Marwadi University Marwadi Chandarana Group NAAC A+	**Marwadi University** **Faculty of Engineering & Technology** **Department of Information and Communication Technology**	
Subject: Programming With Python (01CT1309)	**Aim:** Write a python program to define a module and import a specific function in that module to another program	
Experiment No: 08	**Date:**	**Enrollment No: 92400133189**

Aim: Write a python program to define a module and import a specific function in that module to another program

IDE:

Python Modules

As our program grows bigger, it may contain many lines of code. Instead of putting everything in a single file, we can use modules to separate codes in separate files as per their functionality. This makes our code organized and easier to maintain.

Module is a file that contains code to perform a specific task. A module may contain variables, functions, classes etc. Let's see an example,

Let us create a module. Type the following and save it as example.py

```
def add(a,b):
    result = a+b
    return result
```

```
import example as addition

a = addition.add(4,5)

print(a)
```

Output

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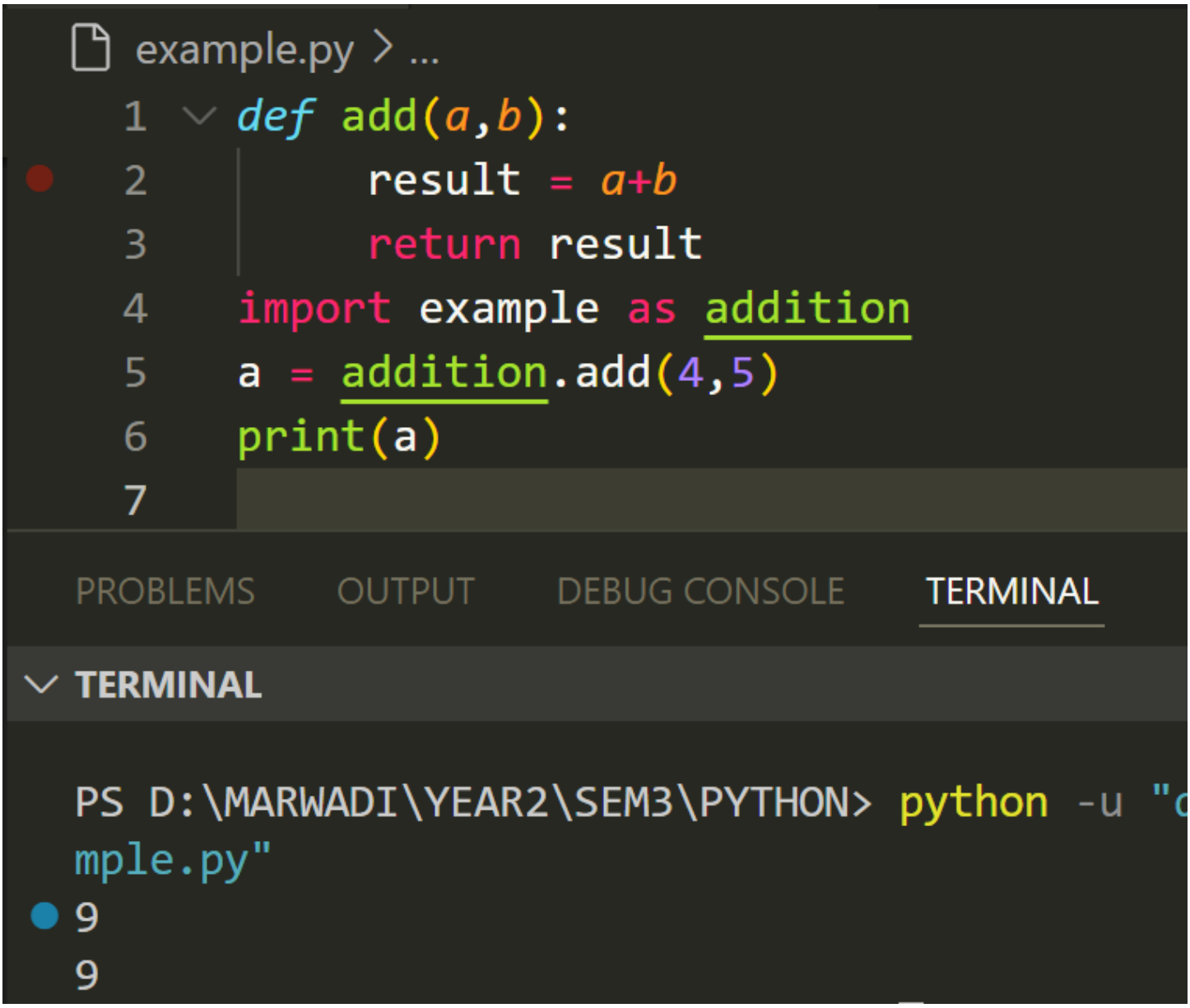

