

**NAME**

casinh, casinhf, casinhl - complex arc sine hyperbolic

**SYNOPSIS**

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

```
double complex casinh(double complex z);
```

```
float complex casinhf(float complex z);
```

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

Link with *-lm*.

**DESCRIPTION**

The **casinh()** function calculates the complex arc hyperbolic sine of *z*. If  $y = c \operatorname{asinh}(z)$ , then  $z = c \operatorname{sinh}(y)$ . The imaginary part of *y* is chosen in the interval  $[-\pi/2, \pi/2]$ .

One has:

$$\operatorname{casinh}(z) = \operatorname{clog}(z + \operatorname{csqrt}(z * z + 1))$$
**VERSIONS**

These functions first appeared in glibc in version 2.1.

**CONFORMING TO**

C99.

**SEE ALSO**

[asinh\(3\)](#), [cabs\(3\)](#), [cimag\(3\)](#), [csinh\(3\)](#), [complex\(7\)](#)

**COLOPHON**

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