

**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/>.