Contents

Chapter 1

Classes

1.1 imaginary – complex numbers and its functions

The module `imaginary` provides complex numbers. The functions provided are mainly corresponding to the cmath standard module.

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This module also provides following constants:

e :

This constant is obsolete (Ver 1.1.0).

pi :

This constant is obsolete (Ver 1.1.0).

j :

`j` is the imaginary unit.

theComplexField :

`the`ComplexField is the instance of **ComplexField**.

1.1.1 ComplexField – field of complex numbers

The class is for the field of complex numbers. The class has the single instance **theComplexField**.

This class is a subclass of **Field**.

Initialize (Constructor)

ComplexField() → *ComplexField*

Create an instance of ComplexField. You may not want to create an instance, since there is already **theComplexField**.

Attributes

zero :
It expresses The additive unit 0. (read only)

one :
It expresses The multiplicative unit 1. (read only)

Operations

operator	explanation
`in`	membership test; return whether an element is in or not.
`repr`	return representation string.
`str`	return string.

Methods

1.1.1.1 createElement – create Imaginary object

createElement(self, seed: *integer*) → *Integer*

Return a Complex object with seed.

seed must be complex or numbers having embedding to complex.

1.1.1.2 getCharacteristic – get characteristic

getCharacteristic(self) → *integer*

Return the characteristic, zero.

1.1.1.3 issubring – subring test

issubring(self, aRing: Ring) → *bool*

Report whether another ring contains the complex field as subring.

1.1.1.4 issuperring – superring test

issuperring(self, aRing: Ring) → *bool*

Report whether the complex field contains another ring as subring.

1.1.2 Complex – a complex number

Complex is a class of complex number. Each instance has a coupled numbers; real and imaginary part of the number.

This class is a subclass of **FieldElement**.

All implemented operators in this class are delegated to complex type.

Initialize (Constructor)

Complex(`re`: *number* `im`: *number*=0) → *Imaginary*

Create a complex number.

`re` can be either real or complex number. If `re` is real and `im` is not given, then its imaginary part is zero.

Attributes

real :

It expresses the real part of complex number.

imag :

It expresses the imaginary part of complex number.

Methods

1.1.2.1 getRing – get ring object

getRing(self) → *ComplexField*

Return the complex field instance.

1.1.2.2 arg – argument of complex

arg(self) → *radian*

Return the angle between the x-axis and the number in the Gaussian plane.
radian must be Float.

1.1.2.3 conjugate – complex conjugate

conjugate(self) → *Complex*

Return the complex conjugate of the number.

1.1.2.4 copy – copied number

copy(self) → *Complex*

Return the copy of the number itself.

1.1.2.5 inverse – complex inverse

inverse(self) → *Complex*

Return the inverse of the number.
If the number is zero, ZeroDivisionError is raised.

1.1.3 ExponentialPowerSeries – exponential power series

This class is obsolete (Ver 1.1.0).

1.1.4 AbsoluteError – absolute error

This class is obsolete (Ver 1.1.0).

1.1.5 RelativeError – relative error

This class is obsolete (Ver 1.1.0).

1.1.6 exp(function) – exponential value

This function is obsolete (Ver 1.1.0).

1.1.7 expi(function) – imaginary exponential value

This function is obsolete (Ver 1.1.0).

1.1.8 log(function) – logarithm

This function is obsolete (Ver 1.1.0).

1.1.9 sin(function) – sine function

This function is obsolete (Ver 1.1.0).

1.1.10 cos(function) – cosine function

This function is obsolete (Ver 1.1.0).

1.1.11 tan(function) – tangent function

This function is obsolete (Ver 1.1.0).

1.1.12 sinh(function) – hyperbolic sine function

This function is obsolete (Ver 1.1.0).

1.1.13 cosh(function) – hyperbolic cosine function

This function is obsolete (Ver 1.1.0).

1.1.14 tanh(function) – hyperbolic tangent function

This function is obsolete (Ver 1.1.0).

1.1.15 atanh(function) – hyperbolic arc tangent function

This function is obsolete (Ver 1.1.0).

1.1.16 sqrt(function) – square root

This function is obsolete (Ver 1.1.0).

Bibliography