

淡江大學九十二學年度進修學士班轉學生招生考試試題

系別：工組三年級

科目：工程數學

准帶項目請打「○」否則打「×」	
×	簡單型計算機

本試題共 1 頁

一. $y' = 3x^2 - \frac{y}{x}$, $y(1) = 5$ (20%)

二. $y'' - 4y' + 53y = 0$, $y(\pi) = -3$, $y'(\pi) = 2$ (20%)

三. Find the inverse matrix of $A = \begin{bmatrix} 3 & 0 & -1 \\ 1 & 2 & 1 \\ 3 & 4 & 0 \end{bmatrix}$
(20%)

四. Find the Fourier series of $f(x)$.

Here, $f(x) = \begin{cases} 0, & \text{for } -3 \leq x \leq 0 \\ 1, & \text{for } 0 < x < 3 \end{cases}$, $f(x+6) = f(x)$
(20%)

五. $\oint_P \frac{2iz - \cos z}{z^2 + z} dz$, where P is a closed path

enclosing 0 , i , and $-i$. (20%)