

Name: _____

1. Suppose $\sum a_n = 3$, and s_n is the n th partial sum of the series.

(a) What is $\lim_{n \rightarrow \infty} a_n$?

8 pts

(b) What is $\lim_{n \rightarrow \infty} s_n$?

8 pts

2. Show whether the series $\sum_{n=1}^{\infty} \frac{4 + 3^n}{2^n}$ is (circle one)

divergent

absolutely convergent,

or conditionally convergent

10 pts

3. Show whether the series $\sum_{n=0}^{\infty} \frac{3^n}{4^{2n+1}}$ converges or diverges. If it converges, WRITE THE SUM, and draw a box around your answer (**no need to simplify**). If it diverges, write DIV, and draw a box around it.

12 pts

(OVER)

4. Consider the series $\sum a_n = \sum_{n=1}^{\infty} (-1)^n \frac{n}{n^2 + 25}$.

2 pts

Do the problems below, and determine whether the series (circle one)

diverges

converges absolutely,

or **converges conditionally.**

(a) Show whether $\sum |a_n|$ converges or diverges. Put a box around your answer.

12 pts

(b) Show whether $\sum a_n$ converges or diverges. Put a box around your answer.

12 pts

5. Show whether the series $\sum_{n=1}^{\infty} \frac{1 \cdot 3 \cdot 5 \cdots (2n-1)}{5^{n!}}$ is (circle one)

divergent

absolutely convergent,

or **conditionally convergent.**

8 pts

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6. Consider the power series $\sum_{n=1}^{\infty} n^n x^n$ about $a = 0$.

(a) Write out the fourth partial sum s_4 .

4 pts

(b) What is the radius of convergence R ? What is the interval of convergence I ? Put boxes around your answers.

12 pts

7. The series $\sum_{n=1}^{\infty} \frac{1}{n^2}$ is a convergent p -series with sum S . Find a value of n that will ensure that the error in the approximation $S \approx s_n$ is less than 0.001. (Indicate why your method is valid.)

12 pts