**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**():
  _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L || _XOPEN_SOURCE
   || /* Since glibc 2.19: */ _DEFAULT_SOURCE
   || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
 **erfcf**(), **erfcl**():
  _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
   || /* Since glibc 2.19: */ _DEFAULT_SOURCE
   || /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

**DESCRIPTION**
 These functions return the complementary error function of $x$, that is, 1.0 − 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**
 For an explanation of the terms used in this section, see **attributes**(7).

| Interface | Attribute | Value |
|---|---|---|
| **erfc**(), **erfcf**(), **erfcl**() | Thread safety | MT-Safe |

**CONFORMING TO**
 C99, POSIX.1-2001, POSIX.1-2008.

 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-erf(x) for large values of $x$ (for which the value of erf(x) approaches 1).

**SEE ALSO**
>   **cerf**(3), **erf**(3), **exp**(3)

**COLOPHON**
>   This page is part of release 5.02 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 https://www.kernel.org/doc/man−pages/.