

EconS 503 - Microeconomic Theory II  
Homework #4 - Due date: February 23rd, 2018

1. **[Fixed entry fee]**. Consider Example 8.13 in the *Advanced Microeconomic Theory* textbook (MIT Press) about endogenous entry in an industry where firms compete a la Cournot. Assume that the social planner can set a licensing fee  $t \geq 0$  which increases the fixed entry cost that firms pay to enter the industry from  $F$  to  $F + t$ .
  - (a) Find the optimal fee  $t$  that the social planner needs to charge to induce firms to choose the socially optimal entry level,  $n^o$ , in equilibrium.
  - (b) Evaluate your results in the case that the fixed entry cost is  $F = 1/8$ . Which is the optimal entry fee  $t^*$  that induces firms to enter at the socially optimal number?
  
2. **[Temporary punishments in GTS]** Consider the setting in Example 8.15 of the *Advanced Microeconomic Theory* textbook (MIT Press). Assume a collusive agreement in which firms use a punishment scheme where they revert to the Nash equilibrium of the stage game during  $T$  consecutive periods, and after that punishment phase they return to cooperation.
  - (a) Under which conditions on the discount factor  $\delta$  can collusion be sustained as a SPNE of the infinitely repeated game when firms rely on this temporary punishment?
  - (b) How does your minimal discount factor,  $\bar{\delta}$ , depend on  $T$ ?
  - (c) Is it always bounded between 0 and 1?
  
3. **Exercises from Tadelis:**
  - (a) Exercises from Chapter 10: 10.4, 10.6, 10.9, and 10.11
  
4. Exercise 8.30 (Chapter 8) from the *Advanced Microeconomic Theory* textbook (MIT Press)