NAME

exp, expf, expl − base-e exponential function

LIBRARY

Math library (*libm*, *−lm*)

SYNOPSIS

```
#include <math.h>

double exp(double x);
float expf(float x);
long double expl(long double x);
```

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

expf(), **expl**():
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

DESCRIPTION

These functions return the value of e (the base of natural logarithms) raised to the power of *x*.

RETURN VALUE

On success, these functions return the exponential value of *x*.

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

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

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

If the result underflows, a range error occurs, and zero is returned.

If the result overflows, a range error occurs, and the functions return +**HUGE_VAL**, +**HUGE_VALF**, or +**HUGE_VALL**, respectively.

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, overflow
: *errno* is set to **ERANGE**. An overflow floating-point exception (**FE_OVERFLOW**) is raised.

Range error, underflow
: *errno* is set to **ERANGE**. An underflow floating-point exception (**FE_UNDERFLOW**) is raised.

ATTRIBUTES

For an explanation of the terms used in this section, see **attributes**(7).

Interface	Attribute	Value
exp(), **expf**(), **expl**()	Thread safety	MT-Safe

STANDARDS

C99, POSIX.1-2001, POSIX.1-2008.

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

SEE ALSO

cbrt(3), **cexp**(3), **exp10**(3), **exp2**(3), **expm1**(3), **sqrt**(3)