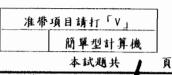
## 淡江大學 95 學年度轉學生招生考試試題

58-1

系別: 商管組三年級

科目:微 穑 分



- 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) \in xdx

(iii)  $\int_{0}^{1} \int_{0}^{e^{y^{2}}} dy dx$ 

- (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%)