



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

\$ man nextafter.3

nextafter(3) Library Functions Manual nextafter(3)

NAME

nextafter, nextafterf, nextafterl, nexttoward, nexttowardf, nexttowardl - floating-point
number manipulation

LIBRARY

Math library (libm, -lm)

SYNOPSIS

```
#include <math.h>

double nextafter(double x, double y);

float nextafterf(float x, float y);

long double nextafterl(long double x, long double y);

double nexttoward(double x, long double y);

float nexttowardf(float x, long double y);

long double nexttowardl(long double x, long double y);
```

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

```
nextafter():

    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
    || _XOPEN_SOURCE >= 500
    || /* Since glibc 2.19: */ _DEFAULT_SOURCE
    || /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

nextafterf(), nextafterl():

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

```
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

nexttoward(), nexttowardf(), nexttowardl():

```
_XOPEN_SOURCE >= 600 || _ISOC99_SOURCE
```

```
|| _POSIX_C_SOURCE >= 200112L
```

DESCRIPTION

The nextafter(), nextafterf(), and nextafterl() functions return the next representable floating-point value following x in the direction of y. If y is less than x, these functions will return the largest representable number less than x.

If x equals y, the functions return y.

The nexttoward(), nexttowardf(), and nexttowardl() functions do the same as the corresponding nextafter() functions, except that they have a long double second argument.

RETURN VALUE

On success, these functions return the next representable floating-point value after x in the direction of y.

If x equals y, then y (cast to the same type as x) is returned.

If x or y is a NaN, a NaN is returned.

If x is finite, and the result would overflow, a range error occurs, and the functions return HUGE_VAL, HUGE_VALF, or HUGE_VALL, respectively, with the correct mathematical sign.

If x is not equal to y, and the correct function result would be subnormal, zero, or underflow, a range error occurs, and either the correct value (if it can be represented), or 0.0, is returned.

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 overflow

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

Range error: result is subnormal or underflows

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
nextafter(), nextafterf(), nextafterl(), nexttoward(),	Thread safety	MT-Safe
nexttowardf(), nexttowardl()		

C11, POSIX.1-2008.

This function is defined in IEC 559 (and the appendix with recommended functions in IEEE 754/IEEE 854).

C99, POSIX.1-2001.

In glibc 2.5 and earlier, these functions do not raise an underflow floating-point (FE_UN?DERFLOW) exception when an underflow occurs.

Before glibc 2.23 these functions did not set errno.

```
nearbyint(3)
```

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