

Quiz Prep: Pre-Calculus

Exponential & Logarithmic Functions – Sections 4.3 – 4.5

You MAY NOT use a calculator on this assignment.

Find the exact value of each expression.

1. $\log_2 16$	2. $\log_{16} \frac{1}{2}$	3. $\log_{125} 5$	4. $\log_{16} 64$
5. $\ln e^{4.1}$	6. $\ln \sqrt[5]{e^3}$	7. $\log 0.0001$	8. $\log_{1000} 1$
9. $\log_{17} 17$	10. $\log_2 48 - \log_2 3$	11. $\log_7 4 + \log_7 3$	12. $2 \log 6 - \log 9$

True or False. (Please write a word as your answer.)

13. $\log_3 (6x^2) = 2 \log_3 (6x)$	14. $\log_7 42 = \frac{\ln 42}{\ln 7}$	15. $\log_8 \left(\frac{5}{x^3} \right) = \log_8 5 - 3 \log_8 x$
16. The value of $\log 0.7$ is between 0 and 1.	17. Logarithmic and exponential functions are opposites of each other.	18. Given: $f(x) = 4^x + 2$ and $f^{-1}(x) = \log_4 (x - 2)$ $D_{f^{-1}} = R_f = (2, \infty)$

Write the equation of the asymptote of each graph.

19. $f(x) = 5^{(x+3)}$	20. $g(x) = 9^x + 4$	21. $h(x) = \log_7(x + 8)$	22. $j(x) = \log_6 x + 10$
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State the domain of each log function.

23. $f(x) = \log_{\frac{1}{4}} (2x^2 - 3x - 9)$	24. $g(x) = \log_3 \frac{4x^2 - 1}{x^2 + 5x + 6}$
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State the range of each exponential function.

25. $f(x) = 7^x - 8$	26. $g(x) = -4^x + 5$
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27. Expand into a sum/difference of logs.

$$\ln\left(\frac{x^3\sqrt{x^2+1}}{x-3}\right), x > 3$$

28. Write the sum/difference as a single log.

$$-2\log_3\left(\frac{1}{x}\right) + \frac{1}{3}\log_3\sqrt{x}$$

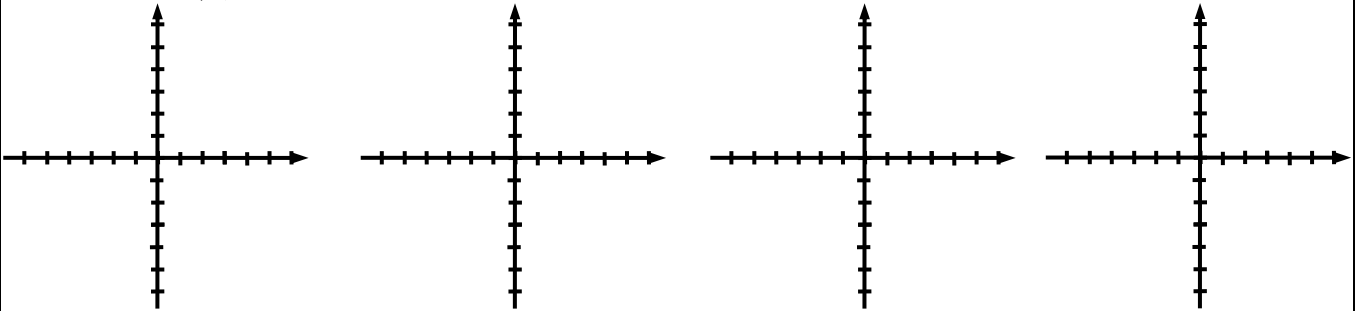
Solve.

29. $49^{2x} = 7^{x^2-45}$

30. $\log_x 125 = -3$

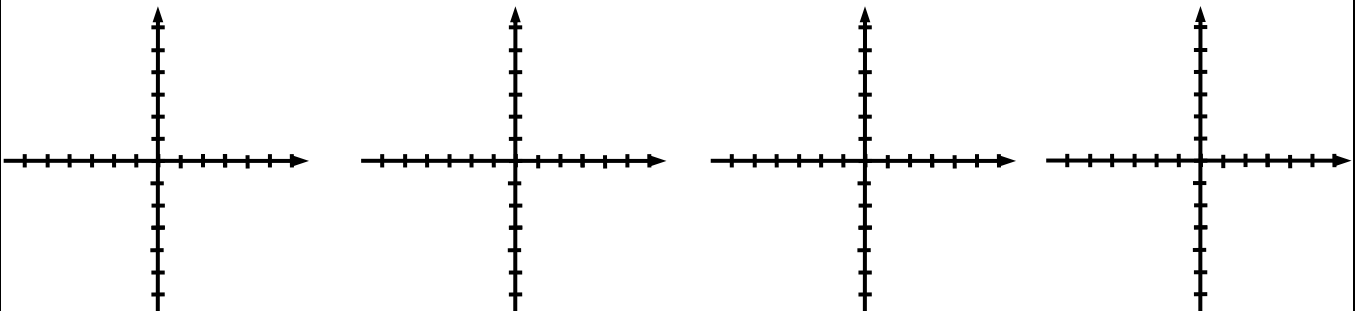
Graph.

31. $f(x) = -\left(\frac{1}{3}\right)^{x+2} + 4$



Domain: _____ Range: _____ Asymptote: _____

32. $g(x) = \log_4(x+3) - 2$



Domain: _____ Range: _____ Asymptote: _____