

MATH 34A EXPONENTS AND LOGARITHMS

What does the expression $\log_b a$ mean?

Using this definition, find the following without using a calculator.

1. $\log_3 27 =$

2. $\log_{10} 10000 =$

3. $\log_6 \sqrt{6} =$

4. $\log_2 \left(\frac{1}{8}\right) =$

5. $\log_{\frac{1}{5}}(25) =$

6. $\log_2 2 =$

??? $\log_{10} 0$

??? $\log_{10}(-4)$

Rules on exponents and logarithms

1. Multiplication \leftrightarrow Addition

2. Division \leftrightarrow Subtraction

3. The “Power rule”

Warning: What is wrong with this?

$$\log(4x^9) = 9 \log(4x)$$

Solving equations using log

1. $2^x = 5^x$

2. $4^{x+1} = 7^{3x-4}$