大葉大學九十三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19日	三	共一頁

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） 11:10 ~ 12:30

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 30 分)

1. Evaluate $\lim_{x\to 4}\frac{\sqrt{x}-2}{x-4}=$_____

2. Find the derivative of $f(x)=4x^3\cdot\ln x$._____

3. Use logarithmic differentiation to find the derivative of $f(x)=x^{\sin x}$._____

4. Evaluate $\int\frac{1+e^x}{e^x}dx=$_____

5. Evaluate $\int 2t\sqrt{t^2-1}dt=$_____

6. Evaluate $\int\left(\frac{1}{x^2}-\frac{3}{x^3}\right)dx=$_____

Part II. 計算題(請詳列計算過程，否則不予給分；此部分共 70 分)

1. Using implicit differentiation to determine $\frac{dy}{dx}$ for $5x^3+y^3-x^4=0$ (10%)

2. Let $y=\frac{x+2}{x-1}$ at $x=2$, Find an equation of the tangent line(10%)

3. Obtain the following questions on the graph of $f(x)=x+\frac{1}{x}$: (30%)
   1. Find the horizontal and vertical asymptotes of $f(x)$
   2. Find the critical point(s) of $f(x)$
   3. Determinate the intervals where $f(x)$ is increasing and where $f(x)$ is decreasing
   4. Determinate the intervals where $f(x)$ is concave upward and where $f(x)$ is concave downward
   5. Find the inflection point(s) of $f(x)$
   6. Sketch the graph of $f(x)$

4. Determine $\int(x+3)e^x dx$ (10%)

5. Determine the area bounded by the given curves. $f(x)=3x^2-2x$ *and* $g(x)=x^3$. (10%)