



Rewrite in Logarithmic and Exponential Form

Rewrite each logarithm in exponential form.

1. $\log_2 16 = 4$

2. $\log 100 = 2$

3. $5 = \log_3 243$

Rewrite each exponential in logarithmic form.

4. $5^2 = 25$

5. $6561 = 9^4$

6. $3^3 = 27$

Evaluate Logarithms

Evaluate each logarithm. Round to two decimal places.

7. $\log_3 68$

8. $\log 66$

9. $\ln 17$

Solve Logarithmic Equations

Solve each logarithmic equation. Apply properties as needed!

10. $\log_3 x = 3$

$x = 125$

11. $\log_6(4x + 12) = 3$

$x = 51$

12. $\log_4(8x + 3) = \log_4(2x + 15)$

$x = 2$

13. $\log_3(x + 5) + \log_3 4 = 6$

$x = 177.25$

14. $\log_9 8x^3 - \log_9 2x^2 = 1$

$x = 2.25$



Solve Exponential Equations

Solve each exponential equation.

15. $6^x = 19$

$x = 1.64$

16. $7 \cdot 19^{4x} + 20 = 300$

$x = .31$

17. $5^{x-3} = 18$

$x = 4.80$

18. $e^{4x-5} = 3$

$x = 1.52$

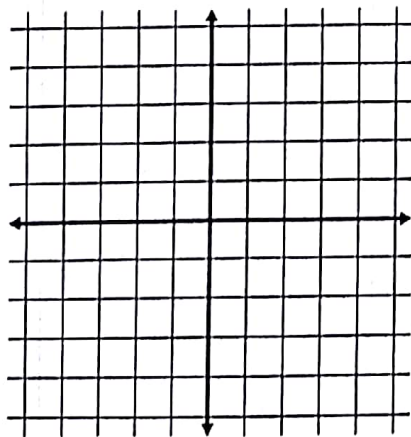
19. $.037 = 9^{7x-2}$

$x = .07$

Graphs of Exponential Functions

Graph each exponential function. State the domain, range, and asymptote.

20. $f(x) = 2^x - 4$

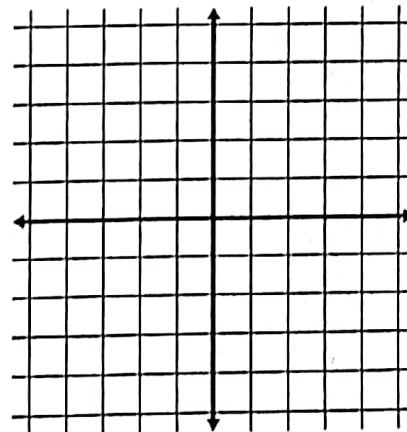


domain:

range:

asymptote:

21. $f(x) = \frac{1}{3} \cdot 3^x$



domain:

range:

asymptote:

Growth and Decay



22. In 1990, there were 2458 students who successfully completed Math 3. If the success rate for completing Math 3 increases by 2% each year, how many years will it take before 2728 students successfully complete Math 3?

5.26 years

23. A population of bumblebees increases every year by 45%. There are currently 50,000 bumblebees in the population. How many bumblebees were in the population 19 years earlier?

430 bumblebees

24. On Monday, your teacher gives you a list of twenty words to be memorized. You memorize all of them Monday night and do not look at the list again. If you forget 3% of the list each day, how many words will you remember 3 days later?

18 words

Compound Interest

25. Find the amount owed at the end of 4 years if \$4700 is loaned at a rate of 10% interest compounded semiannually.

\$6944.04

26. What amount will an account have after 10 years if \$1000 is invested at 7.5% interest compounded continuously?

\$264.63

27. Determine the amount that must be invested at 7% interest compounded monthly, so that \$400,000 will be available for retirement in 10 years.

\$199,038.51

28. What amount invested at 6% interest compounded continuously for 4 years will yield \$700?

\$550.64

29. How long does it take \$700 to double if it is invested at 5% interest compounded quarterly?

13.95 years

30. If \$600 is invested at 4% interest compounded continuously, how long will it take before the amount is \$900?

10.14 years