

**NAME**

round, roundf, roundl – round to nearest integer, away from zero

**SYNOPSIS**

```
#include <math.h>
```

```
double round(double x);
```

```
float roundf(float x);
```

```
long double roundl(long double x);
```

Link with `-lm`.

Feature Test Macro Requirements for glibc (see **feature\_test\_macros(7)**):

```
round(), roundf(), roundl():
```

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
```

**DESCRIPTION**

These functions round  $x$  to the nearest integer, but round halfway cases away from zero (regardless of the current rounding direction, see **feenv(3)**), instead of to the nearest even integer like **rint(3)**.

For example, `round(0.5)` is 1.0, and `round(-0.5)` is -1.0.

**RETURN VALUE**

These functions return the rounded integer value.

If  $x$  is integral, +0, -0, NaN, or infinite,  $x$  itself is returned.

**ERRORS**

No errors occur. POSIX.1-2001 documents a range error for overflows, but see **NOTES**.

**VERSIONS**

These functions first appeared in glibc in version 2.1.

**ATTRIBUTES**

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

Interface	Attribute	Value
<b>round()</b> , <b>roundf()</b> , <b>roundl()</b>	Thread safety	MT-Safe

**CONFORMING TO**

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

**NOTES**

POSIX.1-2001 contains text about overflow (which might set *errno* to **ERANGE**, or raise an **FE\_OVERFLOW** exception). In practice, the result cannot overflow on any current machine, so this error-handling stuff is just nonsense. (More precisely, overflow can happen only when the maximum value of the exponent is smaller than the number of mantissa bits. For the IEEE-754 standard 32-bit and 64-bit floating-point numbers the maximum value of the exponent is 128 (respectively, 1024), and the number of mantissa bits is 24 (respectively, 53).)

If you want to store the rounded value in an integer type, you probably want to use one of the functions described in **lround(3)** instead.

**SEE ALSO**

**ceil(3)**, **floor(3)**, **lround(3)**, **nearbyint(3)**, **rint(3)**, **trunc(3)**

**COLOPHON**

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