



NAME _____

DATE _____

PERIOD _____

Lesson 3: Chopping Logs

Ready, Set, Go



Ready

Rewrite the following expressions with an exponent instead of a radical.

1. $\sqrt[5]{x}$

2. $\sqrt[7]{s^2}$

3. $\sqrt[3]{w^8}$

4. $\sqrt[3]{8r^6}$

5. $\sqrt[5]{125m^5}$

6. $\sqrt[3]{(8x)^2}$

7. $\sqrt[3]{9b^8}$

8. $\sqrt{75x^6}$



Rewrite with a fractional exponent. Then evaluate.



NAME _____

DATE _____

PERIOD _____

9. $\log_3 \sqrt[5]{3} =$

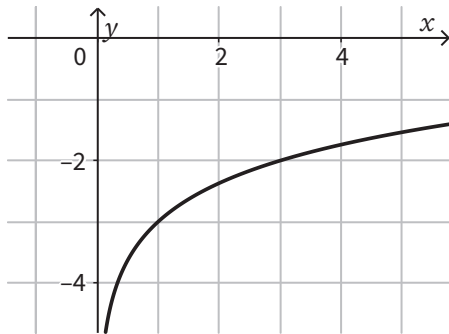
10. $\log_2 \sqrt[3]{4} =$

11. $\log_7 \sqrt[5]{343} =$

12. $\log_5 \sqrt[5]{3,125} =$

**Set**

13. Given $f(x) = \log_3 \frac{x}{27}$

Use the graph to write an equivalent function for $f(x)$.

14. Given $g(x) = \log_3 3x$

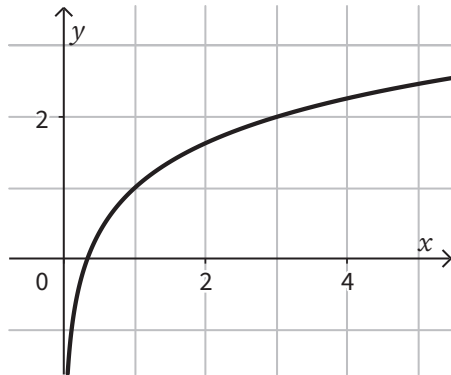
Use the graph to write an equivalent function for $g(x)$.



NAME _____

DATE _____

PERIOD _____



15. Given $h(x) = \log_{10} 40x$, select ALL of the functions that are equivalent. For each function that you select, show why it is equivalent to $h(x)$.

- A. $a(x) = \log_{10} x + \log_{10} 5 + \log_{10} 8$ C. $c(x) = \frac{\log_{10} 80x}{\log_{10} 2}$
B. $b(x) = \log_{10} x + \log_{10} 4 + 1$

16. Given $g(x) = \log_5 3x + 2$, select ALL of the functions that are equivalent. For each function that you selected, explain why it is equivalent to $g(x)$.

- A. $a(x) = \log_5 125 + \log_5 25x$ C. $c(x) = \log_5 9x - \log_5 3 + \log_5 \sqrt{625} + \log_5 1$
B. $b(x) = \log_5 75x$ D. $d(x) = \log_5 50 + \log_5 36x - \log_5 4 - \log_5 3 - \log_5 2$



Convert to logarithmic form.

17. $2^9 = 512$

18. $10^{-2} = 0.01$

19. $\left(\frac{2}{3}\right)^{-1} = \frac{3}{2}$



NAME

DATE

PERIOD



Write in exponential form.

20. $\log_4 2 = \frac{1}{2}$

21. $\log_{\frac{1}{3}} 3 = -1$

22. $\log_{\frac{2}{5}} \frac{8}{125} = 3$