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### ***Rocky Enterprise Linux 9.2 Manual Pages on command 'nexttowardl.3'***

**\$ man nexttowardl.3**

NEXTAFTER(3)      Linux Programmer's Manual      NEXTAFTER(3)

NAME

nextafter, nextafterf, nextafterl, nexttoward, nexttowardf, nexttowardl

- floating-point number manipulation

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);
```

Link with -lm.

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 versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
nextafterf(), nextafterl():
    _ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
    || /* Since glibc 2.19: */ _DEFAULT_SOURCE
    || /* Glibc versions <= 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(), ? Thread safety ? MT-Safe ?

?nextafterl(), nexttoward(), ? ? ?

?nexttowardf(), nexttowardl() ? ? ?

??

### CONFORMING TO

C99, POSIX.1-2001, POSIX.1-2008. This function is defined in IEC 559 (and the appendix with recommended functions in IEEE 754/IEEE 854).

### BUGS

In glibc version 2.5 and earlier, these functions do not raise an underflow floating-point (FE\_UNDERFLOW) exception when an underflow occurs.

Before glibc version 2.23 these functions did not set errno.

### SEE ALSO

nearbyint(3)

### COLOPHON

This page is part of release 5.10 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/>.