

2021/05/24, 微積分小考 (1), §10.4 ~ §10.8

(可用鉛筆、需計算過程、交回題目卷及答案卷，每題 25%)

1. Determining convergence or divergence?

$$(a) \sum_{n=1}^{\infty} \frac{1}{1+2+3+\cdots+n}. \quad (b) \sum_{n=1}^{\infty} \frac{2+(-1)^n}{1.25^n}.$$

2. Which of the series converge absolutely, which converge and which diverge?

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

3. Find the series's radius and interval of convergence. For what values of x does the series converge absolutely, or conditionally?

$$(a) \sum_{n=1}^{\infty} \left(1 + \frac{1}{n}\right)^n x^n. \quad (b) \sum_{n=1}^{\infty} \frac{3 \cdot 5 \cdot 7 \cdots (2n+1)}{n^2 \cdot 2^n} x^{n+1}.$$

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

- 遠距考試，請開視訊，勿有作弊行為!!
- 上傳方式，請參考課程網頁: <http://www.hmwu.idv.tw/index.php/109-2-calculus>