

淡江大學 99 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

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1. Check exactness and/ or find the integration factor to solve the equation: (25%)

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

2. solve the 2nd order differential equation: (25%)

$$y'' + 4y = 8\sin 2x$$

3. Compute the Inverse Laplace transform of following functions:

$$\frac{2s - 1}{(s - 1)(s^2 + 4s + 3)} \quad (12\%)$$

$$\frac{4}{s^2 + 4s + 20} \quad (13\%)$$

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

$$A = \begin{bmatrix} -1 & 4 \\ 0 & 3 \end{bmatrix}$$