3 3^{-15}$

- A. -15
 B. -5
 C. $\frac{1}{15}$
 D. $\frac{1}{5}$

20. Give the domain of the function $y = \log_2(x-4)$.

- A. $x > -4$
 B. $x > 0$
 C. $x > 2$
 D. $x > 4$

22. Given $f(x) = \log_3 x$, determine its inverse, $f^{-1}(x)$.

- A. $f^{-1}(x) = x^3$
 B. $f^{-1}(x) = 3^x$
 C. $f^{-1}(x) = \log_x 3$
 D. $f^{-1}(x) = \log_3 \frac{1}{x}$

24. Consider the graph of $y = -\log_2 x$. Which value for x in the interval $a \leq x \leq b$, $a > 0$, will give the largest value for y ?

- A. a
 B. b
 C. $\frac{a+b}{2}$
 D. \sqrt{ab}

25. A river system has a current population of 4 000 000 fish. In each year, an enhancement program produces a 7% growth in population followed by a 200 000 fish harvest (i.e. 200 000 fish are taken from the population). Determine the number of fish after the second harvest. (2 marks)

LOG-3

JUN 1998

26. Evaluate: $\log_2 8$

- A. 2
 B. 3
 C. 4
 D. 16

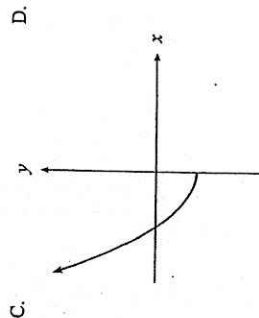
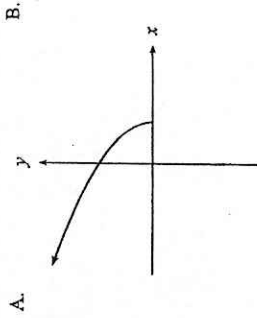
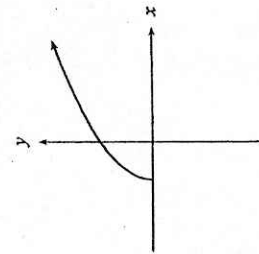
27. Which of the following is equivalent to $\log\left(\frac{a^3}{\sqrt{b}}\right)$?

- A. $3 \log a - \frac{1}{2} \log b$
 B. $\frac{3 \log a}{\frac{1}{2} \log b}$
 C. $\log 3a - \log \frac{1}{2} b$
 D. $\frac{\log 3a}{\log \frac{1}{2} b}$

28. Which of the following equations can be used to determine the number of years, t , that are needed for a \$300 deposit to increase to \$1 500 if it is invested at 9% compounded annually?

- A. $1500 = 300(1.09)^t$
 B. $300 = 1500(1.09)^t$
 C. $1500 = 300(1.9)^t$
 D. $300 = 1500(1.9)^t$

29. Which graph best represents the inverse relation of the graph shown below?



LOG-4

30. Determine the domain of the function $y = \log_5(x+1) - 2$.
31. Solve: $\frac{1}{\log_2 x} + \frac{1}{\log_8 x} = 2$
- A. $x > -1$
 B. $x > 1$
 C. $y > -2$
 D. $y > 2$
- A. 2
 B. 4
 C. 8
 D. 16

32. If $\log_3 7 = x$ and $\log_2 9 = y$, determine an expression for $\log_9 7 + \log_2 3$ in terms of x and y .

- A. $\frac{1}{2}x + \frac{1}{2}y$
 B. $2x + \frac{1}{2}y$
 C. $\frac{1}{2}x + \sqrt{y}$
 D. $2x + \sqrt{y}$

$$\log(3x-5) + \log(2x-1) = 1$$

(3 marks)

JUN 1999

34. Evaluate: $\log_{12} 8000$

- A. 0.33
 B. 2.82
 C. 3.62
 D. 3.90

35. Express $3 \log a + \log b - \log c$ as a single logarithm.

- A. $\log\left(\frac{a^3 b}{c}\right)$
 B. $\log(a^3 + b - c)$
 C. $3 \log\left(\frac{ab}{c}\right)$
 D. $\log\left(\frac{3ab}{c}\right)$

36. The point $(-3, 2)$ is on the graph of the function $f(x)$. Which point must be on the graph of $f^{-1}(x)$, the inverse of $f(x)$?

