NAME DATE PERIOD

Lesson 2: Falling Off a Log

Ready, Set, Go

Ready

Evaluate each logarithm.

1. $\log_5 625 =$

2. $\log_3 243 =$

3. $\log_5 0.2 =$

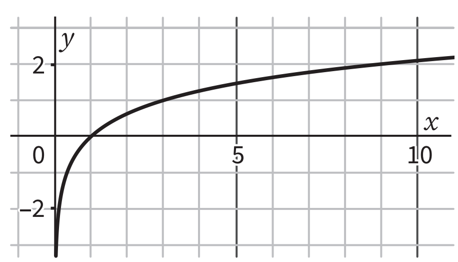
4. $\log_9 81 =$

5. $\log 1{,}000{,}000 =$

6. $\log_x x^7 =$

Set

7. The graph of $f(x) = \log_3 x$ is shown. Which point on the graph tells you the base of the logarithm?



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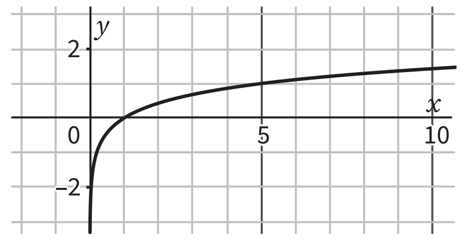
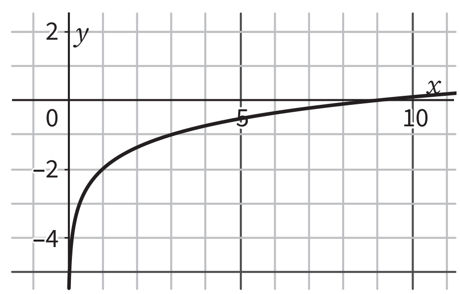
8. The graph of $g(x) = \log_5 x$ is shown. Which point on the graph tells you the base of the logarithm?

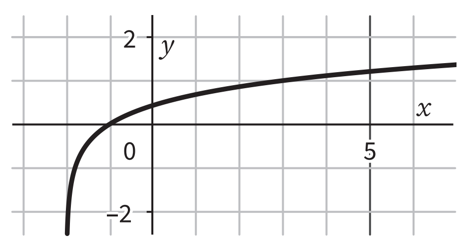


9. Explain why the graphs of both logarithmic functions with different bases contain the point $(1, 0)$.

10. The graph shows a logarithmic function that has been transformed. Write the function for this graph.



11. The graph shows a logarithmic function that has been transformed. Write the function for this graph.



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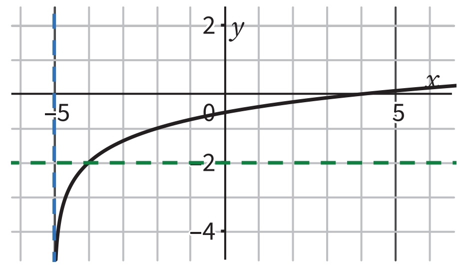
12. The graph shows a logarithmic function that has been translated vertically and horizontally. Write the function for this graph.

(The dotted lines are the transformed axes that could help you write the equation.)



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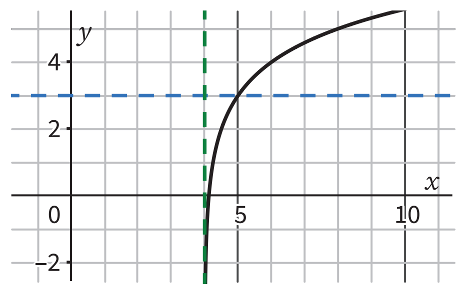

Go

Rewrite each expression. Answers should have only positive exponents.

14. $\left(2^3\right)^4$

15. $\left(x^3\right)^2$

16. $\left(a^3\right)^{-2}$

17. $\left(2^3 w\right)^4$

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18. $\left(b^{-7}\right)^{3}$

19. $\left(d^{-3}\right)^{-2}$

20. $x^{2} \cdot \left(x^{5}\right)^{2}$

21. $m^{-3} \cdot \left(m^{2}\right)^{3}$

22. $\left(x^{5}\right)^{-4} \cdot x^{25}$

23. $\left(5a^{3}\right)^{2}$

24. $\left(6^{-3}\right)^{2}$

25. $\left(2a^{3}b^{2}\right)^{2}$