淡江大學 95 學年度轉學生招生考試試題

系別：商管組三年級　　科目：微　積　分

准帶項目請打「V」	
	簡單型計算機

本試題共 1 頁

1. Find the following limits and derivatives. (7%each)

(i) $\lim_{x\to 0}\frac{(x+4)^{3/2}-8}{x}$　　(ii) $\lim_{x\to 2}\frac{|x-2|}{x-2}$

(iii) $\frac{d}{dx}(2x+1)^{3x}$　　(iv) $\frac{d}{dx}(x(x+1)^{-2}+2\sqrt{(x-2)}-e^{x^2})$

2.Find the following integrals. (8%each)

(i) $\int\frac{x}{(x^2+1)\ln(x^2+1)}dx$　　(ii) $\int\ln x dx$

(iii) $\int_0^1\int_x^1 e^{y^2}dydx$　　(iv) $\int\sin(x)e^x dx$

2. Find the Taylor polynomial at x=0 that approximate e^x with an error less than 0.005 on the interval $-1\le x\le 1$.(10%)

3. A pebble thrown into a pond causes circular ripples to radiate outward. If the radius of the outer ripple is growing by 2 feet per second, how fast is the area of its circle growing at the moment when the radius is 10 feet? .(10%)

5.Find the relative extrema of the function

$f(x,y)=4y^3+x^2-12y^2-36y+2$　　(10%)

6.Find the area of the region completely enclosed by the graphs of the functions

$f(x)=x^3-3x+3$ and $g(x)=x+3$　　(10%)