- A. $(-2, 3)$
 B. $(2, -3)$
 C. $(3, -2)$
 D. $\left(-\frac{1}{3}, \frac{1}{2}\right)$

37. Determine the range of the function $y = 7^{x+2} - 4$.

- A. $y > -4$
 B. $y > -2$
 C. $y > 2$
 D. $y > 4$

LOG-5

39. Simplify: $8^{\log_2 6x}$
- A. $18x$
 B. $6x^3$
 C. $216x^3$
 D. $1296x^4$
- A. $\frac{5}{2}$
 B. $\sqrt{5}$
 C. $\frac{2\sqrt{3}}{7}$
 D. $\frac{\sqrt{35}}{7}$

40. Solve for x : $(\log_x 7)(\log_7 5) = 2$

41. A population of frogs doubles every 20 weeks. If the present population is 400 frogs, how long will it take for the population to reach 10 000? (3 marks)

JUN 1999

42. Change $y = \log_5 x$ to exponential form.

- A. $x = 5y$
 B. $x = 5^y$
 C. $x = y^5$
 D. $x = \left(\frac{1}{5}\right)^y$

43. Express $\log a - \log b + 2 \log c$ as a single logarithm.

- A. $\log \frac{ac^2}{b}$
 B. $\log \frac{a}{bc^2}$
 C. $\log \frac{ab}{2c}$
 D. $\log \frac{a}{2bc}$

44. Solve for x : $3^x = 18$

- A. $x = \log 6$
 B. $x = 3 \log 18$
 C. $x = \frac{\log 18}{\log 3}$
 D. $x = \log 18 - \log 3$

45. Determine an equation of the asymptote of the graph of $y = 4 \log_5(x-4) + 5$.

- A. $x = 4$
 B. $x = 5$
 C. $y = 4$
 D. $y = 5$

LOG-6

46. Solve: $\log_2(4-x) - \log_2 x = 1$
- 1
 - $\frac{4}{3}$
 - $\frac{3}{2}$
 - 2
47. Determine an expression equivalent to $\frac{1}{\log_a x} - \frac{1}{\log_b x}$
- $\log_a x - \log_b x$
 - $\log_x a - \log_x b$
 - $\log_b x - \log_a x$
 - $\log_x b - \log_x a$

48. The point (m, n) is on the graph of $f(x) = a^x$. Which of the following must be a point on the graph of $g(x) = \log_a x$ ($a > 0$)?

- $(-m, -n)$
- $(-n, -m)$
- (m, n)
- (n, m)

JAN 2000

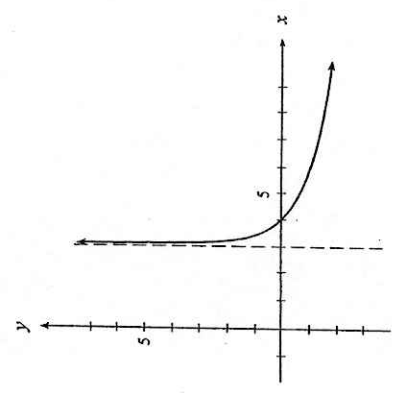
49. Change $a = b^c$ to logarithmic form.
- $\frac{x}{\log c}$
 - $\log c^x$
 - $\frac{x}{c}$
 - $x - \log c$
50. Solve for y : $x = \log c^y$

51. A population of insects doubles every 5 days. If there are currently 1 200 insects, determine an equation for the population, P , of insects t days from now.

