第七周作业

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1

(1)

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

(3)

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

(5)

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

(6)

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

3

(1) 设 $y = b_0 x^2 + b_1 x + b_2$

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

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

得

$$b_0 = 0, b_1 = 0, b_2 = \frac{6}{5}$$
$$y = \frac{6}{5}$$

(3) 设 $y = b_0 x^2 + b_1 x + b_2$

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

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

得

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