

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():

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

logbf(), logbl():

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L /* Since glibc 2.19: */ _DE-
FAULT_SOURCE /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

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(log2(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

For an explanation of the terms used in this section, see [attributes\(7\)](#).

Interface	Attribute	Value
<code>logb()</code> , <code>logbf()</code> , <code>logbl()</code>	Thread safety	MT-Safe

CONFORMING TO

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

SEE ALSO

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

COLOPHON

This page is part of release 4.16 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/>.