

## Precalculus

# Logarithm notation and the infamous notation $\log x$

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- $\log$  and  $\ln$  have different domains but else coincide:  $\ln$  is defined for positive reals, and  $\log$  - for non-zero complex.



- *In the present course we shall abstain from using the notation  $\log x$ .*
- *When we need logarithms base 10 we will always write  $\log_{10}$ .*
- Within this course, we request that the student abstain from using  $\log x$  and use instead the unambiguous  $\log_{10} x$ .
- Outside of this course, we recommend that the student continue avoiding the notation  $\log$ .
- Should our recommendation contradict the commonly accepted conventions in the field of study of the student, we expect the student to honor the conventions of their fields of study.

# Summary of logarithm notation conventions

|                | Name              | ISO notation   | Other notation                              | Used in   |
|----------------|-------------------|----------------|---|---|
| $\log_2(x)$    | binary logarithm  | $\text{lb}(x)$ | $\text{ld}(x)$ , $\log(x)$ , $\text{lg}(x)$ | computer science, information theory, music theory, photography                             |
| $\log_e(x)$    | natural logarithm | $\ln(x)$       | $\log(x)$                                   | mathematics, physics, chemistry, statistics, economics, information theory, and engineering |
| $\log_{10}(x)$ | common logarithm  | $\text{lg}(x)$ | $\log(x)$                                   | various engineering, logarithm tables, handheld calculators, spectroscopy                   |

Table source: Wikipedia

- Standardized in ISO\_31-11 (International Standards Organization).