NAME

acosh, acoshf, acoshl − inverse hyperbolic cosine function

SYNOPSIS

#include <math.h>

double acosh(double *x***);**
float acoshf(float *x***);**
long double acoshl(long double *x***);**

Link with *−lm*.

Feature Test Macro Requirements for glibc (see feature_test_macros(7)):

acosh():
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L || _XOPEN_SOURCE >= 500 || /* Since glibc 2.19: */ _DEFAULT_SOURCE || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

acoshf(), **acoshl**():
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L || /* Since glibc 2.19: */ _DEFAULT_SOURCE || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

DESCRIPTION

These functions calculate the inverse hyperbolic cosine of *x*; that is the value whose hyperbolic cosine is *x*.

RETURN VALUE

On success, these functions return the inverse hyperbolic cosine of *x*.

If *x* is a NaN, a NaN is returned.

If *x* is +1, +0 is returned.

If *x* is positive infinity, positive infinity is returned.

If *x* is less than 1, a domain error occurs, and the functions return a NaN.

ERRORS

See math_error(7) for information on how to determine whether an error has occurred when calling these functions.

The following errors can occur:

Domain error: *x* is less than 1
errno is set to **EDOM**. An invalid floating-point exception (**FE_INVALID**) is raised.

ATTRIBUTES

For an explanation of the terms used in this section, see attributes(7).

Interface	Attribute	Value
acosh(), **acoshf**(), **acoshl**()	Thread safety	MT-Safe

CONFORMING TO

C99, POSIX.1-2001, POSIX.1-2008.

The variant returning *double* also conforms to SVr4, 4.3BSD.

SEE ALSO

asinh(3), atanh(3), cacosh(3), cosh(3), sinh(3), tanh(3)

COLOPHON

This page is part of release 4.16 of the Linux *man-pages* project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at https://www.kernel.org/doc/man−pages/.