

國立暨南國際大學九十二學年度轉學生入學考試試題

第 3 節微積分適用:(財金系二 232)

(本試題共 1 頁, 第 1 頁)

考生注意: 1. 依次序作答, 只要標明題號, 不必抄題。
2. 答案必須寫在答案卷上, 否則不予計分, 並限以藍黑色筆作答。
3. 試題隨卷繳回。(餘請詳閱試場規則)

計算題, 每題 10 分, 共 100 分。須詳列計算過程

1. Determine the value of c so that $f(x)$ is continuous on the entire real

$$\text{line if } f(x) = \begin{cases} x^2 - x \leq 3 \\ \frac{c}{x} & x > 3 \end{cases}$$

2. Differentiate: $f(x) = \frac{x^2 - 2}{x^2 + 2}$

3. Find all open intervals on which the function is

$$\text{increasing: } f(x) = 3x\sqrt{x+2}$$

4. Find the absolute minimum and absolute maximum for

$$f(x) = \frac{10}{(x^2 + 1)} \text{ on the interval } [-1, 2]$$

5. Find $\lim_{x \rightarrow \infty} \left(\frac{2x}{x+2} + \frac{x}{x-1} \right)$

6. Find $\frac{dy}{dx}$ if $y = \ln \frac{\sqrt{x}}{5-x}$

7. Evaluate: $\int_1^e \frac{5}{x} dx$

8. Find the distance between the point $(1, -2, 3)$ and the plane $3x - 4y + 2z - 1 = 0$.

9. Find the least squares regression quadratic for the points $(1, 4), (3, 4), (-1, -3), (7, -1)$.

10. Determine the convergence or divergence of the following series, and

$$\text{state the test used: } \sum_{n=1}^{\infty} \frac{2 \cdot 4 \cdot 6 \cdots 2n}{n!}$$