

112-2 統計諮詢

L^AT_EX 作業

你的名字 *

國立政治大學統計學系碩士班

March 12, 2024

1 如何上傳

1. 打一份 `tex` 文件，跟本文件一模一樣 (除了姓名、email、日期)。
2. 繳交日期: 2024/03/25(一), 24:00 前。
3. 請上傳: (1) `學號-姓名-LaTeX-HW.tex` (2) `學號-姓名-LaTeX-HW.pdf`
4. 【作業考試上傳區】帳號: Consulting2024，密碼: xxxx。如何上傳，教師會示範。
5. 作業不批改，但 2 週後會公告答案。

2 數學式子練習

1.

$$a_0 + \frac{1}{a_1 + \frac{1}{a_2 + \frac{1}{a_3 + \frac{1}{a_4}}}}$$

2. Let $f(x)$ be defined on an open interval about x_0 , except possibly at x_0 itself. We say that the **limit of $f(x)$ as x approaches x_0 is the number L** , and we write

$$\lim_{x \rightarrow x_0} f(x) = L \tag{1}$$

if, for every number $\epsilon > 0$, there exists a corresponding number $\delta > 0$ such that for all x ,

$$0 < |x - x_0| < \delta \quad \Rightarrow \quad |f(x) - L| < \epsilon.$$

*E-mail: 你的 *email*

3. *Definition: derivative function*

The derivative of the function $f(x)$ with respect to the variable x is the function f' whose value at x is

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h} \quad (2)$$

provided the limit exists.

4.

$$\int_0^{\pi/4} (1 + e^{\tan \theta}) \sec^2 \theta \, d\theta, \quad \left(\sqrt{\frac{A^c}{B^y}} + \sum_{i=1}^N a_i \right), \quad \frac{\binom{n+1}{k/2}}{10!}, \quad \underbrace{a, \dots, a, b, \dots, b}_{k+1 \text{ elements}} \begin{matrix} m \text{ a's} & n \text{ b's} \end{matrix}$$

5.

$$\det \begin{vmatrix} c_0 & c_1 & \dots & c_n \\ c_1 & c_2 & \dots & c_{n+1} \\ \vdots & \vdots & & \vdots \\ c_n & c_{n+1} & \dots & c_{2n} \end{vmatrix} \leq 0 \quad (3)$$

6.

$$f(x) = \begin{cases} z - y & \text{if } y > 0 \\ z + y & \text{otherwise.} \end{cases} \quad (4)$$

7.

$$A = \int_a^b \frac{f(x)}{g(x)} dx + \int_{-\infty}^{\infty} \frac{h(x)}{g(x)} dx$$

8.

$$\begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} \alpha \\ \beta \\ \gamma \end{pmatrix}$$