1. What is a namespace, and what is the reason they used in Python programming?

2. Write a simple program that has 3 variables named x that are each in separate namespaces.

3. Is it possible to define a Python function that modifies a variable defined outside of the function? For example, in the following piece of code below is it possible that the program prints two different values? If not, explain why not, or if so fill in the function f() that would achieve this result.

```python
def f():
    x = 0
    print(x)
    f()
    print(x)
```

```python
x = 0
print(x)
f()
print(x)
```
4. Explain the difference (with regard to the namespaces they create) among the following three ways to import the math module:

   a) import math

   b) from math import *

   c) import math as ma

5. Explain why the dot operator is used in both `math.sqrt` and `L.append`. One is a function from an imported module and the other is a method of the list class. Why do you suppose the developers of the Python programming language used the dot (.) in both of these contexts?