Complex Numbers

Imaginary Numbers

Composed of imaginary unit:

$$\sqrt{-1} = i$$

For example, $\sqrt{-9}$ may be represented as:

$$\sqrt{-9} = \sqrt{-1} \cdot \sqrt{9} = \pm 3i$$

Which is true because

$$(-3i)(-3i) = 9i^2 = -9$$

where $i^2 = -1$

Complex Numbers

Complex numbers are represented in the form

$$z = x + iy$$

where x and y are real numbers.

Complex Number Functions

Functions can be used to determine the coefficients of the real and imaginary parts of a complex number.

The real part of any number z can be determined through

$$Re(z) = x$$

while the imaginary part of z can be determined through

$$Im(z) = y$$

Example
Given imaginary number $z_1 = 2 + 3i$,

$$Re(z_1) = 2$$

$$Im(z_1) = 3$$

Similar to regular numbers, basic arithmetic operations can be done on complex numbers.