

NAME

cacos, **cacosf**, **cacosl**, **cacosh**, **cacoshf**, **cacoshl**, **casin**, **casinf**, **casinl**, **casinh**, **casinhf**, **casinhl**, **catan**, **catanf**, **catanl**, **catanh**, **catanhf**, **catanhl** - complex inverse trigonometric and hyperbolic functions

LIBRARY

Math Library (libm, -lm)

SYNOPSIS

#include <complex.h>

double complex

cacos(*double complex z*);

float complex

cacosf(*float complex z*);

long double complex

cacosl(*long double complex z*);

double complex

cacosh(*double complex z*);

float complex

cacoshf(*float complex z*);

long double complex

cacoshl(*long double complex z*);

double complex

casin(*double complex z*);

float complex

casinf(*float complex z*);

long double complex

casinl(*long double complex z*);

double complex

casinh(*double complex z*);

float complex

casinhf(*float complex* z);

long double complex

casinhl(*long double complex* z);

double complex

catan(*double complex* z);

float complex

catanf(*float complex* z);

long double complex

catanl(*long double complex* z);

double complex

catanh(*double complex* z);

float complex

catanhf(*float complex* z);

long double complex

catanhl(*long double complex* z);

DESCRIPTION

The **cacos**(), **casin**(), and **catan**() functions compute the principal value of the inverse cosine, sine, and tangent of the complex number *z*, respectively. The **cacosh**(), **casinh**(), and **catanh**() functions compute the principal value of the inverse hyperbolic cosine, sine, and tangent. The **cacosf**(), **casinf**(), **catanf**() **cacoshf**(), **casinhf**(), and **catanhf**() functions perform the same operations in *float* precision. The **cacosl**(), **casinl**(), **catanl**() **cacoshl**(), **casinhl**(), and **catanhl**() functions perform the same operations in *long double* precision.

There is no universal convention for defining the principal values of these functions. The following table gives the branch cuts, and the corresponding ranges for the return values, adopted by the C language.

Function	Branch Cut(s)	Range
cacos	(-infinity, -1) <union> (1, infinity)	[0, pi]
casin	(-infinity, -1) <union> (1, infinity)	[-pi/2, pi/2]
catan	(-infinity*I, -I) <union> (I, infinity*I)	[-pi/2, pi/2]

cacosh	(-infinity, 1)	$[-\pi * I, \pi * I]$
casinh	(-infinity*I, -1) <union> (1, infinity*I)	$[-\pi/2 * I, \pi/2 * I]$
catanh	(-infinity, -1) <union> (1, infinity)	$[-\pi/2 * I, \pi/2 * I]$

SEE ALSO

ccos(3), ccosh(3), complex(3), cos(3), math(3), sin(3), tan(3)

STANDARDS

These functions conform to ISO/IEC 9899:1999 ("ISO C99").