

What happens if we can't set the bases equal to solve exponential equations?

Introducing Logarithms

a logarithm is an exponent!

New Vocabulary – New Notation

$5^2 = 25$ written as a logarithm is $\log_5 25 = 2$

We say, the log of 25 with base 5 is 2

If a denotes any positive number and b any real number, except 1, then there is a unique real number n , called the logarithm of a with base b , written $\log_b a$, which is the exponent in the power of b that equals a .

Written mathematically

$$\log_b a = n \text{ if and only if } a = b^n$$

Example: Rewrite 3^4 as a logarithm.

Example: Rewrite 10^2 as a logarithm.

Example: Rewrite 4^3 as a logarithm.