T

Ι

Imaginary unit

of i are thus i $3 = i \ 2i = (?1)i = ?i$, i $4 = i \ 3i = (?i)i = 1$, i $5 = i \ 4i = (1)i = i$, {\displaystyle {\begin{alignedat}{3}i - The imaginary unit or unit imaginary number (i) is a mathematical constant that is a solution to the quadratic equation x2 + 1 = 0. Although there is no real number with this property, i can be used to extend the real numbers to what are called complex numbers, using addition and multiplication. A simple example of the use of i in a complex number is 2 + 3i.

Imaginary numbers are an important mathematical concept; they extend the real number system

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R
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{\displaystyle \mathbb {R} }
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to the complex number system

C

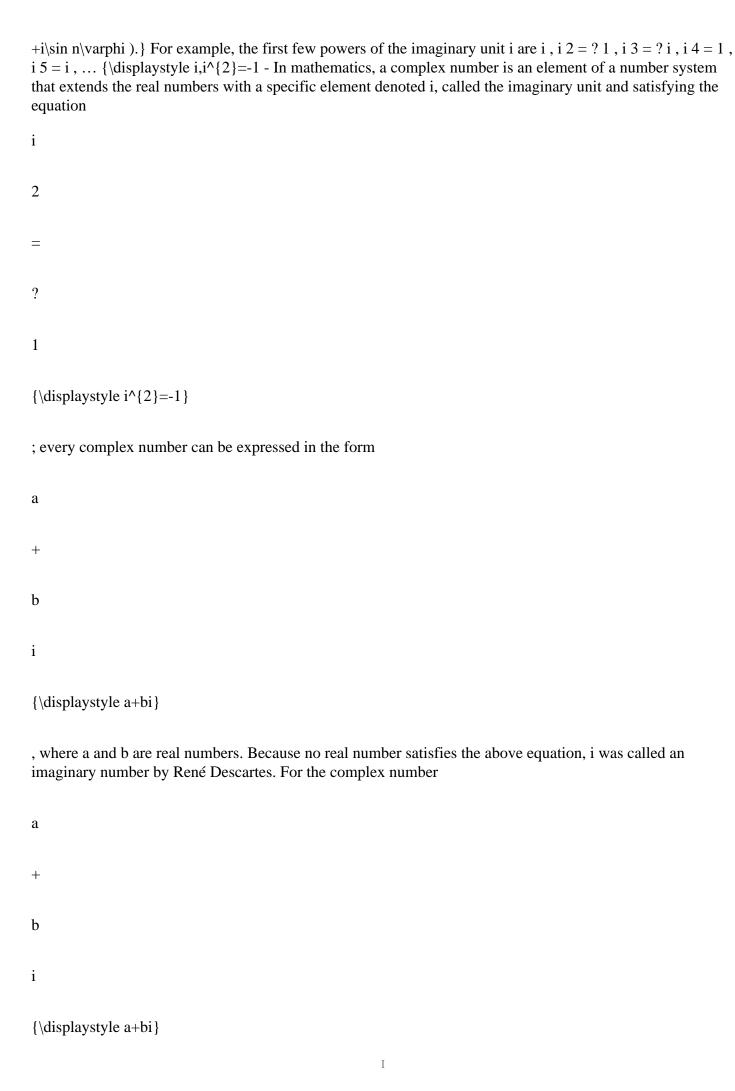
{\displaystyle \mathbb {C},}

in which at least one root for every nonconstant polynomial exists (see Algebraic closure and Fundamental theorem of algebra). Here, the term imaginary is used because there is no real number having a negative square.

There are two complex square roots of ?1: i and ?i, just as there are two complex square roots of every real number other than zero (which has one double square root).

In contexts in which use of the letter i is ambiguous or problematic, the letter j is sometimes used instead. For example, in electrical engineering and control systems engineering, the imaginary unit is normally denoted by j instead of i, because i is commonly used to denote electric current.

