NAME

erfc, erfcf, erfcl − complementary error function

LIBRARY

Math library (*libm*, *−lm*)

SYNOPSIS

```
#include <math.h>

double erfc(double x);
float erfcf(float x);
long double erfcl(long double x);
```

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 <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

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

STANDARDS

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)