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, -I) <union> (I, 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").