- $P = 1200\left(\frac{1}{2}\right)^{\frac{t}{5}}$
- $P = 1200\left(\frac{1}{2}\right)^{5t}$
- $P = 1200(2)^{5t}$
- $P = 1200(2)^{\frac{t}{5}}$

52. Determine the equation of the logarithmic function graphed

- $y = \log_3(x-3)$
- $y = \log_3(x+3)$
- $y = -\log_3(x+3)$
- $y = -\log_3(x-3)$



LOG-7

53. Given $f(x) = 3x + 7$, determine $f^{-1}(x)$, the inverse of $f(x)$.
- $f^{-1}(x) = 3x - 7$
 - $f^{-1}(x) = 3x - \frac{1}{7}$
 - $f^{-1}(x) = \frac{1}{3}x + \frac{1}{7}$
 - $f^{-1}(x) = \frac{1}{3}x - \frac{7}{3}$
54. Solve: $(\log_2 8)^x - (\log_3 3)^{x+1} = 0$
- 0.50
 - 0.39
 - 0.33
 - 1.71

55. If $\log 5 = m$ and $\log 7 = n$, determine $\log \frac{35}{10}$ in terms of m and n .

- $\frac{m+n}{10}$
- $\frac{m+n}{10}$
- $m+n-1$
- $m+n-10$

56. A population of wolves decreases by 2% each year. At the present time, there are 8 000 wolves. How long will it take for the population to become 500 wolves? (Answer to the nearest year.) (3 marks)

57. Given $\frac{1}{\log_y 4} = \log_{\frac{1}{4}} \frac{1}{8x}$, express y as a polynomial function of x . State the restrictions on x and y . (3 marks)

JUN 2000

58. Change $\log_a b = c$ to exponential form.

- $b = a^c$
- $b = c^a$
- $a = b^c$
- $a = c^b$

59. Evaluate: $\log 2^{2000}$

- 0
- 10.97
- 602.06
- infinitely large

60. What is the domain of $y = \log(x-a) + b$, if a and b are constants?

- $x > a$
- $x < a$
- $x > b$
- $x < b$

LOG-8

61. Solve: $\log_2(3-x) + \log_2 x = 1$
- A. 1
 - B. 2
 - C. 1, 2
 - D. no solution

68. Give the domain of the function $y = \log_4(x+7) - 3$.
- A. $x > -7$
 - B. $x > -3$
 - C. $x > 3$
 - D. $x > 7$

69. If $f(x) = 3 \log x$, determine $f^{-1}(x)$, the inverse of $f(x)$.

- A. $f^{-1}(x) = \frac{1}{3 \log x}$
- B. $f^{-1}(x) = \frac{1}{3} \log \frac{1}{x}$
- C. $f^{-1}(x) = 10^{\frac{x}{3}}$
- D. $f^{-1}(x) = 10^{x-3}$

63. For which of the following functions is $f(x) = f^{-1}(x)$, where $f^{-1}(x)$ is the inverse function of $f(x)$?

- A. $f(x) = x^2$
- B. $f(x) = \frac{1}{x}$
- C. $f(x) = |x|$
- D. $f(x) = \log x$

64. If $\log_3 3 = a$ and $\log_x 49 = b$, express $\log_x \left(\frac{9}{7}\right)$ in terms of a and b .

- A. $\frac{a^2}{\sqrt{b}}$
- B. $a^2 - \sqrt{b}$
- C. $2a - \sqrt{b}$
- D. $2a - \frac{1}{2}b$

65. Solve for y and state all restrictions on x and y .

$$\frac{1}{\log_y 3} = \log_{\frac{1}{3}} 27 + 2 \log_3 x$$

JAN 2001

66. Solve for x : $\log_3 x = \log_3 5 + \log_3 7$

- A. 12
- B. 35
- C. $\log_3 12$
- D. $\log_3 35$

LOG-9

67. Express $\frac{1}{2} \log a - \log b$ as a single logarithm.

- A. $\log \frac{a}{2b}$
- B. $\log \frac{ab}{2}$
- C. $\log b\sqrt{a}$
- D. $\log \frac{\sqrt{a}}{b}$

