Each <complex.h> function comes in three versions: a float complex version, a double complex version, and a long double complex version. The name of the float complex version ends with f, and the name of the long double complex version ends with l.

Before we delve into the <complex.h> functions, a few general comments are in order. First, as with the <math.h> functions, the <complex.h> functions expect angle measurements to be in radians, not degrees. Second, when an error occurs, the <complex.h> functions may store a value in the errno variable, but aren't required to.

errno variable ➤24.2

There's one last thing we'll need before tackling the <complex.h> functions. The term ***branch cut*** often appears in descriptions of functions that might conceivably have more than one possible return value. In the realm of complex numbers, choosing which value to return creates a branch cut: a curve (often just a line) in the complex plane around which a function is discontinuous. Branch cuts are usually not unique, but rather are determined by convention. An exact definition of branch cuts takes us further into complex analysis than I'd like to go, so I'll simply reproduce the restrictions from the C99 standard without further explanation.

Trigonometric Functions

```
double complex cacos(double complex z);
float complex cacosf(float complex z);
long double complex cacosl(long double complex z);

double complex casin(double complex z);
float complex casinf(float complex z);
long double complex casinl(long double complex z);

double complex catan(double complex z);
float complex catanf(float complex z);
long double complex catanl(long double complex z);

double complex ccos(double complex z);
float complex ccosf(float complex z);
long double complex ccosl(long double complex z);

double complex csin(double complex z);
float complex csinf(float complex z);
long double complex csinl(long double complex z);

double complex ctan(double complex z);
float complex ctanf(float complex z);
long double complex ctanl(long double complex z);
```

cacos The cacos function computes the complex arc cosine, with branch cuts outside the interval [−1, +1] along the real axis. The return value lies in a strip mathematically unbounded along the imaginary axis and in the interval [0, π] along the real axis.