Analysis Lab 11

Topic: Experience with the $\epsilon - \delta$ Definitions of Continuity and Limit

Guidelines for Lab Report

For this lab, submit a report according to guidelines given below.

1. For Section 2, complete Questions 1 and 2 by filling in each cell of the table provided on page 2 of this report guide. Complete Questions 3 and 4 in the space provide below the table.

2. Complete Exercises 1-3 at the end of Section 3.1.

3. Complete Exercises 1-3 at the end of Section 3.2.

4. Complete Exercises 1-3 at the end of Section 3.3.

5. Complete the Questions for Reflection as assigned by your instructor. Write your response to each question on a separate sheet(s), and attach to the rest of this report.

2 The Limit Definition with Particular Functions

2.3 Practice with the Definition

h_i	L	δ	$\epsilon = .1$	Lab 10
$h_1(x) = \dfrac{x^2 - 9}{x - 3}, \quad x_0 = 3$				
$h_2(x) = \begin{cases} 3 - x, & \text{if } x < 1 \\ 1, & \text{if } x = 1 \\ 3x - 1, & \text{if } x > 1 \end{cases}, \quad x_0 = 1$				
$h_3(x) = \dfrac{x - 4}{\sqrt{x} - 2}, \quad x_0 = 4$				
$h_4(x) = x \sin\left(\dfrac{1}{x}\right), \quad x_0 = 0$				

In the space provided, complete Question 3 by writing your proofs for each of the functions defined in the table. Complete Question 4 by determining how each function needs to be redefined in order to make it continuous. Attach additional sheet(s), if necessary.

3   Algebraic Combinations

3.1   The Sum of Two Functions

Write your responses to Exercises 1-3 in the space provided. Attach additional sheet(s), if necessary.

3.2 The Product of Two Functions

Write your responses to Exercises 1-3 in the space provided. Attach additional sheet(s), if necessary.

3.3 The Quotient of Two Functions

Write your responses to Exercises 1-3 in the space provided. Attach additional sheet(s), if necessary.