

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").