ACOSH(3)

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():

_BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 500 || _XOPEN_SOURCE && _XOPEN_SOURCE_EXTENDED || _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L;

or cc -std=c99

acoshf(), **acoshl**():

_BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L;

or cc -std=c99

DESCRIPTION

The **acosh**() function calculates 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.

CONFORMING TO

C99, POSIX.1-2001. The variant returning double also conforms to SVr4, 4.3BSD, C89.

SEE ALSO

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

COLOPHON

This page is part of release 3.54 of the Linux man-pages project. A description of the project, and information about reporting bugs, can be found at http://www.kernel.org/doc/man-pages/.

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