大葉大學九十二學年度轉學招生考試試題紙						
系　　組　　別	日\第二部	年級	考試科目（中文名稱）	考試日期	節次	備註
資訊管理系	日間	二	微積分	7月23日 11:10～12:30	3	共壹頁

註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

Part I. 填充題 (只需寫出答案即可，但請務必標明題號；每個空格 5 分，共 50 分。)

1. Find the domain of the function $f(x)=\frac{1}{\sqrt{x-1}}+\frac{1}{x^2-4}$? ____(1)____.

2. Let $f(x)=x^2-1$ and $g(x)=\sqrt{x}+1$, compute the composite function $f\circ g$. ____(2)____

3. Evaluate $\lim_{x\to 0}\frac{\sqrt{1+x}-1}{x}$ = ____(3)____.

4. Find the derivative of $f(x)=\frac{(1-x^5)(x^2+1)^3}{x-2}$. ____(4)____

5. Determine the intervals where the function $f(x)=x^3-3x^2-24x+32$ is increasing. ____(5)____

6. Find the absolute maximum of $f(x)=x-2\sqrt{x}$ on the interval $[0,9]$. ____(6)____

7. Use logarithmic differentiation to find the derivative of $f(x)=x^x$ $(x>0)$. ____(7)____

8. Evaluate $\int(2x+\frac{3}{x}+\frac{4}{x^2})dx$ = ____(8)____

9. Evaluate $\int(e^{-3x}+\frac{\ln x}{2x})dx$ = ____(9)____

10. Evaluate $\int_0^4 x\sqrt{9+x^2}\,dx$ = ____(10)____

Part II. 計算題 (請祥列計算過程，否則不予給分；每題 10 分，共 50 分。)

1. Find the derivative f' of $f(x)=\sqrt{1-2x}$ by using the definition of the derivative.

2. What is the slope of the tangent line to the graph of $f(x)=(x^2+1)(2x^3-3x^2+1)$ at the point $(2,\ 25)$? How fast is the function f changing when $x=2$?

3. Given the equation $x^3+3xy+y^3=4$, find dy/dx by implicit differentiation.

4. Determine the intervals where the function $f(x)=\frac{1}{x^2+1}$ is concave upward and where it is concave downward and find the inflection points of f.

5. Find the area of the region completely enclosed by $f(x)=x^3-3x+3$ and $g(x)=x+3$.