Import Python Standard Library Modules

The Python standard library contains well over 200 modules. We can import a module according to our needs. Suppose we want to get the value of pi, first we import the math module and use math.pi. For example,

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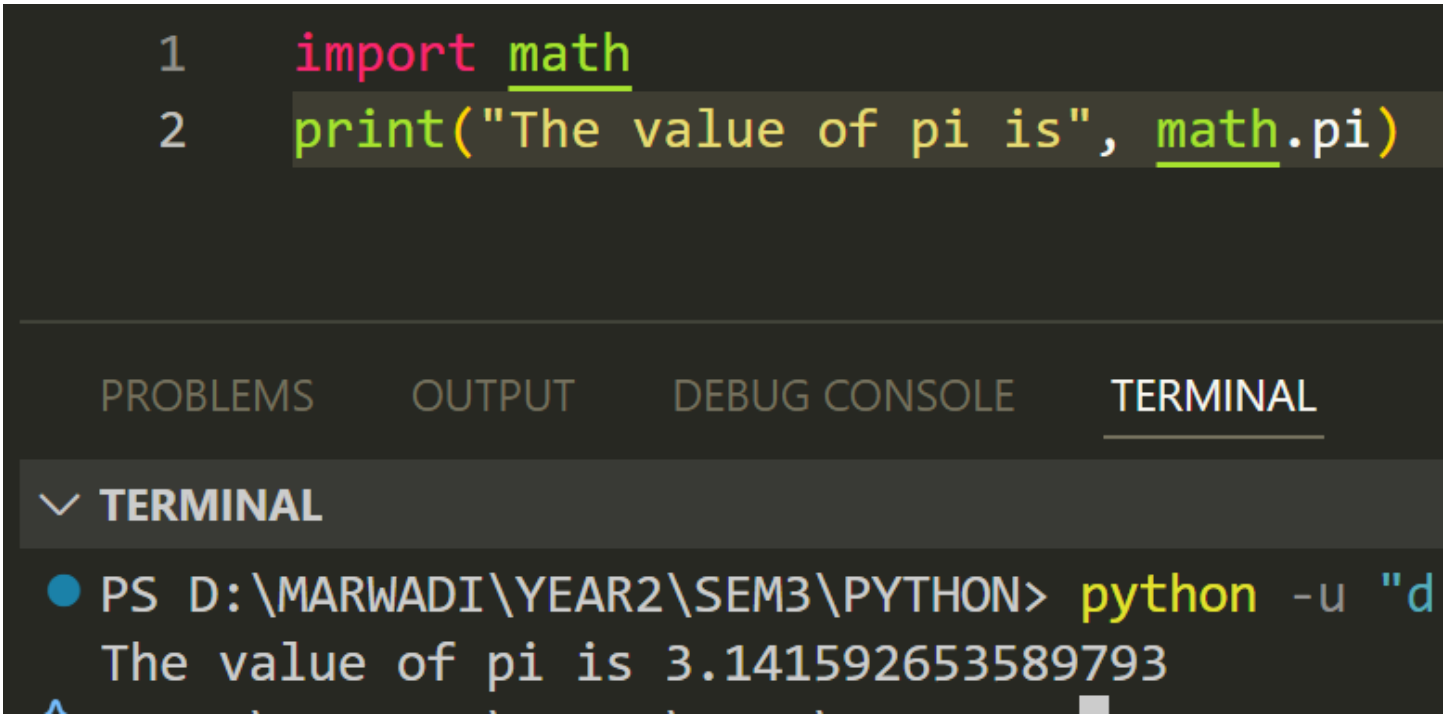
#import standard math module

import math

use math.pi to get value of pi

print("The value of pi is", math.pi)

