



Linux Ubuntu 26.04 Manual Pages on command 'sinh.3'

\$ man sinh.3

sinh(3) Library Functions Manual sinh(3)

NAME

sinh, sinhf, sinh1 - hyperbolic sine function

LIBRARY

Math library (libm, -lm)

SYNOPSIS

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

```
double sinh(double x);
```

```
float sinhf(float x);
```

```
long double sinh1(long double x);
```

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

sinhf(), sinh1():

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

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

```
|| /* glibc <= 2.19: */ _BSD_SOURCE || _SVID_SOURCE
```

DESCRIPTION

These functions return the hyperbolic sine of x, which is defined mathematically as:

$$\sinh(x) = (\exp(x) - \exp(-x)) / 2$$

RETURN VALUE

On success, these functions return the hyperbolic sine of x.

If x is a NaN, a NaN is returned.

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

If x is positive infinity (negative infinity), positive infinity (negative infinity) is re?

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

See `math_error(7)` for information on how to determine whether an error has occurred when calling these functions.

Range error: result overflow

ATTRIBUTES

[illegible][illegible][illegible]

C11, POSIX.1-2008.

C99, POSIX.1-2001.

The variant returning double also conforms to SVr4, 4.3BSD, C89.

acosh(3), asinh(3), atanh(3), cosh(3), csinh(3), tanh(3)

 $\sinh(3)$