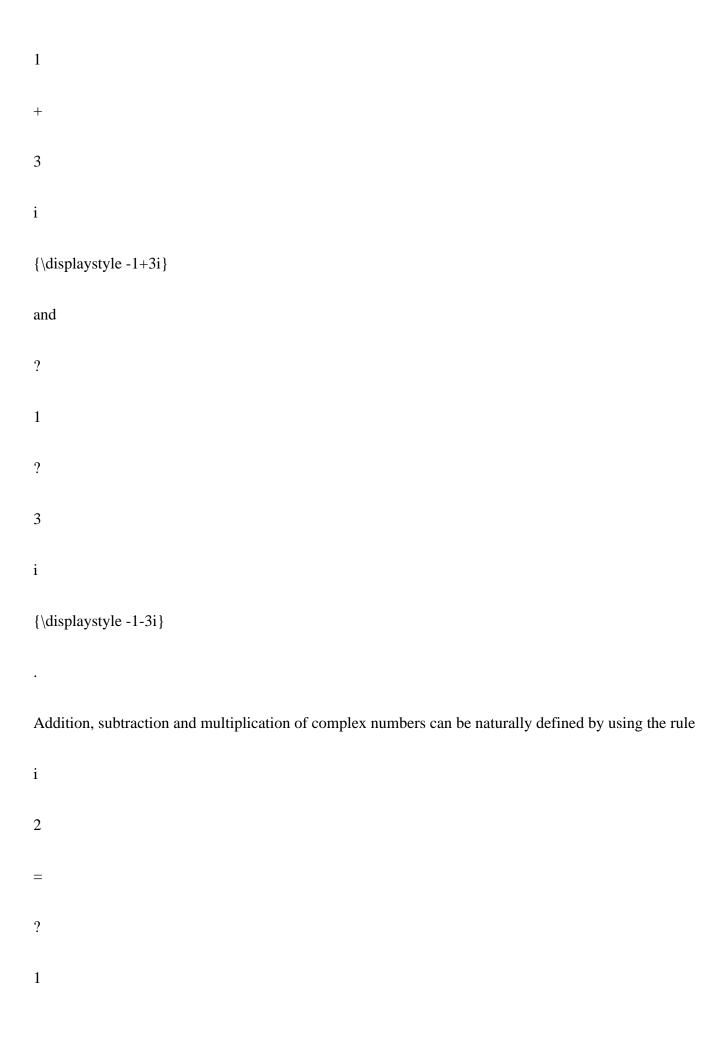
Complex number



, a is called the real part, and b is called the imaginary part. The set of complex numbers is denoted by either of the symbols
C
{\displaystyle \mathbb {C} }
or C. Despite the historical nomenclature, "imaginary" complex numbers have a mathematical existence as firm as that of the real numbers, and they are fundamental tools in the scientific description of the natural world.
Complex numbers allow solutions to all polynomial equations, even those that have no solutions in real numbers. More precisely, the fundamental theorem of algebra asserts that every non-constant polynomial equation with real or complex coefficients has a solution which is a complex number. For example, the equation
x
+
1
)
2
?
9
${\displaystyle \text{(displaystyle } (x+1)^{2}=-9}}$
has no real solution, because the square of a real number cannot be negative, but has the two nonreal complex

?

solutions



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along with the associative, commutative, and distributive laws. Every nonzero complex number has a
multiplicative inverse. This makes the complex numbers a field with the real numbers as a subfield. Because
of these properties,?
a
b
i
a
+
i
b
{\displaystyle a+bi=a+ib}
?, and which form is written depends upon convention and style considerations.
The complex numbers also form a real vector space of dimension two, with
{
1
i
}
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 ${\displaystyle i^{2}=-1}$

