

NAME

ctanh, ctanhf, ctanhl – complex hyperbolic tangent

LIBRARY

Math library (*libm*, *-lm*)

SYNOPSIS

```
#include <complex.h>
```

```
double complex ctanh(double complex z);
```

```
float complex ctanhf(float complex z);
```

```
long double complex ctanhl(long double complex z);
```

DESCRIPTION

These functions calculate the complex hyperbolic tangent of *z*.

The complex hyperbolic tangent function is defined mathematically as:

$$\operatorname{ctanh}(z) = \operatorname{csinh}(z) / \operatorname{ccosh}(z)$$

ATTRIBUTES

For an explanation of the terms used in this section, see [attributes\(7\)](#).

Interface	Attribute	Value
ctanh(), ctanhf(), ctanhl()	Thread safety	MT-Safe

STANDARDS

C11, POSIX.1-2008.

HISTORY

glibc 2.1. C99, POSIX.1-2001.

SEE ALSO

[cabs\(3\)](#), [catanh\(3\)](#), [ccosh\(3\)](#), [csinh\(3\)](#), [complex\(7\)](#)