

大葉大學九十四學年度碩士班招生考試試題(共一頁)						
所別	組(群)別	考試科目 (中文名稱)	考試日期	節次	備註	
事業經營研究所碩士班	甲	微積分	3月27日	第2節 10:30~12:00	可使用不可程式 計算機	

1. Find $\lim_{x \rightarrow -3} \frac{\sqrt{x^2 - 2}}{(3x^3 - 17)}$ (10%).

2. If f is the identity function defined by $f(x) = x$ then $D_x x = 1$ (10%).

3. Find the equation of the tangent to the hyperbola $4x^2 - 9y^2 = 36$ at the point $(6, 2\sqrt{3})$ (15%).

4. Find value of the function $\int_0^4 \frac{4}{\sqrt{x^2 + 9}} dx$ (10%).

5. Differentiate $y = \frac{\sqrt{1-x^2}}{(x+1)^2}$ and simplify the result. (10%).

6. Solve the system

$$\begin{aligned} x + 3y - 2z &= 11 \\ 4x - 2y + z &= -15 \quad \text{by Cramer's rule. (20%).} \\ 3x + 4y - z &= 3 \end{aligned}$$

7. If $f(x, y, z) = x^3 e^{y+z} - y \sin(x-z) = 0$ defines z implicitly as a function of x and y in some rectangular domain, find $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$ (25%).