

**NAME**

ctanh, ctanhf, ctanhl - complex hyperbolic tangent

**SYNOPSIS**

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

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

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

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

Link with *-lm*.

**DESCRIPTION**

The complex hyperbolic tangent function is defined mathematically as:

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

These functions first appeared in glibc in version 2.1.

**CONFORMING TO**

C99.

**SEE ALSO**

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

**COLOPHON**

This page is part of release 3.74 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 <http://www.kernel.org/doc/man-pages/>.