

# 第七周作业

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1

(1)

$$\begin{aligned}\lambda^2 - 3\lambda + 2 &= 0 \\ (\lambda - 1)(\lambda - 2) &= 0 \\ y &= C_1 e^x + c_2 e^{2x}\end{aligned}$$

(3)

$$\begin{aligned}\lambda^2 + 6\lambda + 9 &= 0 \\ (\lambda + 3)^2 &= 0 \\ y &= (C_1 + C_2 x)e^{-3x}\end{aligned}$$

(5)

$$\begin{aligned}\lambda^2 - \lambda + 2 &= 0 \\ \lambda &= \frac{1}{2} \pm \frac{\sqrt{7}}{2}i \\ y &= e^{\frac{1}{2}x} \left( C_1 \sin \frac{\sqrt{7}}{2}x + C_2 \cos \frac{\sqrt{7}}{2}x \right)\end{aligned}$$

(6)

$$\begin{aligned}\lambda^3 + 2\lambda^2 - \lambda &= 0 \\ \lambda &= 0, -1 \pm \sqrt{2} \\ y &= C_1 + C_2 e^{(-1+\sqrt{2})x} + C_3 e^{(-1-\sqrt{2})x}\end{aligned}$$

3

(1) 设  $y = b_0x^2 + b_1x + b_2$ 

$$b_0 + -3(2b_0x + b_1) + 5(b_0x^2 + b_1x + b_2) = 6$$

$$\begin{cases} 5b_0 = 0 \\ 5b_1 - 6b_0 = 0 \\ 5b_2 + b_0 - 3b_1 = 6 \end{cases}$$

得

$$\begin{aligned} b_0 = 0, b_1 = 0, b_2 &= \frac{6}{5} \\ y &= \frac{6}{5} \end{aligned}$$

(3) 设  $y = b_0x^2 + b_1x + b_2$ 

$$b_0 - 9(2b_0x + b_1) + 20(b_0x^2 + b_1x + b_2) = x + 1$$

$$\begin{cases} 20b_0 = 0 \\ 20b_1 - 9b_0 = 1 \\ 20b_2 - 9b_1 + b_0 = 6 \end{cases}$$

得

$$\begin{aligned} b_0 = 0, b_1 &= \frac{1}{20}, b_2 = \frac{29}{400} \\ y &= \frac{1}{20}x + \frac{29}{400} \end{aligned}$$