

淡江大學八十七學年度日間部轉學生入學考試試題

系別：工組三年級

科目：工程數學

本試題共 1 頁

1. Find the general solution of the differential equation
 $y'' - 4y' + 4y = e^{3x} - 1$ (20%)

2. Find the general solution for the following
 $x^2 y'' - 5xy' + 9y = 0, x > 0$ (20%)

3. Find a matrix P that diagonalizes the given matrix

$$\begin{pmatrix} 5 & 0 & 0 \\ 1 & 0 & 3 \\ 0 & 0 & -2 \end{pmatrix}$$

(20%)

4. Find the inverse Laplace transform of $\frac{1}{s^2 - 4s + 5}$ (20%)

5. Find the inverse Fourier transform function

$$\mathcal{F}^{-1} \left\{ \frac{4e^{(2w-6)i}}{5 - (3-w)i} \right\}$$

(20%)