NAME

j0, **j0f**, **j1**, **j1f**, **jn**, **jnf**, **y0**, **y0f**, **y1**, **y1f**, **yn**, **ynf** - Bessel functions of first and second kind

LIBRARY

Math Library (libm, -lm)

SYNOPSIS

#include <math.h>

double
j0(*double x*);

float
j0f(*float x*);

double
j1(*double x*);

float
j1f(*float x*);

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

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

double
y0(*double x*);

float
y0f(*float x*);

double
y1(*double x*);

float
y1f(*float x*);

double

yn(*int n*, *double x*);

float
ynf(*int n*, *float x*);

DESCRIPTION

The functions **j0**(), **j0f**(), **j1**(), and **j1f**() compute the Bessel function of the first kind of orders 0 and 1 for the real value *x*; the functions **jn**() and **jnf**() compute the Bessel function of the first kind of the integer order *n* for the real value *x*.

The functions **y0**(), **y0f**(), **y1**(), and **y1f**() compute the linearly independent Bessel function of the second kind of orders 0 and 1 for the positive *real* value *x*; the functions **yn**() and **ynf**() compute the Bessel function of the second kind for the integer order *n* for the positive *real* value *x*.

RETURN VALUES

These routines return values of their respective Bessel functions. For large positive inputs, they may underflow and return +-0.

The following applies to **y0**(), **y0f**(), **y1**(), **y1f**(), **yn**(), and **ynf**(). If *x* is negative, including -infinity, these routines will generate an invalid exception and return NaN. If *x* is +-0, these routines will generate a divide-by-zero exception and return -infinity. If *x* is a sufficiently small positive number, then **y1**(), **y1f**(), **yn**(), and **ynf**() will generate an overflow exception and return -infinity.

SEE ALSO

math(3)

STANDARDS

The **j0**(), **j1**(), **jn**(), **y0**(), **y1**(), and **yn**() functions conform to IEEE Std 1003.1-2001 ("POSIX.1"). The *float* versions are extensions.

HISTORY

This set of functions appeared in Version 7 AT&T UNIX.