

Logarithms Review

Solve each equation.

1) $3^{2-p} = 1$

- A) $\{2\}$ B) $\{1\}$
 C) $\left\{\frac{3}{7}\right\}$ D) No solution.

2) $125^{-2n} = 25^{2n}$

- A) $\left\{\frac{5}{3}\right\}$ B) $\left\{-\frac{5}{3}\right\}$
 C) $\left\{\frac{11}{9}\right\}$ D) $\{0\}$

Evaluate each expression.

3) $\log_2 16$

- A) -4 B) 8
 C) 4 D) 2

4) $\log_3 27$

- A) 6 B) 9
 C) 5 D) 3

Find the inverse of each function.

5) $y = \log_6 2^x$

- A) $y = 4^{x-7}$ B) $y = 2^x - 3$
 C) $y = \log_2 6^x$ D) $y = \frac{-2^x + 1}{2^x}$

6) $y = 2^{\frac{x}{4}}$

- A) $y = \log_{\frac{1}{4}} x^5$
 B) $y = \log_6 4x$
 C) $y = \log_2 x^4$
 D) $y = \log_3 -4x$

Expand each logarithm.

7) $\log_6 (w^3 \sqrt{u \cdot v})$

- A) $20 \log_6 u + 5 \log_6 v$
 B) $5 \log_6 u - 20 \log_6 v$
 C) $4 \log_6 u + 5 \log_6 v$
 D) $\log_6 w + \frac{\log_6 u}{3} + \frac{\log_6 v}{3}$

8) $\log (a^5 b^6)$

- A) $6 \log a + 30 \log b$
 B) $\log c + \frac{\log a}{3} + \frac{\log b}{3}$
 C) $5 \log a + 6 \log b$
 D) $30 \log a - 6 \log b$

Condense each expression to a single logarithm.

9) $4 \log_4 10 - 6 \log_4 11$

- A) $\log_4 \frac{10^6}{11^{24}}$
 B) $\log_4 \frac{10^{24}}{11^6}$
 C) $\log_4 (11^6 \cdot 10^4)$
 D) $\log_4 \frac{10^4}{11^6}$

10) $6 \log_7 u - 18 \log_7 v$

- A) $\log_7 (v^{18} u^6)$
 B) $\log_7 (w^3 \sqrt{u})$
 C) $\log_7 \frac{u^{18}}{v^6}$
 D) $\log_7 \frac{u^6}{v^{18}}$

Solve each equation. Round your answers to the nearest ten-thousandth.

11) $e^{a-9} + 9 = 62$

- A) 8.7134 B) 11.8387
C) 12.9703 D) 10.7243

12) $18^{n+10} - 2 = -0.4$

- A) -9.7959 B) -9.8374
C) -9.53 D) -9.5153

Solve each equation.

13) $\log_4(2a + 9) = \log_4(4a + 9)$

- A) {15} B) {0}
C) {14} D) No solution.

14) $-8\log_6(b + 4) = -16$

- A) {16} B) $\left\{\frac{6}{5}\right\}$
C) {32} D) $\left\{-\frac{1}{5}\right\}$

15) $\log(10n - 2) = \log(n^2 + 19)$

- A) {7} B) {3, 7}
C) {8, 0} D) {3}

16) $10 + \ln(n - 9) = 8$

- A) {-3} B) $\left\{\frac{9e^2 + 1}{e^2}\right\}$
C) {e + 8} D) $\left\{-\frac{e}{9}\right\}$

17) $\log_4 -5x + \log_4 2 = 1$

- A) $\left\{\frac{2}{15}\right\}$ B) {6}
C) $\left\{-\frac{2}{5}\right\}$ D) $\left\{\frac{14}{45}\right\}$

18) $\log_6 4x - \log_6 3 = 2$

- A) {-81} B) $\left\{\frac{54}{5}\right\}$
C) {27} D) {36}

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