

Logarithmic Equations

Solve the logarithmic equation. Be sure to reject any value that is not in the domain of the original logarithmic expressions. Give the exact answer.

1) $\log_3 x = 4$ 1) _____

A) {81}

B) {12}

C) {1.26}

D) {64}

2) $\log_6 (x - 2) = 3$ 2) _____

A) {214}

B) {218}

C) {731}

D) {727}

3) $\log_4 (x + 3) = -3$ 3) _____

A) $\left\{-\frac{191}{81}\right\}$

B) $\left\{\frac{193}{81}\right\}$

C) $\left\{\frac{193}{64}\right\}$

D) $\left\{-\frac{191}{64}\right\}$

4) $\log_2 (x - 4) + \log_2 (x - 10) = 4$ 4) _____

A) {12, 2}

B) {12}

C) {2}

D) {13}

5) $4 \ln (6x) = 8$ 5) _____

A) $\{e^2\}$

B) $\left\{\frac{e^2}{6}\right\}$

C) $\left\{\frac{2}{\ln 6}\right\}$

D) $\{e^{1/3}\}$

6) $\ln \sqrt{x + 2} = 4$ 6) _____

A) $\{e^4 - 2\}$

B) $\{e^8 - 2\}$

C) $\{e^8 + 2\}$

D) $\left\{\frac{e^4}{2} + 2\right\}$

7) $\log_3 (x + 6) + \log_3 (x - 6) - \log_3 x = 2$ 7) _____

A) {12, -3}

B) {12}

C) {-3}

D) $\emptyset$

8) $\log_2 (x + 4) = 2 + \log_2 (x - 3)$ 8) _____

A) $\left\{-\frac{7}{3}\right\}$

B) $\left\{\frac{16}{3}\right\}$

C) $\left\{-\frac{16}{3}\right\}$

D) $\left\{\frac{7}{3}\right\}$

9) $\log_{14} (x + 5) = 1 - \log_{14} x$ 9) _____

A) {-7}

B) {-2}

C) {2}

D) {7}

10) $\log 3x = \log 5 + \log (x - 2)$ 10) _____

A) {5}

B) {-5}

C) $\left\{\frac{3}{2}\right\}$

D) $\left\{-\frac{5}{4}\right\}$

11) $\log (x + 2) = \log (5x - 3)$ 11) _____

A) $\left\{\frac{1}{4}\right\}$

B) $\left\{\frac{5}{3}\right\}$

C) $\left\{\frac{5}{3}\right\}$

D) $\left\{-\frac{5}{4}\right\}$

Answer Key

Testname: 28_LOGARITHMIC EQUATIONS

- 1) A
- 2) B
- 3) D
- 4) B
- 5) B
- 6) B
- 7) B
- 8) B
- 9) C
- 10) A
- 11) B