

Exercises April 26th 2004, Optimal Control of Economic Systems

1. Consider the system and cost criterion

$$\begin{aligned} \frac{d}{dt}x_1 &= x_2 & x(0) &= (1 \ 0)^T & |u(t)| &\leq 1 \\ \frac{d}{dt}x_2 &= u & J(u) &= \int_0^4 (x_1(t) - x_2(t))dt \end{aligned}$$

- (a) Determine the Hamiltonian and the equations for the co-state.
 - (b) Determine the (candidate) optimal control and the corresponding state.
2. Exercise 2 of Section 4.5.
 3. Exercise 4 of Section 4.5.