淡江大學九十二學年度轉學生招生考試試題

(10)

系別：理工組二年級　　科目：微　積　分

准帶項目請打「○」否則打「×」	
×	簡單型計算機

本試題共 2 頁

本試題雙面印製

注意：第一題只須寫出答案，不必寫出演算過程，請將答案依題號寫在答案卷上的第一頁。
第二、三、四題爲計算題，須寫出演算過程。

一、(共 12 小題，每小題 6 分)

1. The points on the curve $y = x^4 - 6x^2 + 4$ where the tangent line is horizontal are ?

2. $\frac{d}{dx}x^{\sqrt{x}} = ?$

3. $\lim_{x\to 0^+} x^x = ?$

4. $\lim_{x\to 0^+}(1+\sin 4x)^{\cot x} = ?$

5. If $f(x) = xe^x$, then $f^{(n)}(x) = \frac{d^n}{dx^n}f(x) = ?$

6. $\int_1^2 \ln x dx = ?$

7. $\int \frac{5x-4}{2x^2+x-1}dx = ?$

8. The sum of the series $\sum_{n=1}^{\infty}(\frac{1}{n(n+1)}+\frac{1}{2^n})$ is ?

9. The equation of the plane that passes through the points P(1,3,2) , Q(3,-1,6) , R(5,2,0) is ?

10. The directional derivative of the function $f(x,y,z) = x\sin yz$ at the point (1,3,0) in the direction $\vec{V} = \vec{i} + 2\vec{j} - \vec{k}$ is ?

11. $\int_0^1(\int_x^1 \sin y^2 dy)dx = ?$

12. If E is the solid bounded by $x=0$, $y=0$, $z=0$, and $x+y+z=1$, then $\iiint_E z dV = ?$

(注意：背面尚有試題)

二、Find the area of the region enclosed by $y = x - 1$ and $y^2 = 2x + 6$. (8分)

三、Find the interval of convergence of the series $\sum_{n=0}^{\infty} \frac{(-3)^n x^n}{\sqrt{n+1}}$. (10分)

四、Evaluate the double integral $\iint_R e^{(x+y)/(x-y)} dA$, where R is the trapezoidal region with vertices (1,0), (2,0), (0,-2), and (0,-1). (10分)