

淡江大學九十一年度日間部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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計算機
X

本試題共 / 頁

1. Find the general solution of

$$y'' - y' - 2y = 5e^{4x} + 6x \quad (20\%)$$

2. Evaluate $\int_C xy \, ds$ over the curve given by

$$x = 2 \cos t, \quad y = 2 \sin t, \quad z = -3, \quad 0 \leq t \leq \frac{\pi}{2} \quad (20\%)$$

3. Find the solution of Partial Differential Equation

$$\frac{\partial u}{\partial t} = 9 \frac{\partial^2 u}{\partial x^2} - 2u \quad (0 < x < 1, t > 0)$$

B.C. $u(0, t) = u(1, t) = 0$

I.C. $u(x, 0) = 4 \quad (20\%)$

4. Find the general solution of the system

(y_1 and y_2 are functions of x)

$$\begin{cases} y_1' = 3y_1 \\ y_2' = 5y_1 - 4y_2 \end{cases} \quad (20\%)$$

5. Find the general solution of

$$y' = -\frac{1}{x}y^2 + \frac{2y}{x} \quad (20\%)$$