

UNREGISTERED

1-4題, 每15分. 5-8題, 每題10分. Created by Unregistered Version

1. 求解起始值問題 $\frac{dy}{dx} = \frac{y}{x^2 - 3x + 2}$; $y(0) = 2$. (15%)

2. 求解起始值問題 $x \frac{dy}{dx} + 2y = e^x$; $y(1) = 1$. (15%)

3. 求解起始值問題 $\frac{d^2 y}{dx^2} + 2 \frac{dy}{dx} + y = 2e^{-x}$; $y(0) = 0$, $\frac{dy(0)}{dx} = 1$. (15%)

4. 求解起始值問題 $\frac{d^2 y}{dx^2} + 2 \frac{dy}{dx} + 2y = 5 \sin x + 2x$; $y(0) = -3$, $\frac{dy(0)}{dx} = 0$. (15%)

5. 求解起始值問題 $\frac{d^2 y}{dt^2} + 3 \frac{dy}{dt} + 2y = f(t) = \begin{cases} 0 & \text{若 } 0 \leq t < 2 \\ 2 & \text{若 } t \geq 2 \end{cases}$; $y(0) = 0$, $\frac{dy(0)}{dx} = 0$. (10%)

矩陣 $A = \begin{bmatrix} 1 & 2 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 2 & 1 & 1 \\ 1 & 1 & 1 & 2 & 1 \\ 1 & 1 & 1 & 1 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$, $X = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \end{bmatrix}$.

6. 求矩陣 A 的反矩陣 A^{-1} . (10%)

7. 求矩陣 A 的行列式值 $\det A$. (10%)

8. 若 $AX = B$, 求未知矩陣 X 的值. (10%)

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