



Linux Ubuntu 26.04 Manual Pages on command 'cacosh.3'

\$ man cacosh.3

cacosh(3) Library Functions Manual cacosh(3)

NAME _____

cacosh, cacoshf, cacoshl - complex arc hyperbolic cosine

LIBRARY

Math library (libm, -lm)

SYNOPSIS

```
#include <complex.h>
```

```
double complex cacosh(double complex z);
```

```
float complex cacoshf(float complex z);
```

```
long double complex cacosh1(long double complex z);
```

DESCRIPTION

These functions calculate the complex arc hyperbolic cosine of z . If $y = \text{cacosh}(z)$, then $z = \text{ccosh}(y)$. The imaginary part of y is chosen in the interval $[-\pi, \pi]$. The real part of y is chosen nonnegative.

One has:

$$\operatorname{cacosh}(z) = 2 * \operatorname{clog}(\operatorname{csqrt}((z + 1) / 2) + \operatorname{csqrt}((z - 1) / 2))$$

ATTRIBUTES

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

[illegible]

?	Interface	?	Attribute	?	Value	?
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[illegible]

? cacosh(), cacoshf(), cacoshl() ? Thread safety ? MT-Safe ?

[illegible]

STANDARDS

C11, POSIX.1-2008.

HISTORY

C99, POSIX.1-2001. glibc 2.1.

EXAMPLES

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

#include <complex.h>

#include <stdio.h>

#include <stdlib.h>

#include <unistd.h>

int

main(int argc, char *argv[])

{

    double complex z, c, f;

    if (argc != 3) {

        fprintf(stderr, "Usage: %s <real> <imag>\n", argv[0]);

        exit(EXIT_FAILURE);

    }

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

    c = cacosh(z);

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

    f = 2 * clog(csqrt((z + 1)/2) + csqrt((z - 1)/2));

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

    exit(EXIT_SUCCESS);

}
```

SEE ALSO

acosh(3), cabs(3), ccosh(3), cimag(3), complex(7)