71. Determine the number of solutions for the following system:

$$y = -4 \log_{12} x$$

$$y = 4 \sin x$$

- A. 2
- B. 3
- C. 4
- D. 5

72. Simplify: $2^{\log_3 x^{27}}$

- A. $3x$
- B. $9x$
- C. x^3
- D. x^9

73. Change $b^a = c$ to logarithmic form.

- A. $\log_b a = c$
- B. $\log_c b = a$
- C. $\log_b c = a$
- D. $\log_c a = b$

74. In which line would the graph of a function $f(x)$ be reflected to obtain the graph of $f^{-1}(x)$, the inverse of $f(x)$?

- A. $y = 0$
- B. $x = 0$
- C. $y = -x$
- D. $y = x$

LOG-10

JUN 2001

SPECS 2001

75. Express $2 \log k + \log 5 - \log p$ as a single logarithm.
- A. $\log \frac{5k^2}{p}$
 B. 3
 C. 4
 D. $1 + \sqrt{7}$

77. The population of a type of bacteria triples every 20 hours. In how many hours will a population of 30 become a population of 1 000 ?

- A. 63.84
 B. 101.18
 C. 106.83
 D. 169.32

78. Determine the domain of the function $y = \log_{2x-3}(x)$.

- A. $x > 0, x \neq 1$
 B. $x > 0, x \neq 2$
 C. $x > \frac{3}{2}, x \neq 1$
 D. $x > \frac{3}{2}, x \neq 2$

79. Solve for x : $\log_a a^{2x} = \log_b b^{3x-3}$

- A. -3
 B. $-\frac{3}{2}$
 C. $\frac{3}{2}$
 D. 3

80. Simplify: $\log_{\frac{1}{4}} y - \log_{\frac{1}{2}} y - \log_x \frac{1}{y}$

- A. $\log_x y^3$
 B. $\log_x y$
 C. $-\log_x y$
 D. $\log_x y - 2$

81. The population of ABC high school is currently 1 250 students and is decreasing at an annual rate of 3%. Which expression represents the population, P , of the school 5 years from now?

- A. $P = 1250(1.03)^5$
 B. $P = 1250(1.03)^{-5}$
 C. $P = 1250(0.97)^5$
 D. $P = 1250(0.97)^{-5}$

82. Change $y = 5^x$ to logarithmic form.

- A. $\log_5 x = y$
 B. $\log_5 y = x$
 C. $\log_y 5 = x$
 D. $\log_x 5 = y$

83. The population of a particular country is 25 million. Assuming the population is growing continuously, the population P , in millions, t years from now can be determined by the formula $P = 25e^{0.02t}$. What will be the population, in millions, 20 years from now?

- A. 29.90
 B. 37.97
 C. 38.63
 D. 38.82

84. Simplify: $\log_2 4^x$

- A. x
 B. $2x$
 C. 2^x
 D. x^2

85. If $\log_4 x = a$, determine $\log_{16} x$ in terms of a .

- A. $\frac{a}{4}$
 B. $\frac{a}{2}$
 C. $2a$
 D. $4a$

86. The Richter scale is used for comparing the intensities of earthquakes. On the Richter scale, each increase of 1 unit in magnitude represents a 10-fold increase in intensity as measured on a seismometer. In 1976, an earthquake in Guatemala had a magnitude of 7.5 on the Richter scale and in 1960, an earthquake in Morocco had a magnitude of 5.8. How many times as intense was the 1976 Guatemalan earthquake compared to the 1960 Moroccan earthquake?

