

## 淡江大學 95 學年度轉學生招生考試試題

系別：工組三年級

科目：工程數學

41-1

准帶項目請打「V」	
<input checked="" type="checkbox"/>	簡單型計算機

本試題共 壹 頁

- Solve the differential equation  $\frac{dy}{dx} = \frac{y+x}{y-x}$  (20%)
- Obtain the complementary solution of  $x^2y'' + 3xy' + y = x^3$ ,  $x > 0$  (20%)
- Solve the initial value problem  $y'' - 5y' + 4y = e^{2t}$ ,  $y'(0) = 0, y(0) = 1$  (20%)
- Compute the eigenvalues of matrix A:  $\begin{bmatrix} 1 & -1 & 4 \\ 3 & 2 & -1 \\ 2 & 1 & -1 \end{bmatrix}$  (10%)  
Diagonalize matrix A (10%)
- Find the inverse of matrix B:  $\begin{bmatrix} 5 & 6 & -3 \\ 2 & 2 & -1 \\ -1 & -1 & 1 \end{bmatrix}$  (20%)