

**NAME**

acos, acosf, acosl – arc cosine function

**SYNOPSIS**

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

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

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

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

Link with `-lm`.

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 versions <= 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
<code>acos()</code> , <code>acosf()</code> , <code>acosl()</code>	Thread safety	MT-Safe

**CONFORMING TO**

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

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

**SEE ALSO**

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

**COLOPHON**

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