Math 132: Discussion Session: Week 12

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>0–2</td>
<td>0%</td>
</tr>
<tr>
<td>3–4</td>
<td>80%</td>
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<tr>
<td>5–10</td>
<td>100%</td>
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</tbody>
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Group Members:

11.2: Series.

(1) (a) \( \sum_{n=1}^{\infty} 2 \cdot 3^n \cdot (-4)^n = \)

(b) \( \sum_{n=1}^{\infty} \left( e^{1/n} - e^{1/(n+1)} \right) = \)

(c) \( \sum_{n=1}^{\infty} \frac{6 \cdot 2^{2n-1}}{3^n} = \)

(d) \( \sum_{n=1}^{\infty} (\sin 100)^n = \)

(e) \( \sum_{n=1}^{\infty} \frac{n + 2}{2n + 5} = \)

(f) \( \sum_{n=2}^{\infty} \frac{3^n + n}{2^n + 4} = \)

(2) (a) \( \sum_{n=1}^{\infty} (-5)^n \cdot x^n = \)

• converges whenever \( x \) is strictly between \( \) and \( \).

(b) \( \sum_{n=0}^{\infty} \frac{(x - 2)^n}{3^n} = \)

• converges whenever \( x \) is strictly between \( \) and \( \).

11.3: Integral Test.

(1) \( \sum_{n=1}^{\infty} \frac{1}{(n^2 + 2)^{3/5}} = \)

• Test used? What are the conditions for using that test?

(2) For which values of \( p \) does \( \sum_{n=2}^{\infty} \frac{n^2}{(n^3 + 1)^p} \) converge?
11.2: Series.

(1) Determine whether the series converges or diverges. If it converges, determine its value.

(a) \( \sum_{n=1}^{\infty} \frac{2 \cdot 3^n}{(-4)^n} \)

(b) \( \sum_{n=1}^{\infty} \left( e^{1/n} - e^{1/(n+1)} \right) \)

(c) \( \sum_{n=1}^{\infty} \frac{6 \cdot 2^{n-1}}{3^n} \)

(d) \( \sum_{n=1}^{\infty} (\sin 100)^n \)

(e) \( \sum_{n=1}^{\infty} \frac{n + 2}{2n + 5} \)

(f) \( \sum_{n=2}^{\infty} \frac{3^n + n}{2^n + 4} \)

(2) Find the values of \( x \) for which the series converges. Determine the value of the series for those values of \( x \).

(a) \( \sum_{n=1}^{\infty} (-5)^n x^n \)

(b) \( \sum_{n=0}^{\infty} \frac{(x - 2)^n}{3^n} \)

11.3: Integral Test.

(1) Determine whether the series \( \sum_{n=1}^{\infty} \frac{1}{(n^2 + 2)^2} \) converges or diverges. State any tests used and show that all conditions of the test are satisfied.

(2) For which values of \( p \) does \( \sum_{n=2}^{\infty} \frac{n^2}{(n^3 + 1)^p} \) converge?