

3x + 5 = x - 3

2x = 8

x = 4

17. 3^2 = 2x - 1

9 + 1 = 2x

10/2 = 5 = x

Solve the equation. Check for extraneous solutions.

16. 10^{x-5} = 10^{x-3}

17. log_8(2x - 1) = 2

18. 4x + 1 = 2x + 7

18. log_5(4x + 1) = log_5(2x + 7)

x = 2

20. Tell whether the function $f(x) = 4(\frac{3}{2})^x$ represents exponential growth or exponential decay.

29. Car Depreciation The value of a new car purchased for \$20,000 decreases by 10% per year. Write an exponential decay model for the value of the car. Use the model to estimate the value after one year.

$A = 20,000(1 - .10)^t$

30. Earning Interest You deposit \$1000 in an account that pays 6% annual interest compounded continuously. Find the balance at the end of 2 years.

$A = 1000e^{(.06)(2)} \approx 118,000$

Rewrite the equation in exponential form.

31. $\log_2 8 = 3$

$2^3 = 8$

Rewrite in logarithmic form.

35. $e^x = 9$

$\ln 9 = x$

34. $4^{2x} = 8$

$\log_4(8) = 2x$

36. How long will it take \$10,000 to become \$12,000 if placed in an account that pays 5% interest compounded monthly?

36. $A = 10,000(1 + \frac{.05}{12})^{12t}$

calc intersection of $y_1 = 10000(1 + .05/12)$
 $y_2 = 12000$

option 1

37. Identify which type of function best fits the data linear, quadratic, exponential, logarithmic. Write the equation that best fits and find the specified value.

exponential $y = 5^x$

X	F(x)
1	5
2	25
3	125
4	625
5	3125

b. $f(7) = 5^7 =$

X	F(x)
11	1
121	2
1331	3
14641	4
161051	5

F(1771561) =

Solve.

$$37. 3^{2x+6} = 9^{5x}$$

$$3^{2x+6} = 3^{2(5x)}$$

$$2x+6 = 10x$$

$$6 = 8x$$

$$x = \frac{6}{8} = \frac{3}{4}$$

$$x = 1 - \frac{\log 9}{\log 5}$$

$$\log 9 = \log 5^{x+1}$$

$$\log 9 = (x+1) \log 5$$

$$\log 9 = \log 5^{x+1}$$

$$9 = 5^{x+1}$$

$$38. 8 = 5^{x+1} - 1$$

$$39. \log_3 5x = 2$$

$$x = \frac{5}{9}$$

$$9 = 5x$$

$$3^2 = 5x$$

exponential in X means logarithmic in y
 $y = \log_{11} x$

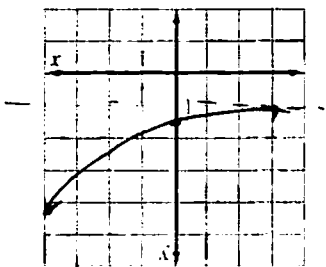
Graph the function. State the domain and range. And asymptote equation and y intercept

(y-int only for exponential)

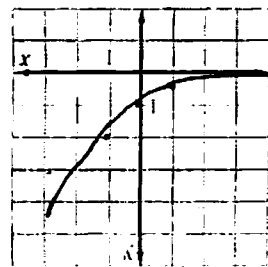
$x=0 \quad y = 2^{-1} + 1 = 3/2$

$x \in \mathbb{R}$
 $y > 1$
 $y = 1$
 $(0, 3/2)$

$x > 0$
 $y \in \mathbb{R}$
 $x = 0$

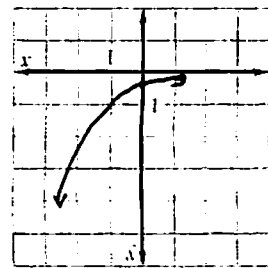


2. $y = 2^{x-1} + 1$



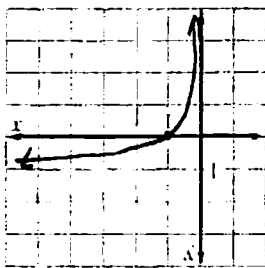
1. $y = 2^x$

$x \in \mathbb{R}$
 $y > 0$
 $y = 0$
 $(0, 1)$



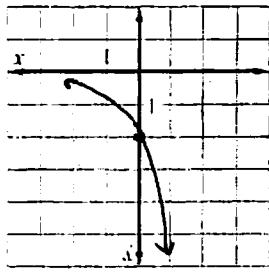
3. $y = \frac{3}{e^x}$

$x \in \mathbb{R}$
 $y > 0$
 $y = 0$
 $(0, 1/3)$

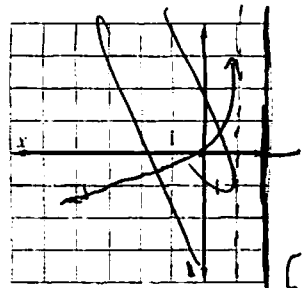


4. $y = \log x$

$x \in \mathbb{R}$
 $y > 0$
 $y = 0$
 $(0, 1)$



6. $y = 2e^{-x}$



5. $y = \ln(x-1)$

$x > 1$

Simplify the expression.

7. $(e^3)(e^2) = e^5$

8. $(3e)(e^{-2}) = 3/e$

9. $\log 10,000 = 4$

10. $\log_3 27 = 3$

11. $\frac{e^3}{e^2} \cdot \frac{e}{e^3} = -3$

Evaluate the expression without using a calculator.

12. $\log_2 0.5$

13. $\log_{1/2} 4$

14. $\log_3 1$

15. $\ln e^1 = 1$

$2^x = 1/2$

$1/2^x = 4$

$2^x = 2$

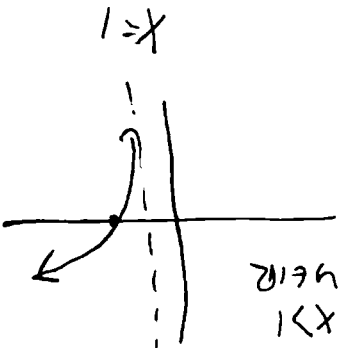
$2^{-x} = 2$

$x = -2$

$x = -1$

$x = 0$

$3^x = 1$



(5)