Output



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Python import with Renaming

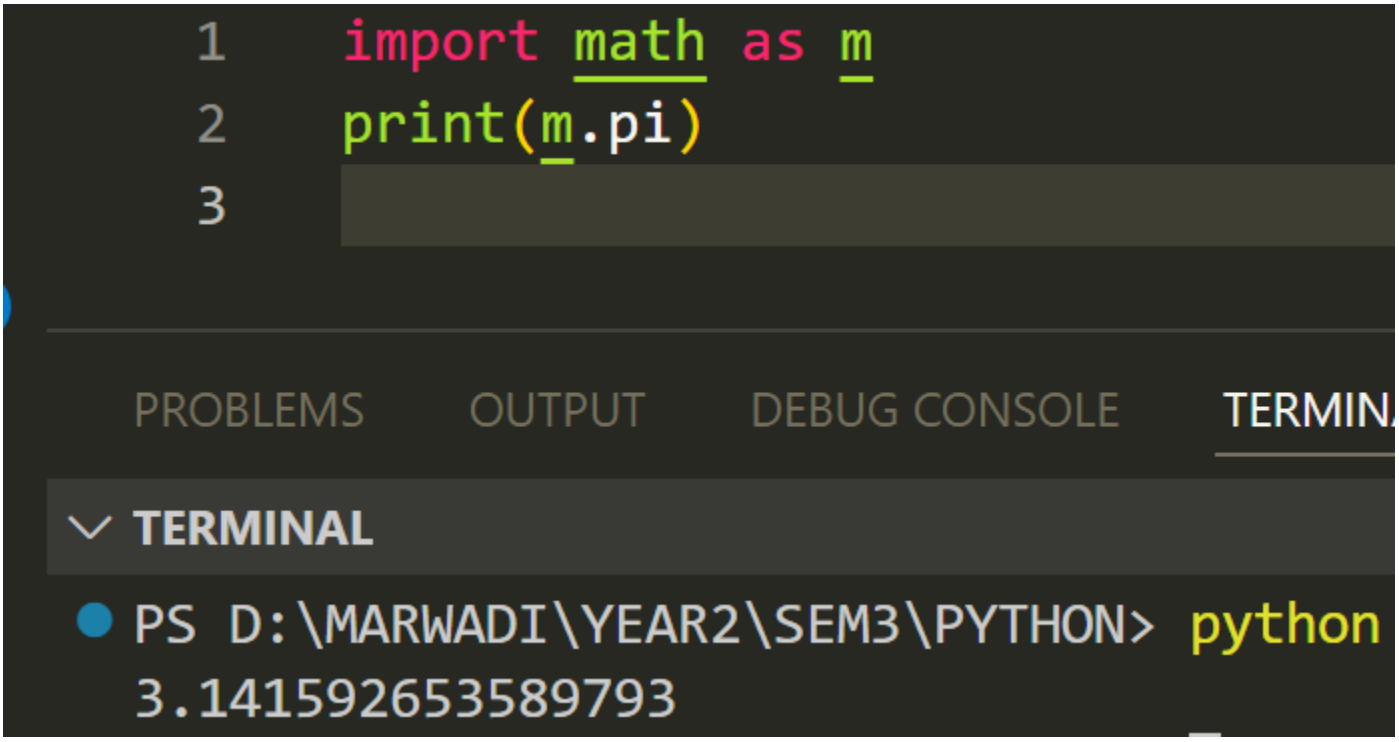
In Python, we can also import a module by renaming it. For example,

import module by renaming it

import math as m

print(m.pi)

Output



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Python from...import statement

