



Math for the people, by the people.

imaginary unit

Canonical name	ImaginaryUnit
Date of creation	2013-03-22 12:21:14
Last modified on	2013-03-22 12:21:14
Owner	Mathprof (13753)
Last modified by	Mathprof (13753)
Numerical id	10
Author	Mathprof (13753)
Entry type	Definition
Classification	msc 12D99
Synonym	i
Related topic	Imaginary
Related topic	Complex

The *imaginary unit* $i := \sqrt{-1}$. Any imaginary number m may be written as $m = bi$, $b \in \mathbb{R}$. Any complex number $c \in \mathbb{C}$ may be written as $c = a + bi$, $a, b \in \mathbb{R}$.

Note that there are two complex square roots of -1 (i.e. the two solutions to the equation $x^2 + 1 = 0$ in \mathbb{C}), so there is always some ambiguity in which of these we choose to call “ i ” and which we call “ $-i$ ”, though this has little bearing on any applications of complex numbers.

In physics and some engineering fields, the symbol j is used for the imaginary unit.