DSC 40B - Discussion 01

Problem 1.

What is the time complexity of the following functions? State your answer using Θ notation.

a)
```python
def foo(n):
    for i in range(n**2 - 2*n + 100):
        j = 0
        while j < n:
            j += 1
```

b)
```python
def foo(n):
    while n > 1:
        n /= 10
        print(n)
```

c)
```python
def foo(n):
    for i in range(n):
        for j in range(i**2): # <-- notice the bound!
            print(i + j)
```

d)
```python
def pairs(numbers):
    result = []
    for x in numbers:
        for y in numbers:
            result.append((x, y))

    return result
```

e)
```python
def foo(numbers):
    for pair in pairs(numbers):
        print(sum(pair))
```

Problem 2.

Let $f(n) = \sum_{p=0}^{n} 3^p$. What is f in Θ notation?