

Chapter 1 - Differentiation

Matt Warner

Limits: A numerical and Graphical Approach

Consider the pattern formed by the following sequence of numbers

0.9, 0.99, 0.999, 0.9999, and so on

The numbers appear to be getting closer to the number 1, yet never equal 1 exactly. Assuming that the sequence continues in the same manner, we could say that the *limit* of this sequence of numbers is 1. Note that this sequence of numbers approaches 1 “from the left,” meaning that all numbers in the sequence are less than the limit, 1. We write $x \rightarrow a$, read “x approaches a from the left”, to represent a sequence of numbers that approaches a from the left.

Thus, the sequence 0.9, 0.99, 0.999, and so on, is written $x \rightarrow 1$