

淡江大學 108 學年度日間部寒假轉學生招生考試試題

系別：工學院三年級

科目：工程數學

28-1

考試日期：1月13日(星期一) 第2節

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1. (10%) Solve $y' = 3x(y+2)$; $y(2) = 4$

2. (15%) Solve $[\cos(x+y) + \sin(x-y)]y' = \cos(2x)$

3. (15%) Solve the initial value problem: $y'' - 4y = -6e^{2x} + x$; $y(0) = 1$, $y'(0) = 2$

4. (15%) Solve the initial value problem:

$$x^2 y'' - 3x y' + 4y = 0; y(1) = 3, y'(1) = 5$$

5. (15%) Use the Laplace transform to solve the initial value problem.

$$y'' + 4y' + 3y = e^t; y(0) = 0, y'(0) = 2$$

6. (15%) Compute $F + G$, $F - G$, $2F$, $3G$ and $\|F\|$.

$$F = \sqrt{2}i - j - 6k, \quad G = 8i + 2k$$

7. (15%) Find the general solution.

$$2x_1 - 3x_3 = 1$$

$$x_1 - x_2 + x_3 = 1$$

$$2x_1 - 4x_2 + x_3 = 2$$