Activities

1. Add overloads for multiplication and division to the Complex class. These have names __mul__ and __div__. 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.

```python
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 __idiv__.