Name_____Date_____

Log Review 3

Simplify

1. $\log_2 64$
2. $\log 1000^{2x}$
3. $\ln \sqrt[3]{e}$
4. $5\log_3 27$
5. $\log_5 125^{(x-3)}$
6. $\frac{1}{2}\log_3 81$
7. $\ln 1$
8. $(x-3)e^{\ln 7}$
9. $\ln \frac{1}{e}$

Find x

10. $3 = \log_4 x$
11. $5 = \log_2 x$
12. $3a = \ln x$
13. $0 = \log x$
14. $1 = \log_{5.2} x$
15. $-1 = \log x$

Expand

16. $\ln\left(5x^3\sqrt{y}\right)$
17. $\log\left(\frac{100x^5}{y^3}\right)$

Condense to a single log

18. $\ln 5 - 2\ln x - \frac{1}{3}\ln y$
19. $\frac{1}{2}\log x + 5\log 2 - 3\log t$
20. $\log_5 Q + 3\log_5 R + \log_5 S$
21. $\log 5 + 4\log x - \log y$

Change to a common log

22. $\log_3 12$
23. $\ln 5$
24. $\log_{2.5} 1.75$

Solve the equation

25. $3^{(x-5)} = 81^{x}$

26. $\frac{1}{4}^{(x+7)} = \frac{1}{32}^{(5-x)}$

27. $e^{(x-3)} = 7$

28. $7^{2x-3} = 10,000$

State the domain and solve the equation.

29. $\ln\left(x^{2}\right) = 2$

30. $\log_{3}\left(x+6\right) + \log_{3} x = 3$

Graph

31. $y = 3^{x} - 2$

32. $y = \log_{5}\left(x+3\right)$