

淡江大學 101 學年度轉學生招生考試試題

40-1

系別：工組三年級

科目：工程數學

考試日期：7月17日(星期二) 第4節

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1. Solve

$$(e^{2y} - y \cos(xy))dx + (2xe^{2y} - x \cos(xy) + 2y)dy = 0 \quad (25\%)$$

2. $y_1(x) = e^{-2x}$ is one solution of $y'' + 4y' + 4y = 0$. To find a second solution, y_2 by the method of Reduction of Order? $y_2(x) = u(x) y_1(x)$
(25%)

3. Solve the initial value problem by using Laplace transform? (25%)

$$y'' - 3y' + 2y = e^{-4t}, y(0) = 1, y'(0) = 5$$

4. Find the eigenvalues and eigenvectors of the matrix? (25%)

$$A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$$