





# Ch 20 The logarithm function (C)

## Intro to logarithms

  $y = a^x$  and  $\log_a y = x$  are equivalent.


- **base:** can be any positive number other than 1


## Calculating logarithms to any base

  $\log_a X = \frac{\log_{10} X}{\log_{10} a} \quad \log_a X = \frac{\ln_{10} X}{\ln_{10} a}$

  $\log_a a = 1$

## Laws of logarithms

  $\log A + \log B = \log AB$

  $\log A - \log B = \log \frac{A}{B}$

  $\log 1 = 0$

  $n \log A = \log A^n$