淡江大學 100 學年度碩士班招生考試試題

98

系別：國際企業學系
產業經濟學系

科目：微　積　分

考試日期：2 月 28 日(星期一) 第 3 節

本試題共 2 大題， 1 頁

下列五題，每題 20 分，滿分 100 分。

I. (60%)

1. Find the average rate of change of $y = 5x^2 - 3x$ (i.e., $\frac{\Delta y}{\Delta x}$) as x moves from $x_0 = -1$ to $x_1 = 2$.

2. Evaluate the total differential dz at the point $(x, y) = (-1,3)$, given $z = xy + \frac{x^2 y}{x + y}$.

3. Assuming that the equation $x^2 + 3xy + 2yz + y^2 + z^2 - 11 = 0$ implicitly defines a function $z = f(x, y)$ around the point (x = 1, y = 2, z = 0). Find and evaluate $\frac{\partial z}{\partial y}$ at that point.

II. (40%)

4. Evaluate $\int_1^2 [e^{-2x} - \frac{1}{x(x+1)} + \ln x]dx$.

5. Find the relative extrema of the function $y = x + \frac{1}{x}$ (with $x \neq 0$). Is the "minimum" larger or smaller than the "maximum"?