

Due Sunday, March 26, 2023 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 4 entry.

1. [10 Points] Consider $\sum_{n=1}^{\infty} \frac{(-1)^n 3^{n+1}}{2^{3n-1}}$. 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. [10 points each]

2. $\sum_{n=1}^{\infty} \frac{4}{n^7} + \frac{4^n}{7^n}$

3. $\sum_{n=2}^{\infty} \frac{n^7}{4 \ln n}$

4. $\sum_{n=1}^{\infty} \frac{1}{n^7 + 4}$

5. $\sum_{n=1}^{\infty} \frac{n^4 + 4}{n^4 + 7}$

6. $\sum_{n=1}^{\infty} \frac{n^3}{n^4 + 7}$

7. $\sum_{n=1}^{\infty} \frac{n^4 + 7}{4n^7 + 1}$