Name_____ Date_____ Period_____

Day #56 Homework

Find the exact value x in each of the following logarithmic expressions **without the aid of a calculator**. Show your work by writing each as an exponential expression.

1. $\log_2 32 = x$	2. $\log_5 5 = x$	3. $\log_3 81 = x$	4. $\log_5 125 = x$
5. $\log 100 = x$	6. $\log 0.0001 = x$	7. $\log_4 4^{-2} = x$	8. $\log_2 2\sqrt[3]{2} = x$
9. $\log_2\left(4 \cdot 8^2\right) = x$	10. $\log_6 6 \cdot 6^{\frac{1}{2}} = x$	11. $\log_2\left(\frac{1}{8}\right) = x$	12. $\log_3\left(\frac{1}{81}\right) = x$

Given the logarithmic expression, (a) determine between which two integers that value should lie without using a calculator, with reasoning, and (b) the value to three decimal places using a calculator, showing your work.

13. $\log_3 5$	(a)	(b)
14. $\log_2 21$	(a)	(b)
15. $\log_5 156$	(a)	(b)

Solve each of the following equations. Round your answers to three decimal places, if necessary.

16. $\log_3(x+2)=2$	17. $\ln(x-3)=2$	18. $\log_9(x)=-1$
19. $\ln(2x+3)=3$	20. $\log_2(3x)=-3$	21. $\ln(x+2)=-2$