

Homework 1

Lin Zejin

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- **Collaborators:** I finish this homework by myself.
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Problem 2 若

Problem 3

Problem 5 e^x 的 Taylor 展开式为

$$e^x = \sum_{j=0}^{\infty} \frac{1}{j!} x^j$$

若 $\frac{P(x)}{Q(x)}$ 是 Pade 逼近, 则

$$p_0 = 1$$

$$q_1 + 1 - p_1 = 0$$

$$q_2 + q_1 + \frac{1}{2}q_0 - p_2 = 0$$

$$q_2 + \frac{1}{2}q_1 + \frac{1}{6}q_0 = 0$$

$$\frac{1}{2}q_2 + \frac{1}{6}q_1 + \frac{1}{24}q_0 = 0$$

不妨 $q_2 = 1$, 解得

$$q_1 = -6, q_0 = 12, p_2 = 1, p_1 = -5$$

故 Pade 逼近为

$$\frac{x^2 - 5x + 1}{x^2 - 6x + 12}$$