

# Free read Section 6 3 logarithmic functions

## logarithmic functions a [PDF]

free logarithms calculator simplify logarithmic expressions using algebraic rules step by step therefore the equation  $\log_6 6^{1/2}$  is equivalent to  $\frac{1}{2}$   $\log_3 9^2$  here  $b=3$ ,  $y=2$  and  $x=9$  step 1 enter the logarithmic expression below which you want to simplify the logarithm calculator simplifies the given logarithmic expression by using the laws of logarithms step 2 click the blue arrow to submit choose simplify condense from the topic selector and click to see the result in our algebra calculator examples simplify condense find the logarithm with base 10 of the number 100  $\lg 100$  2 find the logarithm with base 10 of the number 2  $\lg 2$  0.30103 divide these values by one another  $\lg 100 / \lg 2$  0.30103 6.644 you can also skip steps 3 5 and input the number and base directly into the log calculator a scientific calculator generally always has an  $\ln$  natural logarithm or  $\log$  base  $e$  key from the change of base theorem  $\log_a b = \frac{\ln b}{\ln a}$  for example you can calculate  $\log_3 5$  by calculating  $\ln 5 / \ln 3$  which should give approximately 1.465 learn about the properties of logarithms and how to use them to rewrite logarithmic expressions for example expand  $\log_2 3a$  these properties apply for any values of  $m$ ,  $n$  and  $b$  for which each logarithm is defined which is  $m, n > 0$  and  $0 < b \neq 1$  in mathematics the logarithm is the inverse function to exponentiation that means that the logarithm of a number  $x$  to the base  $b$  is the exponent to which  $b$  must be raised to produce  $x$  for example since  $1000 = 10^3$  the logarithm base 10 of 1000 is 3 or  $\log_{10} 1000 = 3$   $\log_2 64$  since  $2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$  that's a log with base 2  $\log_2 327$  3 since  $3^3 = 3 \times 3 \times 3 = 27$  that's a log with base 3  $\log_{10} 1000 = 3$  since  $10^3 = 10 \times 10 \times 10 = 1000$  that's a log with base 10 applications of logarithms  $\log_3 3 \times 6$   $\log_3 22 \times 6$   $\log_3 3$   $\log_3 22 \times 6$   $\log_3 22 \times 8$  81359 note if you don't have a calculator that can handle alternative bases of logs you can use the change of base property  $\log_3 22 = \frac{\ln 22}{\ln 3}$   $\log_b x = y$  here  $b$  is the base number  $x$  is the argument or number whose logarithm we want to find and  $y$  is the exponent for example consider the equation  $10^3 = 1000$  in this equation the base  $b$  is 10 while the exponent  $y$  is 3 and the result 1000 is the argument  $x$  definition of a logarithmic function let  $b$  be a positive number but  $b \neq 1$  we say  $\log_b m = n$  read as log of base  $b$  of  $m$  is  $n$  is defined as  $\log_b m = n \iff b^n = m$   $\log$  calculator finds the logarithm function result can be called exponent from the given base number and a real number  $\log_b x = y$   $\log$  base number  $b > 0$  and  $b \neq 1$ ,  $x$  is real number  $x > 0$   $\log_b x = y$  and  $x = \log_b x$  by logarithm is considered to be one of the basic concepts in mathematics solution first identify the values of  $b$ ,  $y$  and  $x$  then write the equation in the form  $b^y = x$   $\log_6 \sqrt{6}$   $\frac{1}{2}$  here  $b=6$ ,  $y=\frac{1}{2}$  and  $x=\sqrt{6}$  therefore the equation  $\log_6 \sqrt{6} = \frac{1}{2}$  is equivalent to  $\frac{1}{2}$  logarithmic functions learning objectives in this section you will convert from logarithmic to exponential form convert from exponential to logarithmic form evaluate logarithms use common logarithms use natural logarithms figure 1 devastation of march 11 2011 earthquake in honshu japan credit daniel pierce the answer is 2 because  $5^{2.25} = 25$  in other words  $\log_5 25 = 2.25$  question 2  $\log_2 16$  means what power of 2 gives 16 show answer so  $\log_a x$  exact form  $\log_6 1/3$   $\log_6 1/3$  decimal form 0.25938375 0.25938375 free math problem solver answers your algebra geometry trigonometry calculus and statistics homework questions with step by step explanations just like a math tutor get detailed solutions to your math problems with our logarithmic equations step by step calculator practice your math skills and learn step by step with our math solver check out all of our online calculators here type a math problem or question go math mode text mode 2  $e$   $\pi$   $\ln$   $\log$   $\lim$   $d/dx$   $d/dx$   $\log_7 64$   $\log_7 8$  2  $\log_7 4$  3  $\log_7 2$  6 applying the power property of logarithms we get  $\log_7 64 = 2 \log_7 8$  3  $\log_7 4$  6  $\log_7 2$  note how the first two decompositions can be worked further after all  $8 = 2^3$  and  $4 = 2^2$  so  $\log_7 8 = \log_7 2^3 = 3 \log_7 2$  and  $\log_7 4 = \log_7 2^2 = 2 \log_7 2$  home bookshelves algebra and trigonometry 1e openstax 6 exponential and logarithmic functions 6.3 logarithmic functions expand collapse global location 6.3e logarithmic functions exercises page id openstax table of contents no headers apr 15 2024 logarithm the exponent or power to which a base must be raised to yield a given number expressed mathematically  $x$  is the logarithm of  $n$  to the base  $b$  if  $b^x = n$  in which case one writes  $x = \log_b n$  for example  $2^3 = 8$  therefore 3 is the logarithm of 8 to base 2 or  $\log_2 8$

