

**NAME**

logb, logbf, logbl - get exponent of a floating-point value

**SYNOPSIS**

```
#include <math.h>

double logb(double x);
float logbf(float x);
long double logbl(long double x);
```

Link with *-lm*.

Feature Test Macro Requirements for glibc (see [feature\\_test\\_macros\(7\)](#)):

```
logb():
    _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 500 ||
    _XOPEN_SOURCE && _XOPEN_SOURCE_EXTENDED || _ISOC99_SOURCE ||
    _POSIX_C_SOURCE >= 200112L;
    or cc -std=c99

logbf(), logbl():
    _BSD_SOURCE || _SVID_SOURCE || _XOPEN_SOURCE >= 600 || _ISOC99_SOURCE ||
    _POSIX_C_SOURCE >= 200112L;
    or cc -std=c99
```

**DESCRIPTION**

These functions extract the exponent from the internal floating-point representation of  $x$  and return it as a floating-point value. The integer constant **FLT\_RADIX**, defined in *<float.h>*, indicates the radix used for the system's floating-point representation. If **FLT\_RADIX** is 2, **logb**( $x$ ) is equal to **floor(log<sub>2</sub>( $x$ ))**, except that it is probably faster.

If  $x$  is subnormal, **logb**() returns the exponent  $x$  would have if it were normalized.

**RETURN VALUE**

On success, these functions return the exponent of  $x$ .

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

If  $x$  is zero, then a pole error occurs, and the functions return **-HUGE\_VAL**, **-HUGE\_VALF**, or **-HUGE\_VALL**, respectively.

If  $x$  is negative infinity or positive infinity, then positive infinity 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:

Pole error:  $x$  is 0

A divide-by-zero floating-point exception (**FE\_DIVBYZERO**) is raised.

These functions do not set *errno*.

**ATTRIBUTES**

**Multithreading** (see [pthreads\(7\)](#))

The **logb**(), **logbf**(), and **logbl**() functions are thread-safe.

**CONFORMING TO**

C99, POSIX.1-2001.

**SEE ALSO**

[ilogb\(3\)](#), [log\(3\)](#)

**COLOPHON**

This page is part of release 3.74 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 <http://www.kernel.org/doc/man-pages/>.