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***x*+*y***y*). 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/.