

淡江大學 97 學年度碩士班招生考試試題

系別：土木工程學系

科目：工程數學

A.B

准帶項目請打「V」

簡單型計算機

本試題共 / 頁， 大題

1. Solve the following Differential Equation ?

a) $xy dx + (2x^2 + 3y^2 - 20) dy = 0$

b) $y' = 2x^2 - \frac{y}{x} \quad y(1) = 5$

c) $x^2 y'' + 3xy' + 10y = 0$

d) $y'' - 6y' + 9y = 5e^{3x}$

2. Use Laplace transform to solve the initial value problem

$$y'' + y = 1 \quad y(0) = 6, \quad y'(0) = 0$$

3. $A = \begin{bmatrix} -3 & -3 \\ -2 & 4 \end{bmatrix}$ find $A^{16} = ?$

4. let $f(x) = x$ for $-\pi \leq x \leq \pi$, Write the Fourier Series of f on $[-\pi, \pi]$