

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

These functions calculate the complex hyperbolic tangent of z .

The complex hyperbolic tangent function is defined mathematically as:

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

VERSIONS

These functions first appeared in glibc in version 2.1.

ATTRIBUTES

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

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

CONFORMING TO

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

SEE ALSO

cabs(3), **catanh(3)**, **ccosh(3)**, **csinh(3)**, **complex(7)**

COLOPHON

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