

All Work Should Be Done on a Separate Sheet of Paper (except graphs)

For each of the following exponential functions below: a. identify the initial value, b. tell if the function is increasing or decreasing, and c. tell the percent of increase or decrease.

1. $y = 43(1.72)^t$

2. $g(t) = 341 \cdot 0.72^t$

3. $B(t) = 43 \cdot 1.015^t$

Evaluate each of the following.

4. $\log_2 64$

5. $\log_3 \frac{1}{27}$

6. $\log 1000$

Solve each of the following.

7. $\log_3 x = 5$

8. $\log_x 625 = 4$

9. $\log_7 343 = x$

Use the three log properties and expand the following as much as possible.

10. $\log_m \left(\frac{x^6 \sqrt{y}}{\sqrt[5]{z}} \right)$

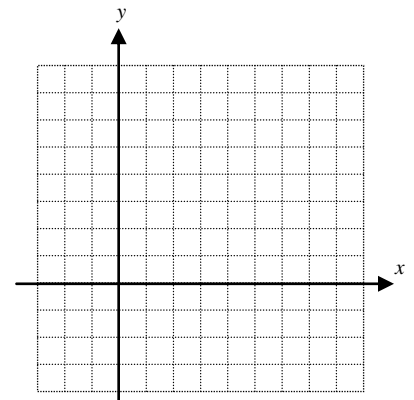
11. $\log_m \left(\frac{\sqrt[3]{x^2}}{y^4 z^5} \right)$

Write as a single logarithm.

12. $2\log_m x + \frac{1}{2}\log_m y - 7\log_m z$

14. Graph $y = \log_2 x$.

13. $\frac{1}{2}\log x - 5\log y - \frac{3}{2}\log z$



Find the value of x in each of the following equations.

15. $\log_5 6 + \log_5 (x+2) = \log_5 48$

16. $\log(x-5) - \log 4 = \log 15$

17. $\frac{2}{3}\log_4 27 + 2\log_4 6 = \log_4 x$

18. $\log_5 (x-14) = 2$

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

20. $\log(x+15) - \log(x+3) = \log(x-7)$

Find the value of x each of the following. Round your answer to the nearest hundredth, where appropriate.

21. $\log_3 8 = x$

22. $2^{x^2+2x} = \frac{1}{2}$

23. $4^x = 12$

24. $\log_5 17 = 2x$

25. $14^{x+1} = 283$

26. $49^x = 343^{x-1}$

27. $x = \log_{11} 7$

26. $4^{8x^2-4x} = 8$

27. $16^{4x+2} = \left(\frac{1}{64}\right)^{x+1}$