Rocky Enterprise Linux 9.2 Manual Pages on command 'lgammal.3'

$ man lgammal.3

LGAMMA(3) Linux Programmer's Manual LGAMMA(3)

NAME

lgamma, lgammaf, lgammal, lgamma_r, lgammaf_r, lgammal_r, signgam - log gamma function

SYNOPSIS

```
#include <math.h>

double lgamma(double x);

float lgammaf(float x);

long double lgammal(long double x);

double lgamma_r(double x, int *signp);

float lgammaf_r(float x, int *signp);

long double lgammal_r(long double x, int *signp);

extern int signgam;
```

Link with -lm.

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

lgamma():

_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L || _XOPEN_SOURCE || /* Since glibc 2.19: */ _DEFAULT_SOURCE

|| /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

lgammaf(), lgammal():

_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L

|| /* Since glibc 2.19: */ _DEFAULT_SOURCE

|| /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

lgamma_r(), lgammaf_r(), lgammal_r():

/* Since glibc 2.19: */ _DEFAULT_SOURCE

|| /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

signgam:

_XOPEN_SOURCE

|| /* Since glibc 2.19: */ _DEFAULT_SOURCE

|| /* Glibc versions <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE

DESCRIPTION

For the definition of the Gamma function, see tgamma(3).

The lgamma(), lgammaf(), and lgammal() functions return the natural logarithm of the absolute value of the Gamma function. The sign of the Gamma function is returned in the external integer signgam declared in <math.h>. It is 1 when the Gamma function is positive or zero, -1 when it is negative.

Since using a constant location signgam is not thread-safe, the func? tions lgamma_r(), lgammaf_r(), and lgammal_r() have been introduced; they return the sign via the argument signp.

RETURN VALUE

On success, these functions return the natural logarithm of Gamma(x).

If x is a NaN, a NaN is returned.

If x is 1 or 2, +0 is returned.

If x is positive infinity or negative infinity, positive infinity is returned.

If x is a nonpositive integer, a pole error occurs, and the functions return +HUGE_VAL, +HUGE_VALF, or +HUGE_VALL, respectively.

If the result overflows, a range error occurs, and the functions return HUGE_VAL, HUGE_VALF, or HUGE_VALL, respectively, with the correct math? ematical sign.

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 a nonpositive integer

errno is set to ERANGE (but see BUGS). A divide-by-zero floating-point exception (FE_DIVBYZERO) is raised.

Range error: result overflow

errno is set to ERANGE. An overflow floating-point exception (FE_OVERFLOW) is raised.

CONFORMING TO

The lgamma() functions are specified in C99, POSIX.1-2001, and POSIX.1-2008. signgam is specified in POSIX.1-2001 and POSIX.1-2008, but not in C99. The lgamma_r() functions are nonstandard, but present on several other systems.

BUGS

In glibc 2.9 and earlier, when a pole error occurs, errno is set to EDOM; instead of the POSIX-mandated ERANGE. Since version 2.10, glibc does the right thing.

SEE ALSO

tgamma(3)

COLOPHON

This page is part of release 5.10 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/.