Essay 4 (BC)

In your paper, you discussed convergence & divergence, Taylor & Maclaurin Series, and so on. Let us ask you some questions…..

The Maclaurin expansion for

ln(1+x) = x – x2/2 + x3/3 – x4/4 + … + (-1) n+1 xn/n + …..

1. How do you determine the interval of convergence? Find the values of x for which this series converges. (Be sure to check endpoints.) Explain your thinking as you solve the problem.

Let’s talk about error.

2. Show the setup to use the 4th partial sum to approximate ln (1.2)

ln(1+x) = x – x2/2 + x3/3 – x4/4 + … + (-1) n+1 xn/n + …..

3. How can you find the error in your approximation in #2?

4. How can you use the alternating series test (next term) to find the error of this estimate if we use the 4th partial sum as an approximation for ln(1.2)

ln(1+x) = x – x2/2 + x3/3 – x4/4

5. How do you find the derivatives of this Maclaurin expansion? Find the first 4 terms of the derivative and the general term.

ln(1+x) = x – x2/2 + x3/3 – x4/4 + … + (-1) n+1 xn/n + …..

6. Assuming that x is within the interval of convergence, what is the sum of this derivative series?

7. How does your answer relate to the derivative of ln(1+x)??