

淡江大學九十四學年度進修學士班轉學生招生考試試題

系別：電機工程學系三年級 科目：工 程 數 學

准帶項目請打「√」	
X	簡單型計算機

節次：7 月 13 日 第 4 節
本試題共 1 頁

I. Solve the initial value problem

$$y' = 3x^2 - \frac{y}{x}; \quad y(1) = 5 \quad (20\%)$$

II. $y'' - y' - 6 = 0$, Find the general solution. (20%)

III. Let \vec{F} be a continuous vector whose components have continuous first and second partial derivatives.

Then $\nabla \cdot (\nabla \times \vec{F}) = ?$ (20%)

IV. Find the Fourier transform of $e^{-a|t|}$? (20%)

V. $\int_P \frac{\sin z}{z^2} dz = ?$, where P is a circle with radius 3 centered at point $z_0 = 0 + 0i$.

(20%)