NAME

j0, j0f, j0l, j1, j1f, j1l, jn, jnf, jnl - Bessel functions of the first kind

SYNOPSIS

#include <math.h>

double j0(double x**);**
double j1(double x**);**
double jn(int n**, double** x**);**

float j0f(float x**);**
float j1f(float x**);**
float jnf(int n**, float** x**);**

long double j0l(long double x**);**
long double j1l(long double x**);**
long double jnl(int n**, long double** x**);**

Link with *-lm*.

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

j0(), **j1**(), **jn**():
    _SVID_SOURCE || _BSD_SOURCE || _XOPEN_SOURCE
j0f(), **j0l**(), **j1f**(), **j1l**(), **jnf**(), **jnl**():
    _SVID_SOURCE || _BSD_SOURCE || _XOPEN_SOURCE >= 600

DESCRIPTION

The **j0**() and **j1**() functions return Bessel functions of x of the first kind of orders 0 and 1, respectively. The **jn**() function returns the Bessel function of x of the first kind of order n.

The **j0f**(), **j1f**(), and **jnf**(), functions are versions that take and return *float* values. The **j0l**(), **j1l**(), and **jnl**() functions are versions that take and return *long double* values.

RETURN VALUE

On success, these functions return the appropriate Bessel value of the first kind for x.

If x is a NaN, a NaN is returned.

If x is too large in magnitude, or the result underflows, a range error occurs, and the return value is 0.

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 underflow, or x is too large in magnitude
    errno is set to **ERANGE**.

These functions do not raise exceptions for fetestexcept(3).

CONFORMING TO

The functions returning *double* conform to SVr4, 4.3BSD, POSIX.1-2001. The others are nonstandard functions that also exist on the BSDs.

BUGS

There are errors of up to 2e-16 in the values returned by **j0**(), **j1**() and **jn**() for values of x between -8 and 8.

SEE ALSO

y0(3)

COLOPHON

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