

Chapter a02 – Complex Arithmetic

1. Scope of the Chapter

The functions provided in this chapter perform basic complex arithmetic operations, taking precautions to avoid unnecessary overflow or underflow in intermediate results. There are no individual function documents in this chapter.

See the Essential Introduction for details of how complex numbers are represented in the NAG C Library.

2. Available Functions

Complex number from real and imaginary parts	<code>nag_complex</code> (a02bac)
Real part of complex number	<code>nag_complex_real</code> (a02bbc)
Imaginary part of complex number	<code>nag_complex_imag</code> (a02bcc)
Add two complex numbers	<code>nag_complex_add</code> (a02cac)
Subtract one complex number from another	<code>nag_complex_subtract</code> (a02cbc)
Multiply two complex numbers	<code>nag_complex_multiply</code> (a02ccc)
Divide one complex number by another	<code>nag_complex_divide</code> (a02cdc)
Negate a complex number	<code>nag_complex_negate</code> (a02cec)
Conjugate a complex number	<code>nag_complex_conjg</code> (a02cfc)
Compare two complex numbers for equality	<code>nag_complex_equal</code> (a02cgc)
Compare two complex numbers for inequality	<code>nag_complex_not_equal</code> (a02chc)
Argument, $\arg(z)$	<code>nag_complex_arg</code> (a02dac)
Absolute value function, $\text{abs}(z)$	<code>nag_complex_abs</code> (a02dbc)
Square root function, $\text{sqrt}(z)$	<code>nag_complex_sqrt</code> (a02dcc)
Raise a complex number to an integer power	<code>nag_complex_i_power</code> (a02ddc)
Raise a complex number to a real power	<code>nag_complex_r_power</code> (a02dec)
Raise a complex number to a complex power	<code>nag_complex_c_power</code> (a02dfc)
Logarithm function, $\log(z)$	<code>nag_complex_log</code> (a02dgc)
Exponential function, $\exp(z)$	<code>nag_complex_exp</code> (a02dhc)
Sine function, $\sin(z)$	<code>nag_complex_sin</code> (a02djc)
Cosine function, $\cos(z)$	<code>nag_complex_cos</code> (a02dkc)
Tangent function, $\tan(z)$	<code>nag_complex_tan</code> (a02dlc)

3. Function Return Types and Argument Lists

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Complex nag_complex(double x, double y)
double nag_complex_real(Complex z)
double nag_complex_imag(Complex z)
Complex nag_complex_add(Complex z1, Complex z2)
Complex nag_complex_subtract(Complex z1, Complex z2)
Complex nag_complex_multiply(Complex z1, Complex z2)
Complex nag_complex_divide(Complex z1, Complex z2)
Complex nag_complex_negate(Complex z)
Complex nag_complex_conjg(Complex z)
Boolean nag_complex_equal(Complex z1, Complex z2)
Boolean nag_complex_not_equal(Complex z1, Complex z2)
double nag_complex_arg(Complex z)
double nag_complex_abs(Complex z)
Complex nag_complex_sqrt(Complex z)
Complex nag_complex_i_power(Complex z, Integer i)
Complex nag_complex_r_power(Complex z, double x)
Complex nag_complex_c_power(Complex z1, Complex z2)
Complex nag_complex_log(Complex z)
Complex nag_complex_exp(Complex z)
Complex nag_complex_sin(Complex z)
Complex nag_complex_cos(Complex z)
Complex nag_complex_tan(Complex z)

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