

Exponential and Logarithmic Equations

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Solve the equation by expressing each side as a power of the same base and then equating exponents.

1) $4^{x+7} = 8^{x-2}$ 1) _____
A) {16} B) {9} C) {13} D) {20}

Solve the exponential equation. Use a calculator to obtain a decimal approximation, correct to two decimal places, for the solution.

2) $2^{x+6} = 7$ 2) _____
A) {1.13} B) {-0.23} C) {-3.19} D) {6.36}

3) $3(3x - 1) = 11$ 3) _____
A) {0.37} B) {1.56} C) {0.39} D) {1.06}

4) $e^{3x} = 7$ 4) _____
A) {0.65} B) {6.34} C) {0.16} D) {5.84}

Solve the equation.

5) $\log_6(x^2 - x) = 1$ 5) _____
A) {-2, -3} B) {-2, 3} C) {1, 6} D) {2, 3}

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.

6) $\log_4(x+5) + \log_4(x-1) = 2$ 6) _____
A) {3, -7} B) {4} C) {-7} D) {3}

7) $\log_3(x+2) - \log_3 x = 2$ 7) _____
A) {3} B) $\{\frac{1}{4}\}$ C) $\{\frac{2}{9}\}$ D) {4}

8) $\ln 2 + \ln(x-1) = 0$ 8) _____
A) {1} B) $\{\frac{2}{3}\}$ C) $\{\frac{1}{2}\}$ D) $\{\frac{3}{2}\}$

Solve the problem.

9) Find out how long it takes a \$3300 investment to double if it is invested at 8% compounded quarterly. Round to the nearest tenth of a year. Use the formula $A = P\left(1 + \frac{r}{n}\right)^{nt}$. 9) _____
A) 9.2 years B) 8.8 years C) 8.6 years D) 9 years

Answer Key

Testname: EXPONENTIAL AND LOGARITHMIC EQUATIONS

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