

**NAME**

hypot, hypotf, hypotl - Euclidean distance function

**SYNOPSIS**

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

```
double hypot(double x, double y);
```

```
float hypotf(float x, float y);
```

```
long double hypotl(long double x, long double y);
```

Link with *-lm*.

Feature Test Macro Requirements for glibc (see [feature\\_test\\_macros\(7\)](#)):

**hypot()**:

```
_BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE || _ISOC99_SOURCE ||
```

```
_POSIX_C_SOURCE >= 200112L;
```

```
or cc -std=c99
```

**hypotf()**, **hypotl()**:

```
_BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE ||
```

```
_POSIX_C_SOURCE >= 200112L;
```

```
or cc -std=c99
```

**DESCRIPTION**

The **hypot()** function returns  $\sqrt{x^2+y^2}$ . This is the length of the hypotenuse of a right-angled triangle with sides of length  $x$  and  $y$ , or the distance of the point  $(x,y)$  from the origin.

The calculation is performed without undue overflow or underflow during the intermediate steps of the calculation.

**RETURN VALUE**

On success, these functions return the length of a right-angled triangle with sides of length  $x$  and  $y$ .

If  $x$  or  $y$  is an infinity, positive infinity is returned.

If  $x$  or  $y$  is a NaN, and the other argument is not an infinity, a NaN is returned.

If the result overflows, a range error occurs, and the functions return **HUGE\_VAL**, **HUGE\_VALF**, or **HUGE\_VALL**, respectively.

If both arguments are subnormal, and the result is subnormal, a range error occurs, and the correct result 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:

Range error: result overflow

*errno* is set to **ERANGE**. An overflow floating-point exception (**FE\_OVERFLOW**) is raised.

Range error: result underflow

An underflow floating-point exception (**FE\_UNDERFLOW**) is raised.

These functions do not set *errno* for this case.

**CONFORMING TO**

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

**SEE ALSO**

[cabs\(3\)](#), [sqrt\(3\)](#)

**COLOPHON**

This page is part of release 3.74 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 <http://www.kernel.org/doc/man-pages/>.