NAME

catan, catanf, catanl − complex arc tangents

SYNOPSIS

#include <complex.h>

double complex catan(double complex *z***);**
float complex catanf(float complex *z***);**
long double complex catanl(long double complex *z***);**

Link with *−lm*.

DESCRIPTION

These functions calculate the complex arc tangent of *z*. If *y = catan(z)*, then *z = ctan(y)*. The real part of y is chosen in the interval [−pi/2,pi/2].

One has:

catan(z) = (clog(1 + i * z) − clog(1 − i * z)) / (2 * i)

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
catan(), **catanf**(), **catanl**()	Thread safety	MT-Safe

CONFORMING TO

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

EXAMPLE

```
/* Link with "-lm" */

#include <complex.h>
#include <stdlib.h>
#include <unistd.h>
#include <stdio.h>

int
main(int argc, char *argv[])
{
    double complex z, c, f;
    double complex i = I;

    if (argc != 3) {
        fprintf(stderr, "Usage: %s <real> <imag>\n", argv[0]);
        exit(EXIT_FAILURE);
    }

    z = atof(argv[1]) + atof(argv[2]) * I;

    c = catan(z);
    printf("catan() = %6.3f %6.3f*i\n", creal(c), cimag(c));

    f = (clog(1 + i * z) - clog(1 - i * z)) / (2 * i);
    printf("formula = %6.3f %6.3f*i\n", creal(f2), cimag(f2));

    exit(EXIT_SUCCESS);
}
```

SEE ALSO

ccos(3), **clog**(3), **ctan**(3), **complex**(7)

COLOPHON

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