



Linux Ubuntu 26.04 Manual Pages on command 'erf.3'

\$ man erf.3

erf(3) Library Functions Manual erf(3)

NAME

erf, erff, erfl - error function

LIBRARY

Math library (libm, -lm)

SYNOPSIS

```
#include <math.h>

double erf(double x);

float erff(float x);

long double erfl(long double x);
```

Feature Test Macro Requirements for glibc (see feature_test_macros(7)):

```
erf():

    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L || _XOPEN_SOURCE
    || /* Since glibc 2.19: */ _DEFAULT_SOURCE
    || /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

```
erff(), erfl():

    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
    || /* Since glibc 2.19: */ _DEFAULT_SOURCE
    || /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions return the error function of x, defined as

$$\operatorname{erf}(x) = \frac{2}{\sqrt{\pi}} \int_0^x \exp(-t^2) dt$$

RETURN VALUE

On success, these functions return the value of the error function of x, a value in the range [-1, 1].

If x is a NaN, a NaN is returned.

If x is +0 (-0), +0 (-0) is returned.

If x is positive infinity (negative infinity), +1 (-1) is returned.

If x is subnormal, a range error occurs, and the return value is $2x/\sqrt{\pi}$.

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 (x 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)`.

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? Interface ? Attribute ? Value ?

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? `erf()`, `erff()`, `erfl()` ? Thread safety ? MT-Safe ?

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STANDARDS

C11, POSIX.1-2008.

HISTORY

C99, POSIX.1-2001.

The variant returning double also conforms to SVr4, 4.3BSD.

SEE ALSO

`cerf(3)`, `erfc(3)`, `exp(3)`