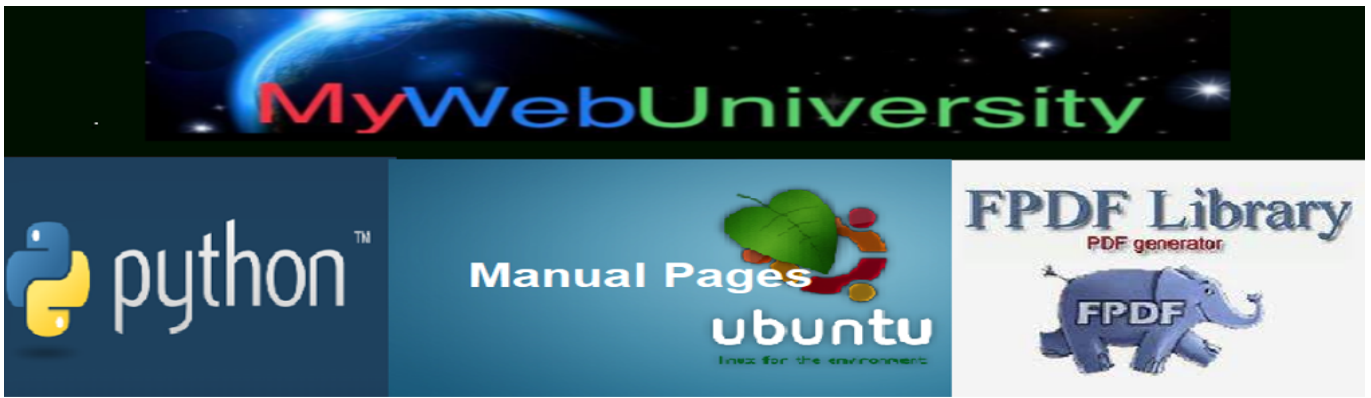




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Rocky Enterprise Linux 9.2 Manual Pages on command 'cacosh.3'

\$ man cacosh.3

CACOSH(3) Linux Programmer's Manual CACOSH(3)

NAME

cacosh, cacoshf, cacoshl - complex arc hyperbolic cosine

SYNOPSIS

```
#include <complex.h>

double complex cacosh(double complex z);

float complex cacoshf(float complex z);

long double complex cacoshl(long double complex z);

Link with -lm.
```

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:

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

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 ?

??

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

??

CONFORMING TO

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

EXAMPLES

```
/* 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;

    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(f2), cimag(f2));

    exit(EXIT_SUCCESS);
}
```

SEE ALSO

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

COLOPHON

This page is part of release 5.10 of the Linux man-pages project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at <https://www.kernel.org/doc/man-pages/>.