

**NAME**

**cimag, cimagf, cimagl, conj, conjf, conjl, cproj, cprojf, cprojl, creal, crealf, creall** - functions to manipulate complex numbers

**LIBRARY**

Math Library (libm, -lm)

**SYNOPSIS**

**#include <complex.h>**

*double*

**cimag**(*double complex z*);

*float*

**cimagf**(*float complex z*);

*long double*

**cimagl**(*long double complex z*);

*double complex*

**conj**(*double complex z*);

*float complex*

**conjf**(*float complex z*);

*long double complex*

**conjl**(*long double complex z*);

*double complex*

**cproj**(*double complex z*);

*float complex*

**cprojf**(*float complex z*);

*long double complex*

**cprojl**(*long double complex z*);

*double*

**creal**(*double complex z*);

*float*

**crealf**(*float complex z*);

*long double*

**creall**(*long double complex z*);

## DESCRIPTION

Let  $a+bi$  denote the complex number  $z$ .

The **creal**() functions return the real part  $a$ , and the **cimag**() functions return the imaginary part  $b$ .

The **conj**() functions return the complex conjugate  $a-bi$ .

The **cproj**() functions return the projection onto the Riemann sphere. If  $z$  contains an infinite component, then the result is *infinity*  $\pm 0i$ , where the (zero) imaginary part of the result has the same sign as  $b$ . Otherwise, the result is  $z$ .

These functions do not signal any floating point exceptions.

## STANDARDS

The **cimag**(), **conj**(), **cproj**(), and **creal**() functions conform to ISO/IEC 9899:1999 ("ISO C99").

## HISTORY

The **cimag**(), **conj**() and **creal**() functions first appeared in FreeBSD 5.3. The **cproj**() functions appeared in FreeBSD 8.0.