

NAME

erfc, erfcf, erfcl - complementary error function

SYNOPSIS

```
#include <math.h>
```

```
double erfc(double x);
```

```
float erfcf(float x);
```

```
long double erfcl(long double x);
```

Link with *-lm*.

Feature Test Macro Requirements for glibc (see [feature_test_macros\(7\)](#)):

```
erfc():
```

```
  _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE || _ISOC99_SOURCE ||
```

```
  _POSIX_C_SOURCE >= 200112L;
```

```
  or cc -std=c99
```

```
erfcf(), erfcl():
```

```
  _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE ||
```

```
  _POSIX_C_SOURCE >= 200112L;
```

```
  or cc -std=c99
```

DESCRIPTION

The **erfc()** function returns the complementary error function of *x*, that is, $1.0 - \text{erf}(x)$

RETURN VALUE

On success, these functions return the complementary error function of *x*, a value in the range $[0, 2]$.

If *x* is a NaN, a NaN is returned.

If *x* is +0 or -0, 1 is returned.

If *x* is positive infinity, +0 is returned.

If *x* is negative infinity, +2 is returned.

If the function result underflows and produces an unrepresentable value, the return value is 0.0.

If the function result underflows but produces a representable (i.e., subnormal) value, that value is returned, and a range error occurs.

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 (result is subnormal)

An underflow floating-point exception (**FE_UNDERFLOW**) is raised.

These functions do not set *errno*.

ATTRIBUTES

Multithreading (see [pthreads\(7\)](#))

The **erfc()**, **erfcf()**, and **erfcl()** functions are thread-safe.

CONFORMING TO

C99, POSIX.1-2001. The variant returning *double* also conforms to SVr4, 4.3BSD.

NOTES

The **erfc()**, **erfcf()**, and **erfcl()** functions are provided to avoid the loss accuracy that would occur for the calculation $1 - \text{erf}(x)$ for large values of *x* (for which the value of $\text{erf}(x)$ approaches 1).

SEE ALSO

cerf(3), **erf(3)**, **exp(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/>.