Names: _____

Swift: If Statements and While Loops - Group Assignment

Part 1: Modify Existing Code

Quick review of quadratics: when the discriminant (in the code below) is 0, then the 2 solutions given by the quadratic equation will be the same, so there is actually only 1 solution.

Below is some existing code. First, read it until you understand what it does and how it works, or you at least have a good guess. Then, rewrite the code so that if the discriminant is 0, instead of redundantly printing out both repetitive roots, it only prints the single root once.

```
import Foundation

print("Input a, then b, then c for the quadratic")
let a: Double = Double(readLine()!)!
let b: Double = Double(readLine()!)!
let c: Double = Double(readLine()!)!

let discriminant = b*b - 4*a*c

if discriminant >= 0 {
     let x1 = (-b + sqrt(discriminant))/(2*a)
     let x2 = (-b - sqrt(discriminant))/(2*a)
     print("The roots are:")
     print(x1)
     print(x2)
}

if discriminant < 0 {
     print("There are no real roots, but the discriminant = \
(discriminant)")
}
```

Part 2: Looping Over User Input

For a homework assignment, you computed the sum, mean, multiplication, and geometric mean for 4 doubles. Now, you will rewrite this code so the user can input as many numbers as they wish. If the user types anything that is not a number, such as "stop", then the program prints the statistics of the numbers so far, and exits.

Example Input:

```
15
6
7.5
9.1
1
stop
```

Example Output:

```
38.6
7.72
6142.5
5.7235968109748008
```

Using a while loop to read while numbers are being given is more complicated than just a bool expression, so I've written the loop for you:

```
while let x = Double(readLine() ?? "") {
   // Here, you can use x as a double
}
// The program will continue here once the user types something other
than a number
```