

Activities

1. Add overloads for multiplication and division to the Complex class. These have names `__mul__` and `__truediv__`. Make sure that dividing by zero raises the ZeroDivision exception. The functions are defined by

$$(a + ib)(c + id) = (ac - bd) + i(ad + bc)$$

and

$$\frac{a + ib}{c + id} = \frac{ac + bd}{c^2 + d^2} + i \frac{bc - ad}{c^2 + d^2}.$$

2. The `__neg__` method can be overwritten so that `-x` returns the negative of a complex number `x`. Implement and test it. (Hint: the method needs to return a new complex number.)
3. Python allows us to override operators such as `+=` by implementing a method `__iadd__`. Below is a sample. Notice that we have to return `self` since the method gets executed and then the result is assigned to `self`.

```
def __iadd__(self, other):
    self.re += other.re
    self.im += other.im
    return self

if __name__ == "__main__":
    a = Complex(2, 3)
    b = Complex(3, -5)
    a+=b
```

Implement immediate subtraction `__isub__`, multiplication `__imul__` and division `__itruediv__`.