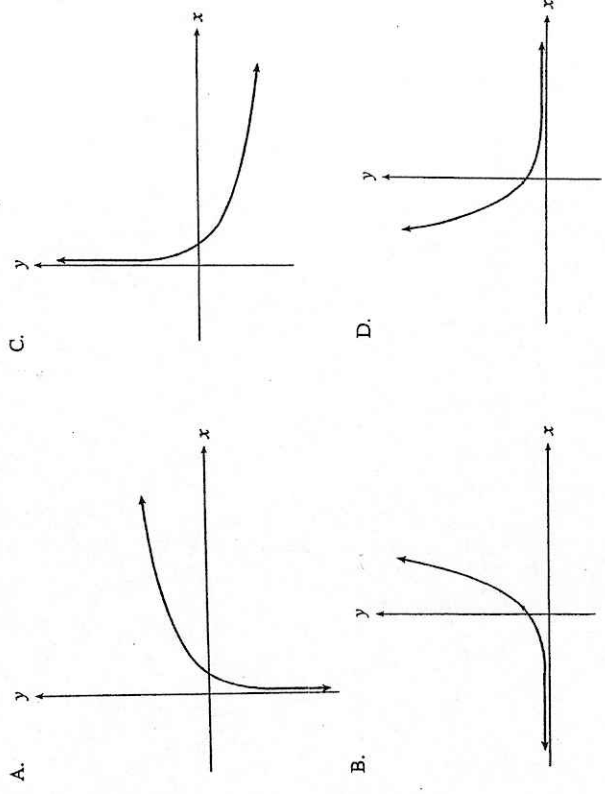
- A. 1.29
 B. 1.7
 C. $10^{1.29}$
 D. $10^{1.7}$

87. Given $\log_a 2 = x$ and $(\log_a 8)(a^{0.8x}) = 12$, solve for a .

- A. 2
 B. ± 2
 C. $\sqrt{2}$
 D. $\pm\sqrt{2}$

96. Solve for x : $\log_3(x-6) + \log_3 x = 3$
- A. 4.5
B. 9
C. 16.5
D. -3, 9
97. Solve for x : $81^{x-1} = \left(\frac{1}{27}\right)^{x-4}$
- A. -8
B. -3
C. $-\frac{3}{7}$
D. $\frac{16}{7}$

98. If $0 < a < 1$, which of the following is the best graph of $y = \log_a x$?



99. Solve for x in terms of $\log a$, $\log b$, and $\log c$: $ab^x = c$

- A. $x = \frac{\log c}{\log a + \log b}$
B. $x = \frac{\log c + \log a}{\log b}$
C. $x = \frac{\log c - \log a}{\log b}$
D. $x = \frac{\log c}{\log b} - \log a$

LOG-14

SAMPLE 2001

88. Graph $\log_4(y+2) = x+1$ on the grid below. State any asymptotes and give exact values for the x - and y -intercepts.

89. The half-life of plutonium-239 is about 25 000 years. How many years does it take until only 36% of the plutonium still remains?

90. It is estimated that 20% of a certain radioactive substance decays in 30 hours. What is the half-life of the substance?

91. The population of Canada is 30 million people and is growing at an annual rate of 1.4%. The population of Germany is 80 million people and is decreasing at an annual rate of 1.7%. In how many years will the population of Canada be equal to the population of Germany? (Use logarithms to solve the resulting equation and answer accurate to two decimal places.)

92. The exponential function $y = 2^x$ can be used to determine the number of ancestors you had in a previous generation. For example, if $x = 2$, then $y = 4$ means that 2 generations ago you had 4 ancestors (Your 4 grandparents). Determine an expression which represents the total number of ancestors you have had in the last n generations.

