Math 408D – Review of Series Convergence

1. Determine if the series converges absolutely, converges conditionally, or diverges $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n}}$

2. Determine if the series converges or diverges $\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^2}$

3. Determine if the series converges absolutely, converges conditionally, or diverges $\sum_{n=1}^{\infty} \frac{(-3)^n}{4^{n+1}}$

4. Determine if the series converges or diverges. If it converges, find its sum. $\sum_{n=1}^{\infty} \frac{(-3)^n}{4^{n+1}}$

5. Determine if the series converges or diverges $\sum_{n=1}^{\infty} \frac{2+n^3}{n^2+n+1}$

6. Determine if the series converges or diverges $\sum_{n=1}^{\infty} \frac{2n}{2^n(n^{12}+4)}$

7. Determine if the series converges or diverges $\sum_{n=1}^{\infty} \frac{n+1}{n!}$

8. Determine if the series converges or diverges $\sum_{n=1}^{\infty} \frac{2^{n+1}}{n^n}$

9. Determine if the series converges absolutely, converges conditionally, or diverges $\sum_{n=1}^{\infty} \frac{(-2)^{n+1}}{n!}$

10. Determine if the series converges absolutely, converges conditionally, or diverges $\sum_{n=1}^{\infty} (-e)^{-n}$

11. Determine if the series converges absolutely, converges conditionally, or diverges $\sum_{n=1}^{\infty} \frac{(-1)^n}{n\sqrt{n^2+1}}$

12. Determine if the series converges or diverges $\sum_{n=1}^{\infty} \frac{2}{n^2+n}$

13. Determine if the series converges or diverges. If it converges, find its sum. $\sum_{n=1}^{\infty} \frac{2}{n^2+n}$

    ** Use sequence of partial sums and the telescoping nature of the series to determine if the series converges or diverges. If it converges, find its sum. $\sum_{n=1}^{\infty} \frac{2}{n^2+n}$