

淡江大學 103 學年度日間部轉學生招生考試試題

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系別：工組三年級

科目：工程數學

考試日期：7月20日(星期日) 第4節

本試題共5大題，1頁

1. Solve  $(\sin x \cos y)dx + (\cos x \sin y)dy = 0$ . (20%)
2. Solve  $y'' - 3y' - 4y = 0$ ,  $y(0) = 2$ ,  $y'(0) = 1$ . (20%)
3. Solve 
$$\begin{aligned} -2w + x - y &= 1 \\ w - 2x + z &= -5 \\ w - 2y + z &= -7 \\ x + y - 2z &= 7 \end{aligned}$$
 by Cramer's rule. (20%)
4. Solve 
$$\begin{aligned} y_1'' &= -5y_1 + 2y_2 \\ y_2'' &= 2y_1 - 2y_2 \end{aligned}$$
 by considering it as eigenvalue problem. (20%)
5. Find the Fourier sine transform and Fourier cosine transform of  $e^{-ax}$ ,  $a > 0$ . (20%)