## 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 * FLT_RADIX ** exp

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

## RETURN VALUE

On success, these functions return *x* * **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 |
|---|---|---|
| **scalb**(), **scalbf**(), **scalbl**() | 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 4.10 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/.