Math 132: Discussion Session: Week 11

Directions: In groups of 3-4 students, work the problems on the following page. Below, list the members of your group and your answers to the specified questions. Turn this paper in at the end of class. You do not need to turn in the question page or your work.

Additional Instructions: It is okay if you do not completely finish all of the problems. Also, each group member should work through each problem, as similar problems may appear on the exam.

Scoring:

<table>
<thead>
<tr>
<th>Correct answers</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>0%</td>
</tr>
<tr>
<td>4-6</td>
<td>80%</td>
</tr>
<tr>
<td>7-11</td>
<td>100%</td>
</tr>
</tbody>
</table>

Group Members:

8.2: Surface Area.

(1) The area is:

(2) The area is:

(3) The area is:

(4) The area is:

11.1: Sequences.

(1) \( \lim_{n \to \infty} a_n = \)

(2) \( \lim_{n \to \infty} a_n = \)

(3) \( \lim_{n \to \infty} a_n = \)

(4) \( \lim_{n \to \infty} a_n = \)

(5) \( \lim_{n \to \infty} a_n = \)

(6) \( \lim_{n \to \infty} a_n = \)

(7) \( \lim_{n \to \infty} a_n = \)
8.2: Surface Area. Find the exact area of the surface obtained by rotating the given curve about the given axis.

1. \( y = x^3 \) from \( x = 0 \) to \( x = 1 \), rotated about the \( x \)-axis.
2. \( y = \sqrt{1 + e^x} \) from \( x = 0 \) to \( x = 2 \), rotated about the \( x \)-axis.
3. \( y = \frac{1}{3}x^{\frac{3}{2}} \) \( 0 \leq x \leq 16 \), rotated about the \( y \)-axis.
4. \( y = \frac{1}{4}x^2 - \frac{1}{2}\ln x \), \( 1 \leq x \leq 3 \), rotated about the \( y \)-axis.

11.1: Sequences. Determine whether the sequence converges or diverges. If it converges, find the limit.

1. \( a_n = \frac{(\ln n)^2}{\sqrt{n}} \).
2. \( a_n = \arctan(\ln n) \).
3. \( a_n = \ln(2n + 1) - \ln(n + 1) \).
4. \( a_n = n \ln \left( 1 + \frac{17}{n} \right) \).
5. \( a_n = \left( 1 + \frac{17}{n} \right)^n \).
6. \( a_n = n \sin \left( \frac{2}{n} \right) \).
7. \( a_n = n - \sqrt{n + 1} \sqrt{n + 5} \).