

**NAME**

**clog**, **clogf** and **clogl** - complex natural logarithm functions

**LIBRARY**

Math Library (libm, -lm)

**SYNOPSIS**

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

*double complex*

```
clog(double complex z);
```

*float complex*

```
clogf(float complex z);
```

*long double complex*

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

**DESCRIPTION**

The **clog**(), **clogf**(), and **clogl**() functions compute the complex natural logarithm of  $z$ . with a branch cut along the negative real axis .

**RETURN VALUES**

The **clog**() function returns the complex natural logarithm value, in the range of a strip mathematically unbounded along the real axis and in the interval  $[-I*\pi, +I*\pi]$  along the imaginary axis. The function satisfies the relationship: **clog**(**conj**( $z$ )) = **conj**(**clog**( $z$ )).

Argument	Return value	Comment
$-0 + I*0$	$-\text{infinity} + I*\pi$	Divide-by-zero exception raised
$+0 + I*0$	$-\text{infinity} + I*0$	Divide by zero exception raised
$x + I*\text{infinity}$	$+\text{infinity} + I*\pi/2$	For finite $x$
$x + I*\text{NaN}$	$\text{NaN} + I*\text{NaN}$	Optionally raises invalid floating-point exception for finite $x$
$-\text{infinity} + I*y$	$+\text{infinity} + I*\pi$	For finite positive-signed $y$
$+\text{infinity} + I*y$	$+\text{infinity} + I*0$	For finite positive-signed $y$
$-\text{infinity} + I*\text{infinity}$	$+\text{infinity} + I*3\pi/4$	
$+\text{infinity} + I*\text{infinity}$	$+\text{infinity} + I*\pi/4$	

$+-\infty + I*\text{NaN}$	$+\infty + I*\text{NaN}$	
$\text{NaN} + I*y$	$\text{NaN} + I*\text{NaN}$	Optionally raises invalid floating-point exception for finite $y$
$\text{NaN} + I*\infty$	$+\infty + I*\text{NaN}$	
$\text{NaN} + I*\text{NaN}$	$\text{NaN} + I*\text{NaN}$	

**SEE ALSO**

`complex(3)`, `log(3)`, `math(3)`

**STANDARDS**

The `clog()`, `cexpf()`, and `clogl()` functions conform to ISO/IEC 9899:1999 ("ISO C99").