



# Classes: Dealing with Complex Numbers ★

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Problem

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For this challenge, you are given two complex numbers, and you have to print the result of their addition, subtraction, multiplication, division and modulus operations.

The real and imaginary precision part should be correct up to two decimal places.

## Input Format

One line of input: The real and imaginary part of a number separated by a space.

## Output Format

For two complex numbers  $C$  and  $D$ , the output should be in the following sequence on separate lines:

- $C + D$
- $C - D$
- $C * D$
- $C/D$
- $\text{mod}(C)$
- $\text{mod}(D)$

For complex numbers with non-zero real( $A$ ) and complex part( $B$ ), the output should be in the following format:

$A + Bi$

Replace the plus symbol (+) with a minus symbol (−) when  $B < 0$ .

For complex numbers with a zero complex part i.e. real numbers, the output should be:

$A + 0.00i$

For complex numbers where the real part is zero and the complex part( $B$ ) is non-zero, the output should be:

$0.00 + Bi$

## Sample Input

```
2 1
5 6
```

## Sample Output

```
7.00+7.00i
-3.00-5.00i
4.00+17.00i
0.26-0.11i
2.24+0.00i
7.81+0.00i
```

## Concept

Python is a fully object-oriented language like C++, Java, etc. For reading about classes, refer [here](#).

Methods with a double underscore before and after their name are considered as built-in methods. They are used by interpreters and are generally used in the implementation of overloaded operators or other built-in functionality.

`__add__` -> Can be overloaded for + operation

`__sub__` -> Can be overloaded for - operation

`__mul__` -> Can be overloaded for \* operation

For more information on operator overloading in Python, refer [here](#).

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Language

Python 3



```

1  import math
2
3  class Complex(object):
4      def __init__(self, real, imaginary):
5          self.real = real
6          self.imaginary = imaginary
7
8      def __add__(self, no):
9          return Complex(self.real + no.real, self.imaginary + no.imaginary)
10
11     def __sub__(self, no):
12         return Complex(self.real - no.real, self.imaginary - no.imaginary)
13
14     def __mul__(self, no):
15         new_real = self.real * no.real - self.imaginary * no.imaginary
16         new_imaginary = self.real * no.imaginary + self.imaginary * no.real
17         return Complex(new_real, new_imaginary)
18
19     def __truediv__(self, no):
20         new_real = (self.real * no.real + self.imaginary * no.imaginary) / (no.real **2 + no.imaginary**2)
21         new_imaginary = (self.imaginary * no.real - self.real * no.imaginary) / (no.real **2 + no.imaginary**2)
22         return Complex(new_real, new_imaginary)
23
24     def mod(self):
25         return Complex(math.sqrt(self.real**2 + self.imaginary**2),0)
26
27     def __str__(self):
28         if self.imaginary == 0:
29             result = "%.2f+0.00i" % (self.real)
30         elif self.real == 0:
31             if self.imaginary >= 0:
32                 result = "0.00+%.2fi" % (self.imaginary)
33             else:
34                 result = "0.00-%.2fi" % (abs(self.imaginary))

```

EMACS

Line: 26 Col: 1

Upload Code as File

☐ Test against custom input


Run Code

Submit Code

You have earned 20.00 points!

67/115 challenges solved.

58%



Congratulations

You solved this challenge. Would you like to challenge your friends?

Next Challenge

Test case 0

Compiler Message

Test case 1

Success

Test case 2

Input (stdin)

1 2 1

2 5 6

Download

Test case 3

Expected Output

1 7.00+7.00i

2 -3.00-5.00i

3 4.00+17.00i

4 0.26-0.11i

5 2.24+0.00i

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Test case 4

Test case 5

Test case 6