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

$ man erfc.3p

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

erfc, erfcf, erfcl ? complementary error functions

SYNOPSIS

```
#include <math.h>
double erfc(double x);
float erfcf(float x);
long double erfcl(long double x);
```

DESCRIPTION

The functionality described on this reference page is aligned with the ISO C standard. Any conflict between the requirements described here and the ISO C standard is unintentional. This volume of POSIX.1?2017 defers to the ISO C standard.

These functions shall compute the complementary error function 1.0 - erf(x).

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 value of the complementary error function.

If the correct value would cause underflow, and is not representable, a range error may occur, and erfc(), erfcf(), and erfcl() shall return 0.0, or (if the IEC 60559 Floating-Point option is not supported) an implementation-defined value no greater in magnitude than DBL_MIN, FLT_MIN, and LDBL_MIN, respectively.

If x is NaN, a NaN shall be returned.

If x is ?0, +1 shall be returned.

If x is -Inf, +2 shall be returned.

If x is +Inf, +0 shall be returned.

If the correct value would cause underflow and is representable, a range error may occur and the correct value shall be returned.

ERRORS

These functions may fail if:

Range Error The result underflows.

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

The erfc() function is provided because of the extreme loss of relative accuracy if erf(x) is called for large x and the result subtracted from 1.0.

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

erf(), feclearexcept(), fetestexcept(), isnan()

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

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