

系所組別	考試科目
經濟學系二年級	微積分

※本考題 可使用 禁止使用 簡易型電子計算機

※考生請於答案卷內作答

- I. (20%) Find the area of the region completely enclosed by the graph of the function

$$f(x) = x^3 - 3x + 3 \text{ and } g(x) = x + 3$$

- II. (20%) Estimate the value of $f(x) = 4 - x$ by forming a Riemann sum using left endpoints on the interval $0 \leq x \leq 4$ for $n=8$ subintervals.

- III. (20%) A manufacturer supplies $S(p)=0.5p^2+3p+7$ hundred units of a certain commodity to the market when the price is p dollars per unit. Find the average supply as the price varies from $p=\$2$ to $p=\$5$.

- IV. (20%) Find the critical points of the given functions and classify each as a relative maximum, a relative minimum, or a saddle point.
 (1) $f(x, y) = 2x^2 - 3y^2$; (2) $f(x, y) = -x^4 - 32x + y^3 - 12y + 7$

- V. (20%) Find the 4th Taylor polynomial of $f(x) = e^x$ at $x = 2$.