

ACOSH(3)

ACOSH(3) Linux Programmer's Manual 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 \underline{x} ; that is the value whose hyperbolic cosine is \underline{x} .

RETURN VALUE

On success, these functions return the inverse hyperbolic cosine of \underline{x} .

If \underline{x} is a NaN, a NaN is returned.

If \underline{x} is +1, +0 is returned.

If \underline{x} is positive infinity, positive infinity is returned.

If \underline{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: \underline{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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