

淡江大學 97 學年度轉學生招生考試試題

45-1

系別：工組三年級

科目：工 程 數 學

可否使用計算機			
可	✓	否	

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1. Check exactness and/or find the integration factor to solve the equation:

$$y^2 + 2xy - x^2y' = 0 \quad (25\%)$$

2. Solve the initial value problem: $y'' + 10y' + 25y = e^{-5x}$, $y(0) = 1$, $y'(0) = 0$

(25%)

3. Use Laplace Transform to solve the following initial value problem:

$$2y'' + 5y' + 1y = 1 + 2t, \quad y(0) = 1, y'(0) = 0 \quad (25\%)$$

4. Find the eigenvalues and eigenvectors of the matrix $A = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$. (25%)