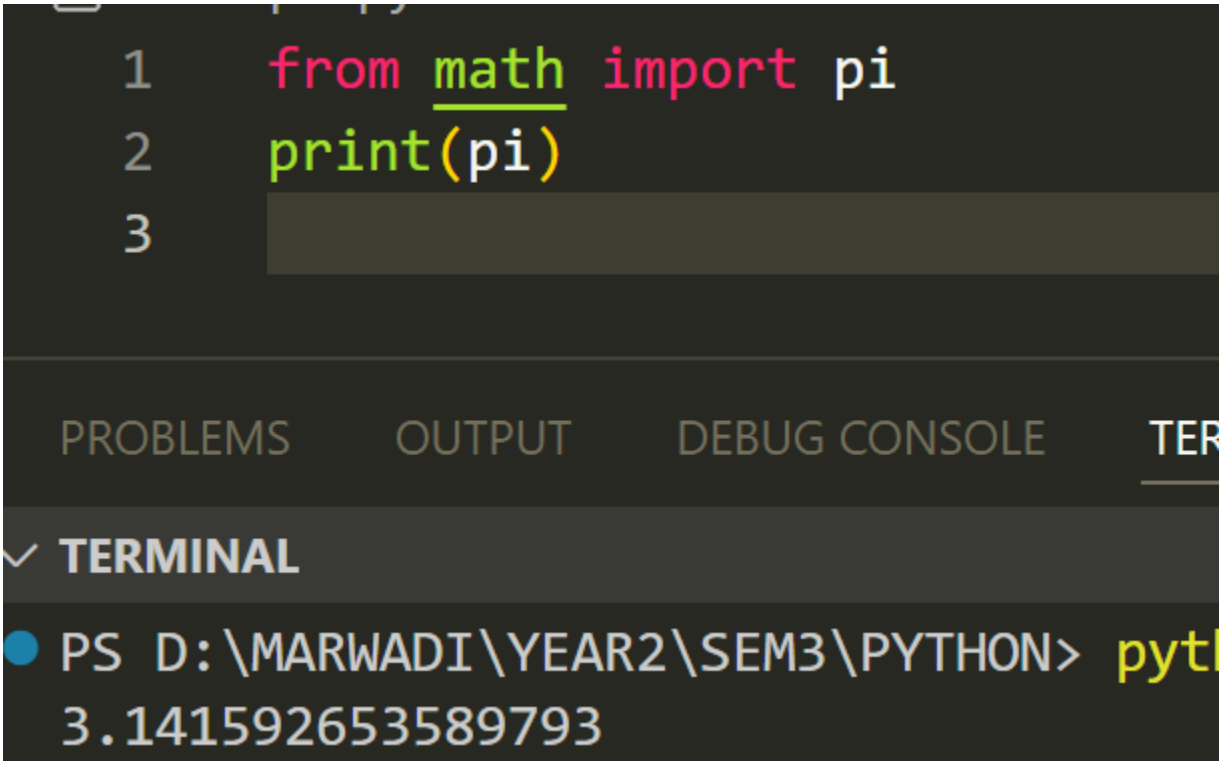
We can import specific names from a module without importing the module as a whole. For example,

import only pi from math module

from math import pi

print(pi)

Output



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Import all names

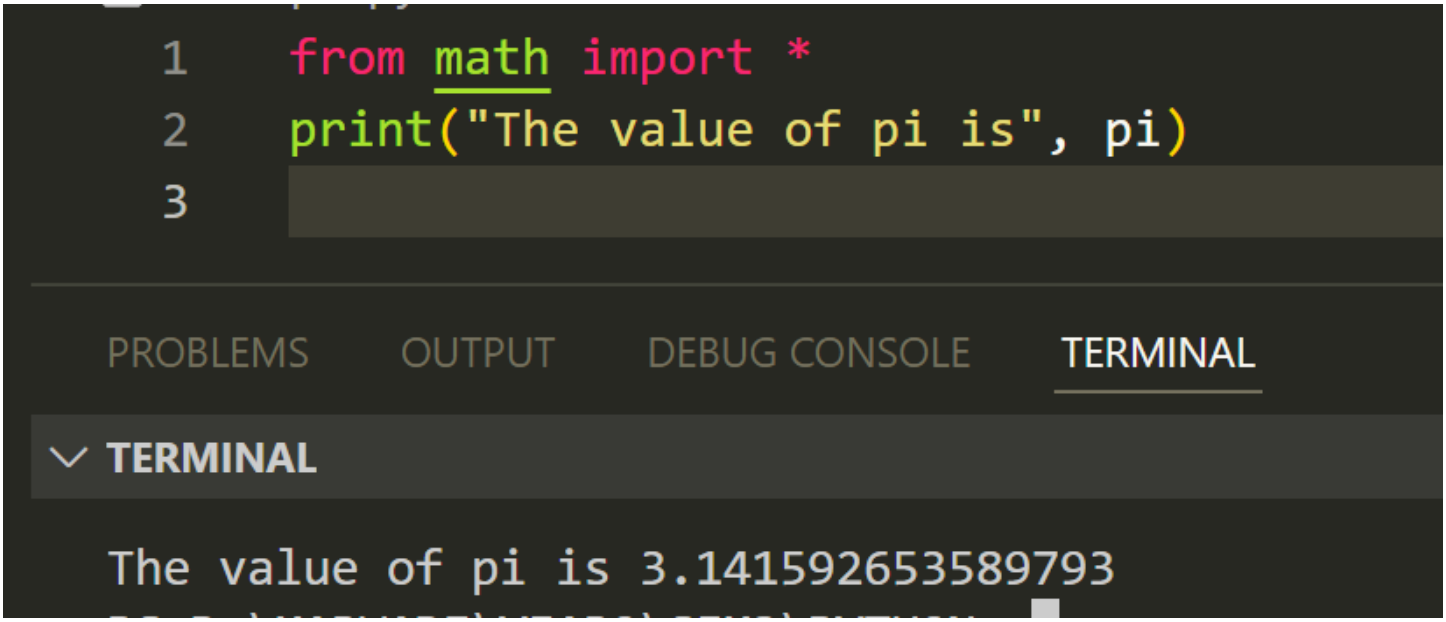
In Python, we can import all names(definitions) from a module using the following construct:

import all names from the standard module math

from math import *

print("The value of pi is", pi)

Output



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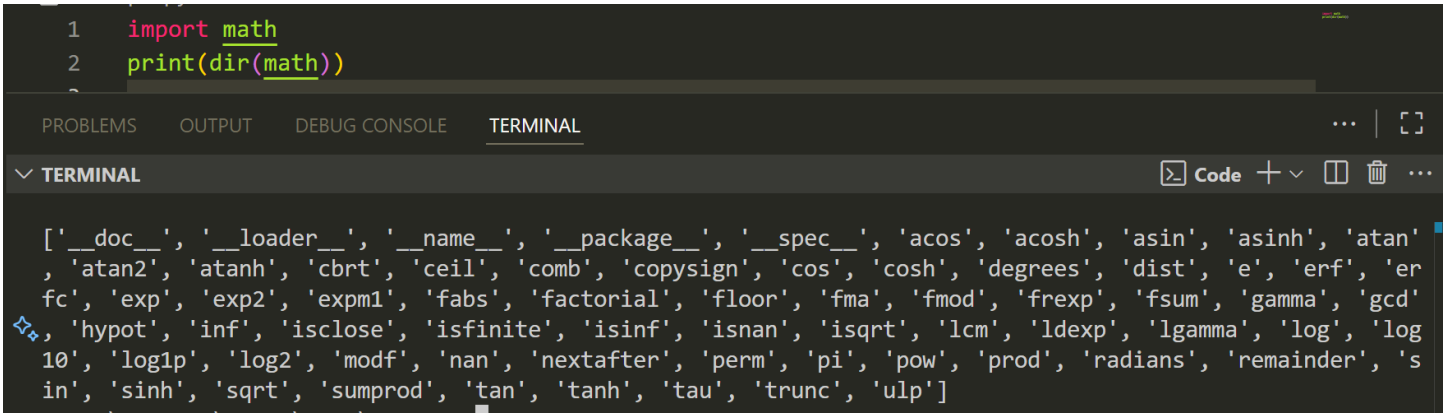
The dir() built-in function

In Python, we can use the dir() function to list all the function names in a module.

We can use dir in math module in the following way:

print(dir(math))

Output



Built-in modules

Some examples of Python built-in modules include “os”, “sys”, “math”, and “datetime”.

help('modules')

Output:

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```
2   help('modules')
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

TERMINAL

```
_testsinglephase    imaplib             sre_compile         xml
_thread             importlib           sre_constants       xmlrpc
_threading_local    importlib_metadata  sre_parse           xxsubtype
_tkinter            inflect             ssl                 zipapp
_tokenize           inspect             sspi                zipfile
_tracemalloc        inspector           sspicon             zipimport
_typing             io                  start_pythonwin     zipp
_uuid               ipaddress           stat                zlib
_warnings           isapi               statistics          zoneinfo

Enter any module name to get more help.  Or, type "modules spam" to search
for modules whose name or summary contain the string "spam".
```

Let's find the area of the circle

$$a = \pi r^2$$

Python Code

Print the values of positive and negative infinity.