- A. $2(2^{n-1} - 1)$
B. $2^n - 1$
C. $2^{n+1} - 1$
D. $2(2^n - 1)$

93. Determine the domain of the function $y = \log(2x+3)$.

- A. $x > -\frac{3}{2}$
B. $x > -\frac{2}{3}$
C. $x > \frac{2}{3}$
D. $x > \frac{3}{2}$

94. Change to exponential form: $\log_k \ell = m$

- A. $\ell = m^k$
B. $\ell = k^m$
C. $k = m^\ell$
D. $k = \ell^m$

95. A recent earthquake in Washington measured 6.3 on the Richter scale. In 1964, the Alaskan earthquake measured 8.5. How many times as intense was the 1964 Alaskan earthquake compared to the recent Washington earthquake?

- A. 1.35
B. 2.2
C. $10^{1.35}$
D. $10^{2.2}$

LOG-13

100. A bank account earns interest at a rate of 7% per year compounded continuously. Which equation will determine the effective annual growth rate, r ? (P_0 is the initial amount invested; t is time, in years, over which the amount is invested.)

- A. $P_0(1+r)^t = P_0e^{0.07t}$
- B. $P_0(1.07)^t = P_0e^t$
- C. $P_0(1+r)^t = P_0e^{1.07t}$
- D. $P_0(1.07)^t = P_0^{(1+r)t}$

101. If 3150 mg of a radioactive substance decays to 450 mg in 73 weeks, determine the half-life of the substance to the nearest week. (Solve algebraically using logarithms.) (5 marks)

JAN 2002

102. Change to logarithmic form: $p = q^r$
- A. $\log_p q = r$
 - B. $\log_q p = r$
 - C. $\log_r p = q$
 - D. $\log_q r = p$
103. Evaluate: $\log_2 7.5$
- A. 0.44
 - B. 0.57
 - C. 2.26
 - D. 2.91

104. Determine the range of the function $y = 2^{x-3} + 4$.
- A. $y > 4$
 - B. $y > -4$
 - C. $x > 3$
 - D. $x > -3$
105. Solve: $16^{x+1} = 8^{1-x}$
- A. $-\frac{1}{3}$
 - B. $-\frac{1}{7}$
 - C. $\frac{2}{7}$
 - D. $\frac{2}{5}$

106. Which expression is equivalent to $\log\left(\frac{100x^2}{y}\right)$?

- A. $2 + \log(3x - y)$
- B. $300 \log x - \log y$
- C. $2 + 3 \log x - \log y$
- D. $\log(100 + x^2 - y)$

108. Simplify: $a^{\log_a 8 + \log_a 2}$

- A. 10
- B. 16
- C. a^{10}
- D. a^{16}

109. The population of a city grows continuously according to the formula $P = P_0 e^{kt}$. Determine the value of the growth rate, k , if the population increases from 30 000 to 45 000 in 8 years.

- A. 0.02
- B. 0.05
- C. 0.41
- D. 1.05

110. Strontium-90 is a radioactive substance with a half-life of 28 days. How many days will it take for a 200 gram sample of strontium-90 to be reduced to 8 grams? (Solve algebraically using logarithms.) (5 marks)

APR 2002

111. Change $y = \log_7 x$ to exponential form.
112. What is the domain of $y = \log_3(4x-1) + 3$?
- A. $y = x^7$
 - B. $y = 7^x$
 - C. $x = y^7$
 - D. $x = 7^y$
- A. $x > 0$
 - B. $x > 1$
 - C. $x > \frac{1}{4}$
 - D. all real numbers

113. Simplify the expression: $\log_a\left(\frac{1}{\frac{1}{a^b}}\right)$

- A. $-b$
- B. b
- C. a^b
- D. a^{-b}

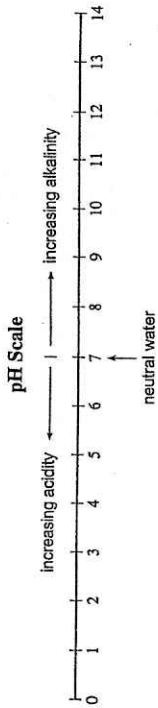
114. The intensity of light is reduced by 2% for each metre that a diver descends below the surface of the water. At what depth is the intensity of light only 10% of that at the surface?

