

### Problems for Seminar 9

#### Problem 1

- Do Problem 13.1 in the book by Church and Ware (if you need to, use the index of the book to find the descriptions of the games they are asking about).

#### Problem 2

- Solve Practice Problem 13.2 (page 304) in Pepall et al. (see enclosed sheet).

#### Problem 3

- Do the following alternative version of a problem from the midterm test:

In a market there are three firms, Firm 1, Firm 2, and Firm 3. Each of the firms can choose “A low price” (LP), “An intermediate price” (IP) or “A high price” (HP). That is, the firms’ strategy sets are identical and given by  $S_1 = S_2 = \{LP, IP, HP\}$ . Each firm wants to choose the strategy that maximizes its own profits; which strategy this is depends on the other firm’s chosen strategy. The firms’ profits (= their payoffs) are given by the following three tables:

**Table A (Firm 3 chooses LP):**

	LP	IP	HP
LP	1, 2, 1	2, 3, 0	2, 0, 0
IP	0, 1, 2	3, 9, 4	3, 9, 1
HP	1, 2, 1	1, 2, 4	4, 3, 3

**Table B (Firm 3 chooses IP):**

	LP	IP	HP
LP	1, 1, 0	3, 2, 2	2, 3, 1
IP	2, 1, 1	2, 1, 3	3, 1, 0
HP	3, 2, 3	1, 2, 2	2, 1, 4

**Table C (Firm 3 chooses HP):**

	LP	IP	HP
LP	1, 1, 0	2, 1, 1	3, 2, 0
IP	3, 2, 3	2, 0, 2	2, 1, 0
HP	2, 2, 4	3, 3, 1	2, 0, 2

The first (second) [third] number in each cell is Firm 1’s (Firm 2’s) [Firm 3’s] payoff. The information given above defines a normal (or strategic) form game, where Firm 1 chooses row, Firm 2 chooses column, and Firm 3 chooses table. Identify all (pure strategy) Nash equilibria of this game. You may indicate your answer by making (a) circle(s) around the appropriate cell(s) in the above tables.