

7-3 Standardized Test Prep

Logarithmic Functions as Inverses

Multiple Choice

For Exercises 1–4, choose the correct letter.

- Which of the following is the logarithmic form of the equation $4^{-3} = \frac{1}{64}$?

<input type="radio"/> (A) $\log_{-3} \left(\frac{1}{64} \right) = 4$	<input type="radio"/> (C) $\log_4 \left(\frac{1}{64} \right) = -3$
<input type="radio"/> (B) $\log_{-3} 4 = \frac{1}{64}$	<input type="radio"/> (D) $\log_{\frac{1}{64}} 4 = -3$
- What is the value of $\log_2 8$?

<input type="radio"/> (F) 64	<input type="radio"/> (H) 16
<input type="radio"/> (G) 8	<input type="radio"/> (I) 3
- How does the graph of $y = \log_5(x - 3)$ compare with the graph of the parent function, $y = \log_5 x$?

<input type="radio"/> (A) translated 3 units to the left	<input type="radio"/> (C) translated 3 units to the right
<input type="radio"/> (B) translated 3 units down	<input type="radio"/> (D) translated 3 units up
- In 2009, an earthquake of magnitude 6.7 shook the Kermadec Islands off the coast of New Zealand. Also in 2009, an earthquake of magnitude 5.1 occurred in the Alaska Peninsula. How many times stronger was the Kermadec earthquake than the Alaska earthquake?

<input type="radio"/> (F) 39.811	<input type="radio"/> (H) 5.77
<input type="radio"/> (G) 20.593	<input type="radio"/> (I) 0.025

Short Response

- A single-celled bacterium divides every hour. The number N of bacteria after t hours is given by the formula $\log_2 N = t$.
 - After how many hours will there be 64 bacteria?
 - Explain in words or show work for how you determined the number of hours.