Analysis Lab 3

Topic: Introducing the Formal Definition of Convergence

Guidelines for Lab Report

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

1. For Section 2.1, enter your answers to Questions 1-4 in the table provided on page 2. Enter your answers to Question 5 in the column marked Q5 on the table on page 2. Enter your answers to Question 6 in the column marked Q6 in the table on page 2.

2. For Section 2.2, enter your answers to Question 1 in the table provided on page 2. Enter your answers to Question 2 in the column marked Q2 in the table on page 2. Enter your answers to Question 3 in the column marked Q3 in the table on page 2.

3. For Section 2.3, submit your answers and explanations for Question 1-4.

4. For Section 3.1, submit your responses to Questions 1-3, and provide your version of the “new definition,” as instructed in Question 4.

5. For Section 3.2, fill in the blanks provided on page 5 of the guide, and answer the questions at the end of the section.

6. 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.
## Using Examples to Enhance Understanding

### 2.1 Example Set 1

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Identification of those ( n ) for which ( a_n \in (L - \epsilon, L + \epsilon) )</th>
<th>Q5</th>
<th>Q6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence 1</td>
<td>( L = 0 )</td>
<td>( \epsilon = .5 )</td>
<td>( \epsilon = .2 )</td>
</tr>
<tr>
<td>Sequence 2</td>
<td>( L = 2 )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Example Set 2

<table>
<thead>
<tr>
<th>Sequence</th>
<th>Identification of those ( n ) for which ( a_n \in (L - \epsilon, L + \epsilon) )</th>
<th>Q2</th>
<th>Q3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence 3</td>
<td>( L = 1 )</td>
<td>( \epsilon = .2 )</td>
<td>( \epsilon = .1 )</td>
</tr>
<tr>
<td>Sequence 4</td>
<td>( L = 0 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequence 5</td>
<td>( L = 0 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sequence 6</td>
<td>( L = 0 )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.3 Example Set 3

In the space provided, write your answers to Questions 1-4. Attach additional sheet(s), if necessary.
3 Critical Thinking Questions

3.1 Formulating the Definition

In the space provided, answer Questions 1-3 and provide your version of the “new definition,” as instructed in Question 4. Attach additional sheet(s), if necessary.
3.2 Comparison Between the Definition and Intuition

Terms $a_1$ to _____ are .2 or more units from $L = 2$.

Terms _____ to _____ are less than or equal to .2 units from $L = 2$, but are also .1 or more units away from $L = 2$.

Terms _____ to _____ are less than or equal to .1 units from $L = 2$, but are also .05 or more units from $L = 2$.

Terms _____ to _____ are less than or equal to .05 units from $L = 2$, but are also .01 or more units from $L = 2$.

Terms _____ to _____ are less than or equal to .01 units from $L = 2$.

In the remaining space, answer the questions posed at the end of the section. Attach additional sheet(s), if necessary.