1. You need to write code to do the following:

- Define the function \( f(x) = 0.1x\left(1 - \frac{x}{100}\right) \).
- Plot \( f(x) \) in magenta for \( x \) ranging between 0 and 150, with the axes labeled appropriately, of course.

Choose the correct two lines of code from the choices below to accomplish this.

**First line:**

A. \( f(x) = 0.1x(1 - x/100) \)
B. \( f = 0.1x(1 - x/100) \)
C. \( f(x) = 0.1\times(1 - x/100) \)
D. \( f = 0.1\times(1 - x/100) \)

**Second line:**

A. \( \text{plot}(f(x), 0, 150, \text{color}="magenta", \text{axes_labels}=["x", "f(x)"]) \)
B. \( \text{plot}(f(x), (x, 0, 150), \text{color}="magenta", \text{axes_labels}=["x", "f(x)"]) \)
C. \( \text{plot}(f(x), (x, 0, 150), \text{color}="magenta") \)
D. \( \text{plot}(f(x), (x, 0, 150), \text{color}="magenta", \text{axes_labels}=[x, f(x)]) \)
E. \( \text{plot}(f(x), 0, 150, \text{color}="magenta", \text{axes_labels}=[x, f(x)]) \)
2. The code below does not have any errors. If you run this code in SageMath, what will the output be?

```python
def squarefunc(x, y):
    a = x^2
    b = y^2
    return a + b

squarefunc(4, 7)
```
3. Your goal is to write code that will create a list of the numbers $n^3$, for values of $n$ from 1 to 5 (inclusive). In other words, if after running your code, you type `print listofcubes`, the output would be $[1, 8, 27, 64, 125]$.

Choose the correct lines of code from the choices below to accomplish this.

**First line:**
A. `listofcubes = []`
B. `listofcubes = [1]`
C. `listofcubes = [1, 2, 3, 4, 5]`
D. `listofcubes = srange(1, 5)`
E. `listofcubes = srange(1, 6)`

**Second line:**
A. `for n in 1, 2, 3, 4, 5:`
B. `for n in [1, 2, 3, 4, 5]:`
C. `for n in srange(5):`
D. `for n in srange(1, 5):`
E. `for n in srange(1, 6):`

**Third line:**
A. `print n^3`
B. `n^3`
C. `listofcubes.append(n^3)`
D. `listofcubes + [n^3]`
E. `listofcubes.append(n^3)`
4. The goal of the following code is to define a function that returns the slope of the line through two points, with each point given as a list of \( x, y \) coordinates. For example the code \( 1 + \text{slope}([4,4], [2,19]) \) should output \(-13/2\). However, the code below has five errors. Find all five of them, and explain how you would correct each one.

```python
slo = (y2-y1)/x2-x1
print slope
```
5. The goal of the code below is to iterate the function $f(x) = 2x$ five times with an initial value of 1. If the script worked correctly, it would display the output $[1, 2, 4, 8, 16, 32]$. However, it has five errors. Find all five of them, and explain how you would correct each one.

```python
mult2 = []
ums = srange(1,5)
for i in nums:
    test = 2*mult2[n]
mult2.append(test)
mult # Should print [1, 2, 4, 8, 16, 32]
```