- A. 5 m
- B. 18 m
- C. 98 m
- D. 114 m

115. Solve for x : $5^{x-1} = 125^{3-x}$

- A. 2
- B. 5
- C. $\frac{2}{3}$
- D. $\frac{5}{2}$

116. In chemistry, the pH scale measures the acidity (0-7) or alkalinity (7-14) of a solution. It is a logarithmic scale in base 10. Thus, a pH of 9 is 10 times more alkaline than a pH of 8. If a solution has a pH of 7.6, how many times more alkaline is it than neutral water which has a pH of 7?



- A. 0.6
 B. 1.09
 C. 3.98
 D. 12.18
117. Determine an expression for: $\sum_{n=1}^5 \log_a n$
- A. $\log_a 5$
 B. $\log_a 6$
 C. $\log_a 15$
 D. $\log_a 120$

118. At which of the following points is the relation $\log(y-x) + \log(y+x) = \log 9$ not defined?

- A. (0, 3)
 B. (-4, 5)
 C. (4, -5)
 D. (4, 5)

119. Solve algebraically.

$$\log_2(2-2x) + \log_2(1-x) = 5$$

(5 marks)

120. A biologist determines that a particular type of bacteria grows continuously according to the formula $P = P_0 e^{kt}$. Determine the value of the continuous growth rate if the population of the bacteria increases from 500 to 1500 in 8 days. (5 marks)

122. Solve: $\left(\frac{1}{4}\right)^{1-2x} = 8^{x-3}$

- A. -7
 B. $\frac{11}{7}$
 C. $\frac{7}{4}$
 D. no solution

121. Determine the logarithmic form of $a = b^c$.

- A. $\log_a b = c$
 B. $\log_a c = b$
 C. $\log_c a = b$
 D. $\log_b a = c$

LOG-17

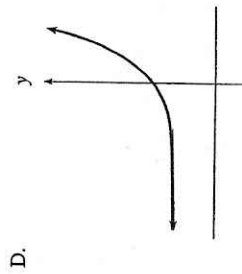
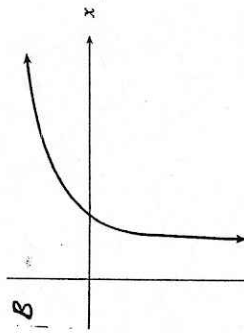
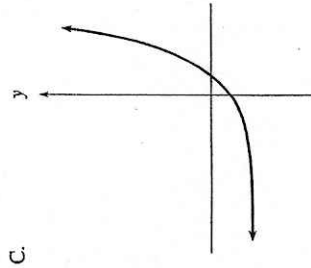
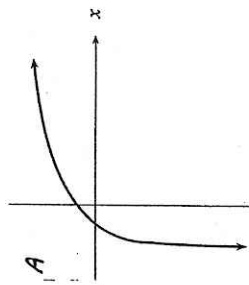
123. A recent earthquake in Turkey measured 7.2 on the Richter scale. In 1960, the earthquake in Morocco measured 5.8. How many times as intense was the Moroccan earthquake compared to the recent Turkey earthquake?

- A. 1.24
 B. 1.4
 C. 17.43
 D. 25.12

124. If the graph of $y = \log_a x$ goes through the point (1024, 5), determine a .

- A. 4
 B. 4.31
 C. 10
 D. 204.8

125. Which graph best represents the function $y = \log_2(x-2)$?



126. A sample of water contains 200 g of pollutants. Each time the sample is passed through a filter, 20% of its pollutants are removed. Determine an expression that gives the number of grams of pollutants still in the water after it passes through five filters.

- A. $200(0.8)^4$
 B. $200(1.2)^4$
 C. $200(0.8)^5$
 D. $200(1.2)^5$

LOG-18

JUN 2002