

Mathematics 1120H – Calculus II: Integrals and Series

TRENT UNIVERSITY, Winter 2024

Assignment #10

Series of Power

Due\* just before midnight on Thursday, 28 March.

1. For what values of  $x$  does the series  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!}$  converge? [4]
2. What function does the series  $\sum_{n=0}^{\infty} \frac{(-1)^n x^{2n+1}}{(2n+1)!}$  equal when it converges? [1]
3. For what values of  $x$  does the series  $\sum_{n=0}^{\infty} (n+1)x^n$  converge? [4]
4. What function does the series  $\sum_{n=0}^{\infty} (n+1)x^n$  equal when it converges? [1]

A mathematics nursery rhyme (and cautionary tale):

Solomon Grundy  
Conjectured on Monday  
Hypothesized Tuesday  
Existed on Wednesday  
Constructed on Thursday  
Uniquely on Friday  
Contradicted on Saturday  
Disproved on Sunday  
And that was the end  
of Solomon Grundy.

From *Seven Years of Manifold 1968-1980*.

---

\* You should submit your solutions via Blackboard's Assignments module, preferably as a single pdf. If submission via Blackboard fails, please submit your work to your instructor by email or on paper.