05-08 Sample Quiz - Solve Logarithmic Equations and Inequalities

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Solve the logarithmic equation.
\[ \log_5(8x + 7) = \log_5(3x + 27) \]

a. \( x = 3.09 \)  
   b. \( x = 4 \)  
   c. \( x = 7 \)  
   d. No Solution

____ 2. Find the approximate value of \( x \) that makes the following statement true:
\[ \log_4 x = 3 \]

a. \( x = 64 \)  
   b. \( x = 12 \)  
   c. \( x = \frac{3}{\log(4)} \)  
   d. \( x = 81 \)

____ 3. Find the approximate value of \( x \) that makes the following statement true:  \[ \log_5(3x + 9) = 2 \]

a. \( x = \frac{22}{3} \)  
   b. \( x = \frac{16}{3} \)  
   c. \( x = \frac{1}{3} \)  
   d. \( x = \frac{34}{3} \)

____ 4. Find the approximate value of \( x \) that makes the following statement true:  \[ \log_2 x + \log_2(2) = 4 \]

a. \( x = 2 \)  
   b. \( x = 16 \)  
   c. \( x = 4 \)  
   d. \( x = 8 \)

____ 5. Find the approximate value of \( x \) that makes the following statement true:
\[ \ln(x + 2) - 3 = 2 \]

a. \( x = e^2 + 1 \)  
   b. \( x = 2e^2 + 3 \)  
   c. \( x = e^2 - 2 \)  
   d. \( x = 5e - 2 \)

____ 6. Which graph shows the set of all possible values of \( x \) that makes the following statement true?
\[ \log_5 (x + 1) \leq 2 \]

a.  
   b.  
   c.  
   d.  

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Completion
Complete each statement.

7. Solve the following equation for $x$:
\[
\ln(3x + 3) = \ln(5x - 9)
\]

8. Solve the following equation for $x$:
\[
\log_3 (5x + 1) = 4
\]