

NAME

acos, acosf, acosl – arc cosine function

LIBRARY

Math library (*libm*, *-lm*)

SYNOPSIS

```
#include <math.h>
```

```
double acos(double x);
```

```
float acosf(float x);
```

```
long double acosl(long double x);
```

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

```
acosf(), acosl():
```

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
```

```
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
```

```
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions calculate the arc cosine of x ; that is the value whose cosine is x .

RETURN VALUE

On success, these functions return the arc cosine of x in radians; the return value is in the range $[0, \pi]$.

If x is a NaN, a NaN is returned.

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

If x is positive infinity or negative infinity, a domain error occurs, and a NaN is returned.

If x is outside the range $[-1, 1]$, a domain error occurs, and a NaN is returned.

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 outside the range $[-1, 1]$

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
acos(), acosf(), acosl()	Thread safety	MT-Safe

STANDARDS

C11, POSIX.1-2008.

HISTORY

C99, POSIX.1-2001.

The variant returning *double* also conforms to C89, SVr4, 4.3BSD.

SEE ALSO

asin(3), **atan(3)**, **atan2(3)**, **cacos(3)**, **cos(3)**, **sin(3)**, **tan(3)**