AP/ECON 2350 Q Assignment 2 W 2010–11

due : Tuesday March 15, 4:00 pm
Do all 5 questions. All count equally.

1. What should firm #1 do to maximize its profits in the following modification of the quantity leadership (Stackelberg) model?

Firms 1 and 2 produce a homogeneous good ; firm #1 chooses its output first, followed by firm #2 (with firm #2 observing firm #1's output before making its own output choice) ; the inverse demand function for the good is

$$p = 24 - (y_1 + y_2)$$

But here the marginal cost of producing the good is **zero**. However each firm incurs a **fixed** cost of 16 if it chooses to produce any output at all. (This fixed cost can be avoided if the firm chooses to go out of business).

2. Suppose everything is the same as in question #1, except that the firms choose their output quantities **simultaneously** (as in the Cournot model).

Find an equilibrium in this model.

3. Find the equilibrium in the following Cournot (simultaneous quantity–setting) duopoly model, in which the firms have **different** production costs.

Firms choose their output levels simultaneously.

The inverse demand function for the good that they produce is

$$p = 24 - (y_1 + y_2)$$

Firm #1's total cost of producing y units of output is

$$TC_1(y) = 6y$$

and firm #2's total cost of producing y units of output is

$$TC_2(y) = 12y$$

continued

4. What output levels y_1 and y_2 maximize the combined profits of the two firms in question #3 above?

5. Write down the payoff matrix to the game described below, and find **all** the Nash equilibria to the game.

The two firms choose prices simultaneously, for a homogeneous good, as in the Bertrand model of duopoly.

But each firm's price has to be an integer : either \$1, \$2, \$3, or \$4.

The market demand curve for the firms' output is

$$Y = 4 - p$$

and each firm's total cost of producing y units of output is

$$TC(y) = y$$