

**NAME**

**log, logf, logl, log10, log10f, log10l, log2, log2f, log2l, log1p, log1pf, log1pl** - logarithm functions

**LIBRARY**

Math Library (libm, -lm)

**SYNOPSIS**

**#include <math.h>**

*double*

**log(double x);**

*float*

**logf(float x);**

*long double*

**logl(long double x);**

*double*

**log10(double x);**

*float*

**log10f(float x);**

*long double*

**log10l(long double x);**

*double*

**log2(double x);**

*float*

**log2f(float x);**

*long double*

**log2l(long double x);**

*double*

**log1p(double x);**

*float*

**log1pf**(float *x*);

*long double*

**log1pl**(*long double x*);

## DESCRIPTION

The **log**(), **logf**(), and **logl**() functions compute the natural logarithm of *x*.

The **log10**(), **log10f**(), and **log10l**() functions compute the logarithm base 10 of *x*, while **log2**(), **log2f**(), and **log2l**() compute the logarithm base 2 of *x*.

The **log1p**(), **log1pf**(), and **log1pl**() functions compute the natural logarithm of 1 + *x*. Computing the natural logarithm as  $\log_1 p(x)$  is more accurate than computing it as  $\log(1 + x)$  when *x* is close to zero.

## RETURN VALUES

These functions return the requested logarithm; the logarithm of 1 is +0. An attempt to take the logarithm of +0 results in a divide-by-zero exception, and -infinity is returned. Otherwise, attempting to take the logarithm of a negative number results in an invalid exception and a return value of NaN.

## SEE ALSO

`exp(3)`, `ilogb(3)`, `math(3)`, `pow(3)`

## STANDARDS

The **log**(), **logf**(), **logl**(), **log10**(), **log10f**(), **log10l**(), **log2**(), **log2f**(), **log2l**(), **log1p**(), **log1pf**(), and **log1pl**() functions conform to ISO/IEC 9899:1999 ("ISO C99").

## HISTORY

The **log**() function first appeared in Version 1 AT&T UNIX; **log10**() in Version 7 AT&T UNIX; **log1p**() in 4.3BSD.