

NAME

scalb, scalbf, scalbl – multiply floating-point number by integral power of radix (OBSOLETE)

SYNOPSIS

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

```
double scalb(double x, double exp);
```

```
float scalbf(float x, float exp);
```

```
long double scalbl(long double x, long double exp);
```

Link with `-lm`.

Feature Test Macro Requirements for glibc (see [feature_test_macros\(7\)](#)):

scalb():

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

scalbf(), scalbl():

```
_XOPEN_SOURCE >= 600 || /* Since glibc 2.19: */ _DEFAULT_SOURCE || /* Glibc versions <=
2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions multiply their first argument x by **FLT_RADIX** (probably 2) to the power of exp , that is:

$$x * \text{FLT_RADIX} ** exp$$

The definition of **FLT_RADIX** can be obtained by including `<float.h>`.

RETURN VALUE

On success, these functions return $x * \text{FLT_RADIX} ** exp$.

If x or exp is a NaN, a NaN is returned.

If x is positive infinity (negative infinity), and exp is not negative infinity, positive infinity (negative infinity) is returned.

If x is +0 (−0), and exp is not positive infinity, +0 (−0) is returned.

If x is zero, and exp is positive infinity, a domain error occurs, and a NaN is returned.

If x is an infinity, and exp is negative infinity, a domain error occurs, and a NaN is returned.

If the result overflows, a range error occurs, and the functions return **HUGE_VAL**, **HUGE_VALF**, or **HUGE_VALL**, respectively, with a sign the same as x .

If the result underflows, a range error occurs, and the functions return zero, with a sign the same as x .

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:

Domain error: x is 0, and exp is positive infinity, or x is positive infinity and exp is negative infinity and the other argument is not a NaN

An invalid floating-point exception (**FE_INVALID**) is raised.

Range error, overflow

An overflow floating-point exception (**FE_OVERFLOW**) is raised.

Range error, underflow

An underflow floating-point exception (**FE_UNDERFLOW**) 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>scalb()</code> , <code>scalbf()</code> , <code>scalbl()</code>	Thread safety	MT-Safe

CONFORMING TO

`scalb()` is specified in POSIX.1-2001, but marked obsolescent. POSIX.1-2008 removes the specification of `scalb()`, recommending the use of `scalbln(3)`, `scalblnf(3)`, or `scalblnl(3)` instead. The `scalb()` function is from 4.3BSD.

`scalbf()` and `scalbl()` are unstandardized; `scalbf()` is nevertheless present on several other systems

SEE ALSO

[ldexp\(3\)](#), [scalbln\(3\)](#)

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/>.