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{\langle displaystyle \setminus \{1,i \} \}}
```

as a standard basis. This standard basis makes the complex numbers a Cartesian plane, called the complex plane. This allows a geometric interpretation of the complex numbers and their operations, and conversely some geometric objects and operations can be expressed in terms of complex numbers. For example, the real numbers form the real line, which is pictured as the horizontal axis of the complex plane, while real multiples of

{\displaystyle i}

i

are the vertical axis. A complex number can also be defined by its geometric polar coordinates: the radius is called the absolute value of the complex number, while the angle from the positive real axis is called the argument of the complex number. The complex numbers of absolute value one form the unit circle. Adding a fixed complex number to all complex numbers defines a translation in the complex plane, and multiplying by a fixed complex number is a similarity centered at the origin (dilating by the absolute value, and rotating by the argument). The operation of complex conjugation is the reflection symmetry with respect to the real axis.

The complex numbers form a rich structure that is simultaneously an algebraically closed field, a commutative algebra over the reals, and a Euclidean vector space of dimension two.

Unicode subscripts and superscripts

The World Wide Web Consortium and the Unicode Consortium have made recommendations on the choice between using markup and using superscript and subscript characters:

When used in mathematical context (MathML) it is recommended to consistently use style markup for superscripts and subscripts [...] However, when super and sub-scripts are to reflect semantic distinctions, it is easier to work with these meanings encoded in text rather than markup, for example, in phonetic or phonemic transcription.

Fraktur

accents (?à?, ?â?, ?ê?, ?î?, ?ô?, ?û?) together with digraphs (?ah?, ?eh? etc.) are used for long vowels (?? ??, ?? ??, ?? ??, ?? ??). Stroked - Fraktur (German: [f?ak?tu???]) is a calligraphic hand of the Latin alphabet and any of several blackletter typefaces derived from this hand. It is designed such that the beginnings and ends of the individual strokes that make up each letter will be clearly visible, and often emphasized; in this way it is often contrasted with the curves of the Antiqua (common) typefaces where the letters are designed to flow and strokes connect together in a continuous fashion. The word "Fraktur" derives from Latin fr?ct?ra ("a break"), built from fr?ctus, passive participle of frangere ("to break"), which is also

the root for the English word "fracture". In non-professional contexts, the term "Fraktur" is sometimes misused to refer to all blackletter typefaces – while Fraktur typefaces do fall under that category, not all blackletter typefaces exhibit the Fraktur characteristics described above.

Fraktur is often characterized as "the German typeface", as it remained popular in Germany and much of Eastern Europe far longer than elsewhere. Beginning in the 19th century, the use of Fraktur versus Antiqua (seen as modern) was the subject of controversy in Germany. The Antiqua–Fraktur dispute continued until 1941, when the Nazi government banned Fraktur typefaces. After Nazi Germany fell in 1945, Fraktur was unbanned, but it failed to regain widespread popularity.

Numerals in Unicode

Help desk

"Help Desk". Merriam-Webster.com Dictionary. 16 November 2021. Middleton, I "Key Factors in Help Desk Success (An analysis of areas critical to help desk - A help desk is a department or person that provides assistance and information, usually for electronic or computer problems. In the mid-1990s, research by Iain Middleton of Robert Gordon University studied the value of an organization's help desks. It found that value was derived not only from a reactive response to user issues, but also from the help desk's unique position of communicating daily with numerous customers or employees. Information gained in areas such as technical problems, user preferences, and satisfaction can be valuable for the planning and development work of other information technology units.

A main function of the help desk is to separate issues from defects. Many issues can be solved at the help desk level such as password resets and simple misunderstandings. Some issues will be the result of actual product defect which should be forwarded to a development team for resolution.

Large help desks have a person or team responsible for managing the incoming requests, called "issues"; they are commonly called queue managers or queue supervisors. The queue manager is responsible for the issue queues, which can be set up in various ways depending on the help desk size or structure. Typically, large help desks have several teams that are experienced in working on different issues. The queue manager will assign an issue to one of the specialized teams based on the type of issue raised. Some help desks may have telephone systems with ACD splits ensuring that calls about specific topics are put through to analysts with the requisite experience or knowledge.

Visitor center

lower case, roman type, serif, extra bold, letter i, but the script typeface form i {\displaystyle i} is common. In the United Kingdom, there is a nationwide - A visitor center or centre (see American and British English spelling differences), visitor information center or tourist information centre is a physical location that

provides information to tourists.

Enclosed Alphanumerics

It is currently fully allocated. Within the Basic Multilingual Plane, a few additional enclosed numerals are in the Dingbats and the Enclosed CJK Letters and Months blocks. There is also a block with more of these characters in the Supplementary Multilingual Plane named Enclosed Alphanumeric Supplement (U+1F100–U+1F1FF), as of Unicode 6.0.

Enclosed Alphanumeric Supplement

The block is mostly an extension of the Enclosed Alphanumerics block, containing further enclosed alphanumeric characters which are not included in that block or Enclosed CJK Letters and Months. Most of the characters are single alphanumerics in boxes or circles, or with trailing commas. Two of the symbols are identified as dingbats. A number of multiple-letter enclosed abbreviations are also included, mostly to provide compatibility with Broadcast Markup Language standards (see ARIB STD B24 character set) and Japanese telecommunications networks' emoji sets. The block also includes the regional indicator symbols to be used for emoji country flag support.

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