



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

\$ man atanh.3

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

NAME

atanh, atanhf, atanhf - inverse hyperbolic tangent function

SYNOPSIS

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

```
double atanh(double x);
```

```
float atanhf(float x);
```

```
long double atanhf(long double x);
```

Link with -lm.

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

atanh():

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
```

```
|| _XOPEN_SOURCE >= 500
```

```
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
```

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

atanhf(), atanhf():

```
_ISOC99_SOURCE || _POSIX_C_SOURCE >= 200112L
```

```
|| /* Since glibc 2.19: */ _DEFAULT_SOURCE
```

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

DESCRIPTION

These functions calculate the inverse hyperbolic tangent of x ; that is the value whose hyperbolic tangent is x .

RETURN VALUE

On success, these functions return the inverse hyperbolic tangent of x .

If x is a NaN, a NaN is returned.

If x is $+0$ (-0), $+0$ (-0) is returned.

If x is $+1$ or -1 , a pole error occurs, and the functions return

`HUGE_VAL`, `HUGE_VALF`, or `HUGE_VALL`, respectively, with the mathematically correct sign.

If the absolute value of x is greater than 1, a domain error occurs, and a NaN 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:

Domain error: x less than -1 or greater than $+1$

`errno` is set to `EDOM`. An invalid floating-point exception (`FE_INVALID`) is raised.

Pole error: x is $+1$ or -1

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

ATTRIBUTES

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

??

?Interface ? Attribute ? Value ?

??

?`atanh()`, `atanhf()`, `atanhl()` ? Thread safety ? MT-Safe ?

??

CONFORMING TO

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

The variant returning double also conforms to SVr4, 4.3BSD.

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

`acosh(3)`, `asinh(3)`, `catanh(3)`, `cosh(3)`, `sinh(3)`, `tanh(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/>.

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