

Name _____ Per. _____ Date _____ Score _____

Unit 4 Worksheet

Evaluate or simplify each expression without a calculator.

1) $\log_5 \frac{1}{125}$

2) $\log_{1/2} 32$

3) $\log_3 \sqrt{3}$

4) $\log 1000$

Use Common Logarithms or Natural Logarithms and a calculator to evaluate to four decimal places.

5) $\log_5 17$

6) $\log_{1.2} 5.4$

Use the properties of logarithms to expand each logarithmic expression.

7) $\ln \left(\frac{x^3 y^2}{z^5} \right)$

8) $\log \left(\frac{y\sqrt{x^2+1}}{(x+1)^3} \right)$

Use the properties of logarithms to condense each logarithmic expression.

9) $\frac{1}{2} \log(x+5) - \frac{1}{3} \log x + \log(y+4)$

10) $\log_2(x-4) + 5 \log_2(x+1) - 3 \log_2(x^2-16)$

Solve. Find the exact answer.

11) $4^{x-3} = \left(\frac{1}{8} \right)^{x-1}$

12) $3 - e^{2x+1} = -7$

Solve. Find the exact answer.

13) $4^{x+3} - 7 = 5$

14) $\ln(x+7) - \ln(x+3) = \ln 8$

15) $\log_3(x+8) + \log_3 x = 2$

16) $7 - \ln(x-4) = 2$

17) The half-life of lead-210 is 22 years. If 50 grams are present now, how much will be present in 17 years?

18) Find the accumulated amount of an investment of \$9000 at 4% compounded monthly for 6 years.