

**NAME**

`nextup`, `nextupf`, `nextupl`, `nextdown`, `nextdownf`, `nextdownl` – return next floating-point number toward positive/negative infinity

**LIBRARY**

Math library (*libm*, *-lm*)

**SYNOPSIS**

```
#define _GNU_SOURCE    /* See feature_test_macros(7) */
#include <math.h>

double nextup(double x);
float nextupf(float x);
long double nextupl(long double x);

double nextdown(double x);
float nextdownf(float x);
long double nextdownl(long double x);
```

**DESCRIPTION**

The `nextup()`, `nextupf()`, and `nextupl()` functions return the next representable floating-point number greater than  $x$ .

If  $x$  is the smallest representable negative number in the corresponding type, these functions return  $-0$ . If  $x$  is 0, the returned value is the smallest representable positive number of the corresponding type.

If  $x$  is positive infinity, the returned value is positive infinity. If  $x$  is negative infinity, the returned value is the largest representable finite negative number of the corresponding type.

If  $x$  is NaN, the returned value is NaN.

The value returned by `nextdown( $x$ )` is  $-nextup(-x)$ , and similarly for the other types.

**RETURN VALUE**

See DESCRIPTION.

**VERSIONS**

These functions were added in glibc 2.24.

**ATTRIBUTES**

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

Interface	Attribute	Value
<code>nextup()</code> , <code>nextupf()</code> , <code>nextupl()</code> , <code>nextdown()</code> , <code>nextdownf()</code> , <code>nextdownl()</code>	Thread safety	MT-Safe

**STANDARDS**

These functions are described in *IEEE Std 754-2008 - Standard for Floating-Point Arithmetic* and *ISO/IEC TS 18661*.

**SEE ALSO**

`nearbyint(3)`, `nextafter(3)`