

206 Logarithms on ACT

D14

51. What value of x satisfies the equation below?

$$\log_{16} x = -\frac{3}{4}$$

- A. -12
- B. -8
- C. $\frac{1}{12}$
- D. $\frac{1}{8}$
- E. 8

D13 – 71E

53. A used car has a constant annual rate of decrease in value of 0.075. According to the model, which of the following expressions gives the number of years after purchase for the car to reach a value that is 50% of its purchase price?

- A. $\frac{50}{7.5}$
- B. $\frac{1-0.075}{0.5}$
- C. $\frac{2}{1-0.0075}$
- D. $\frac{\log(50)}{\log(7.5)}$
- E. $\frac{\log(0.5)}{\log(1-0.075)}$

J13 – 71C

47. For all $x > 0$, which of the following expressions is equivalent to $\log((2x)^{\frac{1}{2}})$?

- A. $\log x$
- B. $\log 1 + \log \frac{x}{2}$
- C. $\log 2 + \frac{1}{2} \log x$
- D. $\frac{1}{2} \log 2 + \frac{1}{2} \log x$
- E. $\frac{1}{2} (\log 2)(\log x)$

D11

59. For all $x > 2$, $\log(x-2) + \log x = ?$

- A. $\log(-2)$
- B. $\log(2x-2)$
- C. $\log(x^2-2x)$
- D. $\log\left(\frac{x-2}{x}\right)$
- E. $\log\left(\frac{x}{x-2}\right)$

A11

52. If b is a positive number such that $\log_b\left(\frac{1}{81}\right) = -4$, then $b = ?$

- F. 3
- G. 9
- H. 85
- J. $\frac{1}{3}$
- K. $\frac{1}{9}$

Answers:

51. D

53. E

47. D

59. C

52. F