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therefore the equation  $\log_6 6^{\frac{1}{2}} \log_6 6^{\frac{1}{2}}$  is equivalent to  $6^{\frac{1}{2}} 6^{\frac{1}{2}} 6 \log_3 9^{\frac{1}{2}} \log_3 9^{\frac{1}{2}}$  here  $b = 3$   $y = 2$  and  $x = 9$   $b = 3$   $y = 2$  and  $x = 9$

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step 1 enter the logarithmic expression below which you want to simplify the logarithm calculator simplifies the given logarithmic expression by using the laws of logarithms step 2 click the blue arrow to submit choose simplify condense from the topic selector and click to see the result in our algebra calculator examples simplify condense

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find the logarithm with base 10 of the number 100  $\lg 100 = 2$  find the logarithm with base 10 of the number 2  $\lg 2 = 0.30103$  divide these values by one another  $\lg 100 / \lg 2 = 2 / 0.30103 = 6.644$  you can also skip steps 3 5 and input the number and base directly into the log calculator

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a scientific calculator generally always has an  $\ln$  natural logarithm or  $\log$  base  $e$  key from the change of base theorem  $\log_a b = \frac{\ln b}{\ln a}$  for example you can calculate  $\log_3 5$  by calculating  $\frac{\ln 5}{\ln 3}$  which should give approximately 1.465

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learn about the properties of logarithms and how to use them to rewrite logarithmic expressions for example  $\log_2 3a$  these properties apply for any values of  $m$   $n$  and  $b$  for which each logarithm is defined which is  $m, n \geq 0$  and  $0 < b \neq 1$

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in mathematics the logarithm is the inverse function to exponentiation that means that the logarithm of a number  $x$  to the base  $b$  is the exponent to which  $b$  must be raised to produce  $x$  for example since  $1000 = 10^3$  the logarithm base 10 of 1000 is 3 or  $\log_{10} 1000 = 3$

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$\log_2 64 = 6$  since  $2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$  that's a log with base 2  $\log_3 27 = 3$  since  $3^3 = 3 \times 3 \times 3 = 27$  that's a log with base 3  $\log_{10} 1000 = 3$  since  $10^3 = 10 \times 10 \times 10 = 1000$  that's a log with base 10 applications of logarithms

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$\log_3 3 \times 6 \log_3 22 \times 6 \log_3 3 \log_3 22 \times 6 \log_3 22 \times 8$  81359 note if you don t have a calculator that can handle alternative bases of logs you can use the change of base property  $\log_3 22 = \frac{\ln 22}{\ln 3}$

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$\log_b x = y$  here b is the base number x is the argument or number whose logarithm we want to find and y is the exponent for example consider the equation  $10^3 = 1000$  in this equation the base b is 10 while the exponent y is 3 and the result 1000 is the argument x

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definition of a logarithmic function let  $b$  a positive number but  $b \neq 1$  we say  $\log_b m = n$  read as log of base b of m is n is defined as  $\log_b m = n \iff b^n = m$

***logarithm calculator log x***

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log calculator finds the logarithm function result can be called exponent from the given base number and a real number  $\log_b x = y$   $b^y = \log$  base number b 0 and b 1 x is real number x 0  $\log_b x = y$  and  $x = \log_b b^y$  and x by logarithm is considered to be one of the basic concepts in mathematics

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solution first identify the values of b y and x then write the equation in the form  $b^y = x$   $\log_6 \sqrt{6} = \frac{1}{2}$  here  $b = 6$   $y = \frac{1}{2}$  and  $x = \sqrt{6}$  therefore the equation  $\log_6 \sqrt{6} = \frac{1}{2}$  is equivalent to

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6 3 logarithmic functions learning objectives in this section you will convert from logarithmic to exponential form convert from exponential to logarithmic form evaluate logarithms use common logarithms use natural logarithms figure 1 devastation of march 11 2011 earthquake in honshu japan credit daniel pierce

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the answer is 2 because  $5^2 = 25$  in other words  $\log_5 25 = 2$  question 2  $\log_2 16$  means what power of 2 gives 16 show answer so  $\log_a x$

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$\log_7 64 \log_7 8^2 \log_7 4^3 \log_7 2^6$  applying the power property of logarithms we get  $\log_7 64^2 \log_7 8^3 \log_7 4^6 \log_7 2$  note how the first two decompositions can be worked further after all  $8^2 = 3$  and  $4^2 = 2$  so  $\log_7 8 \log_7 2^3 \log_7 2$  and  $\log_7 4 \log_7 2^2$

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apr 15 2024 logarithm the exponent or power to which a base must be raised to yield a given number expressed mathematically  $x$  is the logarithm of  $n$  to the base  $b$  if  $b^x = n$  in which case one writes  $x = \log_b n$  for example  $2^3 = 8$  therefore 3 is the logarithm of 8 to base 2 or  $3 = \log_2 8$

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