import math

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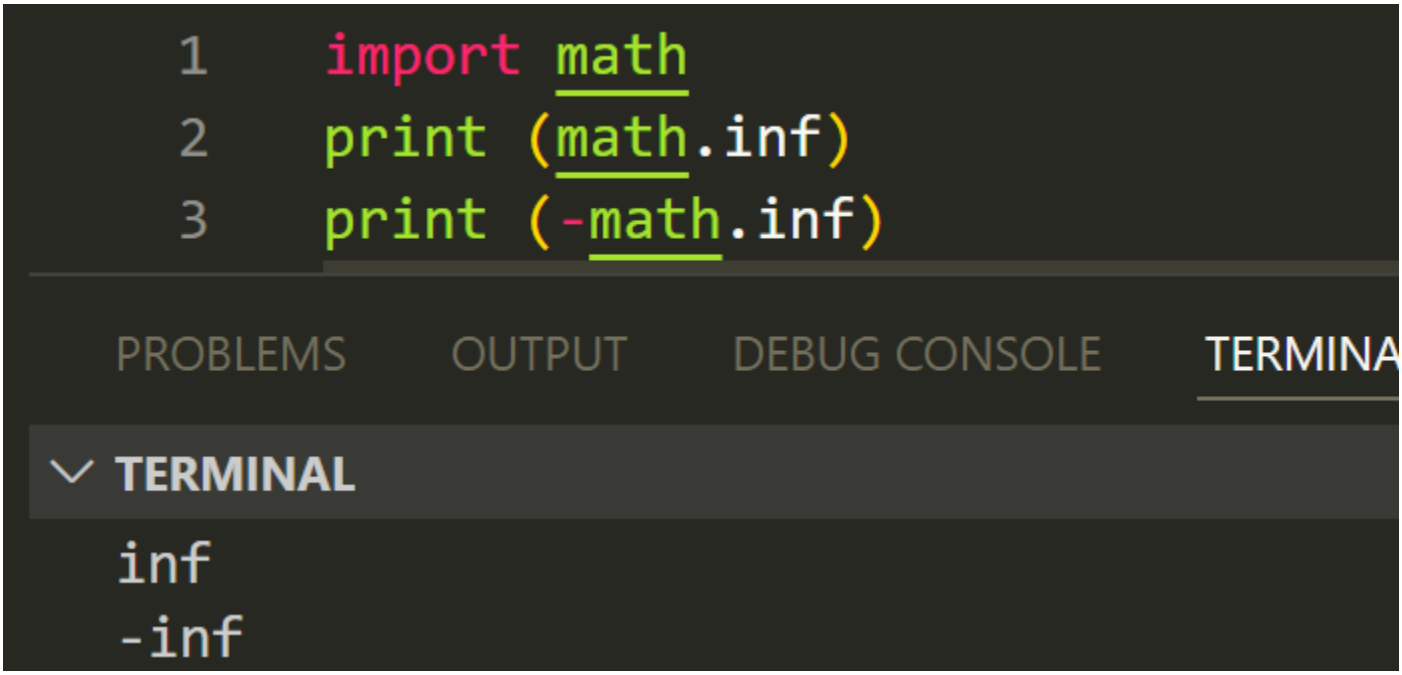
print (math.inf)

print (-math.inf)

Output



List of Mathematical function in Math Module

pow(x,y), sqrt(x), trunc(x), cos(x), sin(x), tan(x), degrees(x), radians(x), exp(x), log2(x), log10(x)

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Post Lab Exercise:

a. Write a Python program to convert degree to radian

```
8-1 > degree
1   import math
2   degree = 30
3   radian = math.radians(degree)
4   print(degree, "degrees in radians is", radian)

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

TERMINAL
PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\8> python 8-1
30 degrees in radians is 0.5235987755982988
```

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b. Make a simplest possible Python program that calculates and prints the value of the formula

$$y = 6x^2 + 4sin(x)$$

```
8-2 > ...
1   import math
2   x = 5
3   y = 3
4   value = (6 * (x**2) + 4 * math.sin(x)) / (x - y)
5   print("For x=5, y=3, value =", value)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

TERMINAL

```
PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\8> python 8-2
For x=5, y=3, value = 73.08215145067372
```

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c. Write a Python function that evaluates the mathematical functions $f(x) = cos(2x), f'(x) = -2\sin(2x)\,, and\ f''(x) = -4\cos(2x).$

Return these three values. Write out the results of these values for $x = \pi$

```
8-3 > ...
1   import math
2   def calculate(val):
3       return math.exp(val), math.log2(val), math.sqrt(abs(val))
4   num = 4
5   a, b, c = calculate(num)
6   print("exp:", a)
7   print("log2:", b)
8   print("sqrt(abs):", c)

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL

TERMINAL                                   Code
PS D:\MARWADI\YEAR2\SEM3\PYTHON\PythonPostLab\8> python 8-3
exp: 54.598150033144236
log2: 2.0
sqrt(abs): 2.0
```

Github : [PythonPostLab/8 at main · Om-Lathigara/PythonPostLab]