

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Convert to a logarithmic equation.

1) $7^3 = 343$

2) $e^2 = t$

3) $128^{1/7} = 2$

4) $4^{-2} = \frac{1}{16}$

5) $10^2 = 100$

Convert to an exponential equation.

6) $\log_8 64 = 2$

7) $\log_4 \left(\frac{1}{64} \right) = -3$

8) $\log_8 1 = 0$

9) $\ln 27 = 3.2958$

10) $\log_{16} 4 = \frac{1}{2}$

Evaluate the expression without a calculator.

11) $\log_3 9$

12) $\log_{18} 1$

13) $\log_{11} \sqrt{11}$

14) $\log 10,000$

15) $\ln e^4$

16) $\log_8(32)$

Solve the logarithmic equation.

17) $\log_6 x = 3$

18) $\ln x = 8$

Give your answer in exact form.

19) $\log x = 3$

20) $\log_4(4x - 4) = 2$

21) $\log_8 \sqrt{x - 3} = \frac{1}{3}$

Graph the function.

22) $y = \log_5 x$

23) $y = \log_{1/7} (x)$

24) $f(x) = \log_5 (x - 4)$

25) $f(x) = \log_3 (x) + 1$

Solve the problem.

26) How long will it take for the population of a certain country to double if its annual growth rate is 5.5%? Round to the nearest year.

27) If \$4000 is invested in an account that pays interest compounded continuously, how long will it take to grow to \$9100 at 4.25%?

28) Ben Franklin bequeathed \$4000.00 to the city of Boston in 1790. Assuming the fund grew to \$7 million in 200 years, find the interest rate compounded continuously that would yield this total value.