1. Re-derive the result of Example 7.1 of the textbook by adding more details. For instance,

(a) show the $L_2$ gain of the system (or $H_\infty$ norm of $G(j\omega)$) is

$$\|G\|_\infty = \sup_{\omega \in \mathbb{R}} \sigma_{\text{max}}[G(j\omega)] = \sup_{\omega \in \mathbb{R}} \|G(j\omega)\|_2.$$ 

(b) show Eq. (7.9) implies that $\psi(t, y) \in [-\gamma_2 I, \gamma_2 I]$.

(c) ...

2. Exercise 7.9 of the textbook.

3. Exercises 4.55-(1), (2) of the textbook.