

# The Complex class.

Class **Complex** is implemented in a way similar to that described by Stroustrup. In keeping with libg++ conventions, the class is named **Complex**, not **complex**. Complex arithmetic and relational operators are provided (+, -, \*, /, +=, -=, \*=, /=, ==, !=). Attempted division by (0, 0) triggers an exception.

Complex numbers may be constructed and used in the following ways:

<b>Complex x;</b>	Declares an uninitialized Complex.
<b>Complex x = 2; Complex y(2.0);</b>	Set x and y to the Complex value (2.0, 0.0);
<b>Complex x(2, 3);</b>	Sets x to the Complex value (2, 3);
<b>Complex u(x); Complex v = x;</b>	Set u and v to the same value as x.
<b>double real(Complex&amp; x);</b>	returns the real part of x.
<b>double imag(Complex&amp; x);</b>	returns the imaginary part of x.
<b>double abs(Complex&amp; x);</b>	returns the magnitude of x.
<b>double norm(Complex&amp; x);</b>	returns the square of the magnitude of x.
<b>double arg(Complex&amp; x);</b>	returns the argument (amplitude) of x.
<b>Complex polar(double r, double t = 0.0);</b>	returns a Complex with abs of r and arg of t.
<b>Complex conj(Complex&amp; x);</b>	returns the complex conjugate of x.

<b>Complex cos(Complex&amp; x);</b>	returns the complex cosine of x.
<b>Complex sin(Complex&amp; x);</b>	returns the complex sine of x.
<b>Complex cosh(Complex&amp; x);</b>	returns the complex hyperbolic cosine of x.
<b>Complex sinh(Complex&amp; x);</b>	returns the complex hyperbolic sine of x.
<b>Complex exp(Complex&amp; x);</b>	returns the exponential of x.
<b>Complex log(Complex&amp; x);</b>	returns the natural log of x.
<b>Complex pow(Complex&amp; x, long p);</b>	returns x raised to the p power.
<b>Complex pow(Complex&amp; x, Complex&amp; p);</b>	returns x raised to the p power.
<b>Complex sqrt(Complex&amp; x);</b>	returns the square root of x.
<b>ostream &lt;&lt; x;</b>	prints x in the form (re, im).
<b>istream &gt;&gt; x;</b>	reads x in the form (re, im), or just (re) or re in which case the imaginary part is set to zero.