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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'y0.3p' command

$ man y0.3p

Y0(3P) POSIX Programmer's Manual Y0(3P)

PROLOG

This manual page is part of the POSIX Programmer's Manual. The Linux implementation of this interface may differ (consult the corresponding Linux manual page for details of Linux behavior), or the interface may not be implemented on Linux.

NAME

y0, y1, yn ? Bessel functions of the second kind

SYNOPSIS

```
#include <math.h>
double y0(double x);
double y1(double x);
double yn(int n, double x);
```

DESCRIPTION

The y0(), y1(), and yn() functions shall compute Bessel functions of x of the second kind of orders 0, 1, and n, respectively.

An application wishing to check for error situations should set errno to zero and call feclearexcept(FE_ALL_EXCEPT) before calling these functions. On return, if errno is non-zero or fetestexcept(FE_INVALID | FE_DIVBYZERO | FE_OVERFLOW | FE_UNDERFLOW) is non-zero, an error has occurred.

RETURN VALUE

Upon successful completion, these functions shall return the relevant

Bessel value of x of the second kind.

If x is NaN, NaN shall be returned.

If the x argument to these functions is negative, -HUGE_VAL or NaN shall be returned, and a domain error may occur.

If x is 0.0, -HUGE_VAL shall be returned and a pole error may occur.

If the correct result would cause underflow, 0.0 shall be returned and a range error may occur.

If the correct result would cause overflow, -HUGE_VAL or 0.0 shall be returned and a range error may occur.

ERRORS

These functions may fail if:

Domain Error

The value of x is negative.

If the integer expression (math_errhandling & MATH_ERRNO) is non-zero, then errno shall be set to [EDOM]. If the in? teger expression (math_errhandling & MATH_ERREXCEPT) is non-zero, then the invalid floating-point exception shall be raised.

Pole Error The value of x is zero.

If the integer expression (math_errhandling & MATH_ERRNO) is non-zero, then errno shall be set to [ERANGE]. If the integer expression (math_errhandling & MATH_ERREXCEPT) is non-zero, then the divide-by-zero floating-point exception shall be raised.

Range Error The correct result would cause overflow.

If the integer expression (math_errhandling & MATH_ERRNO) is non-zero, then errno shall be set to [ERANGE]. If the integer expression (math_errhandling & MATH_ERREXCEPT) is non-zero, then the overflow floating-point exception shall be raised.

Range Error The value of x is too large in magnitude, or the correct result would cause underflow.

If the integer expression (math_errhandling & MATH_ERRNO)

is non-zero, then errno shall be set to [ERANGE]. If the integer expression (math_errhandling & MATH_ERREXCEPT) is non-zero, then the underflow floating-point exception shall be raised.

The following sections are informative.

EXAMPLES

None.

APPLICATION USAGE

On error, the expressions (math_errhandling & MATH_ERRNO) and (math_er?rhandling & MATH_ERREXCEPT) are independent of each other, but at least one of them must be non-zero.

RATIONALE

None.

FUTURE DIRECTIONS

None.

SEE ALSO

feclearexcept(), fetestexcept(), isnan(), j0()

The Base Definitions volume of POSIX.1?2017, Section 4.20, Treatment of Error Conditions for Mathematical Functions, <math.h>

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