

2020/05/25, 108-2 微積分小考 (2), §10.3 ~ §10.8 (可用鉛筆、需計算過程、交回題目卷及答案卷)

1. Use the Ratio Test or Root Test to determine if each series converges or diverges.

(a) $\sum_{n=1}^{\infty} \frac{n!}{10^n}$. (b) $\sum_{n=1}^{\infty} \frac{n \ln n}{2^n}$.

2. Determine the convergence of the series, absolutely, conditionally or diverge?

(a) $\sum_{n=2}^{\infty} (-1)^n \frac{\ln n}{n - \ln n}$. (b) $\sum_{n=1}^{\infty} (-1)^n \frac{(2n)!}{2^n n! n}$.

3. Find the series's radius and interval of convergence. For what values of x does the series converge absolutely, or conditionally? (a) $\sum_{n=0}^{\infty} \frac{(-1)^n (x+2)^n}{n}$. (b) $\sum_{n=1}^{\infty} \frac{3 \cdot 5 \cdot 7 \cdots (2n+1)}{n^2 \cdot 2^n} x^{n+1}$.

4. (a) Find the Maclaurin series: xe^x .

(b) Find the Taylor series and the Taylor polynomials generated by $f(x) = \sin x$ at $x = 0$.

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