## NAME

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

## LIBRARY

Math library (*libm*, −*lm*)

## SYNOPSIS

```
#include <math.h>

[[deprecated]] double scalb(double x, double exp);
[[deprecated]] float scalbf(float x, float exp);
[[deprecated]] long double scalbl(long double x, long double exp);
```

Feature Test Macro Requirements for glibc (see **feature_test_macros**(7)):

**scalb**():

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

**scalbf**(), **scalbl**():

```
_XOPEN_SOURCE >= 600
    || /* Since glibc 2.19: */ _DEFAULT_SOURCE
    || /* glibc <= 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
: *errno* is set to **EDOM**. An invalid floating-point exception (**FE_INVALID**) is raised.

Range error, overflow
: *errno* is set to **ERANGE**. An overflow floating-point exception (**FE_OVERFLOW**) is raised.

Range error, underflow
: *errno* is set to **ERANGE**. An underflow floating-point exception (**FE_UNDERFLOW**) is raised.

## ATTRIBUTES

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

| Interface | Attribute | Value |
|---|---|---|
| **scalb**(), **scalbf**(), **scalbl**() | Thread safety | MT-Safe |

## STANDARDS

**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

## BUGS

Before glibc 2.20, these functions did not set *errno* for domain and range errors.

## SEE ALSO

**ldexp**(3), **scalbln**(3)