Math 121 Take-Home Quiz #5

Due Sunday, April 3, 2022 in Gradescope by 11:59 pm ET

Instructions:

• This is an Open Notes Quiz. You can use materials, homeworks problems, lecture notes, etc. that you manually worked on.

• This is **NOT** an Open Internet Quiz. You can only access our Main Course Webpage.

• You are not allowed to work on or discuss these problems with other students or people.

• You can ask a few small, clarifying, questions in Office Hours, but the problems will not be solved for you.

• The main goal is to make a thoughtful and detailed presentation for the solutions. Submit a clear final draft. No mess please.

• Please submit your final work in Gradescope in the Quiz 5 entry.

1. [10 Points] Consider $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n\ 3^{n+1}}{2^{3n-1}}$. First, explain why this series Converges, and then second show that the series Sum equals $\boxed{-\frac{18}{11}}$.

For each of the following series, determine whether the series Converges or Diverges. Name any convergence test(s) you use, and justify all of your work.

2. [10 Points] $\displaystyle\sum_{n=1}^{\infty} \frac{4}{n^7} + \frac{4^n}{7^n}$

3. [10 Points] $\displaystyle\sum_{n=2}^{\infty} \frac{n^7}{4 \ln n}$

4. [10 Points] $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^7 + 4}$

5. [10 Points] $\displaystyle\sum_{n=1}^{\infty} \frac{n^4 + 7}{n^7 + 4}$

6. [10 Points] $\displaystyle\sum_{n=1}^{\infty} \frac{n^3}{n^4 + 7}$