Name_____

MAT21C Written Assignment
Due Thursday, 8/10

Read, **R**eflect, and **R**eact (or Respond) **P**rompt #3

In 1994, when I was taking Algebra in high school, my teacher Mrs. N went on a tangent ,and we as a class discussed whether .9999… = 1. She realized that .9999…. = 0.3333… + 0.3333… + 0.3333… = 1/3 + 1/3 + 1/3 = 1, but she still didn't believe that 0.9999… = 1. Her reasoning was the following: 0.999… can't equal 1 because in order for equality to occur there eventually needs to be a 0.0000…1 added to 0.9999…9 in order to make it a 1, and it was a mystery to her where this magical 0.000…1 comes from. Show that you can prove and explain why 0.9999... = 1 by doing the following:

1. Use your knowledge of a geometric series to convert 0.9999… into a fraction and prove that 0.9999… = 1.

2. Provide a counter argument to try and convince my high school teacher that indeed 0.9999… = 1. Assume she doesn't know Calculus and your argument can't use any Calculus facts or definitions. This is an exercise in trying to explain a complicated math model to someone that doesn't have the necessary math background to truly understand it.

(in memory of Dr. Silvia)