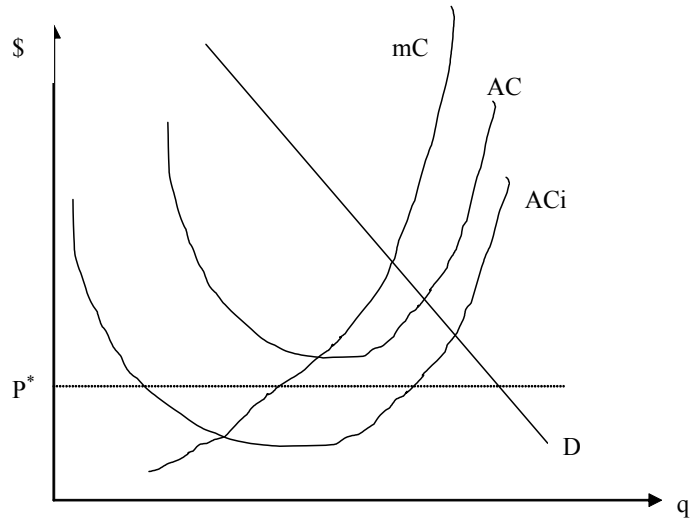
ARE 202 – Final Exam Spring 2004
Villas-Boas

Please answer all the questions! The exam has a maximum of 20 (twenty) points.
This is an in-class closed book exam.
Don't forget to write your name and Student ID number on the answer sheets.
You have 3 hours (maximum limit, till 2 p.m.) to finish this exam.
I should have your grades then ready on Monday May 17th. Good luck!

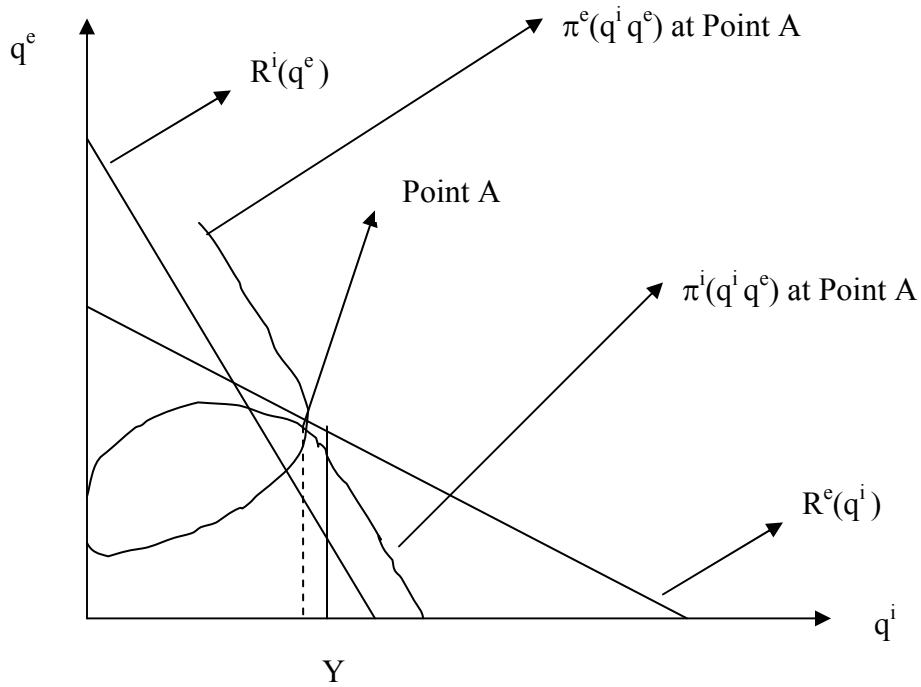
Question 1. (8 points)

(i) (2 points) In markets where there are tourists (un-informed consumers) and natives (informed consumers), the equilibrium prices are higher, the larger the proportion of informed consumers. Is the previous statement correct? (Explain briefly)

(ii) (3 points) In the conditions of the graph below, is predatory pricing at price p^* going to be successful for the incumbent? Marginal costs and average costs for the competing firm are given by mC and AC, average cost for the incumbent is given by ACi and total demand is given by D.



(iii) (3 points) In this question you are supposed to argue whether an incumbent firm will prefer to accommodate and play a Stackelberg game in quantities or rather prefer to limit entry by producing $q^i = Y$ (see graph), and thus leaving the competitor with enough residual demand to achieve zero profits. You are supposed to answer given the information in the graph below. Let q^i and q^e be the incumbent's and the entrant's quantities produced, let $R^i(q^e)$ and $R^e(q^i)$ be the reaction functions for the incumbent and the entrant, respectively, that are obtained by solving a Cournot game in quantities. The iso-profits for the incumbent and for the entrant are, respectively, parallel to the ones drawn at Point A, $\pi^i(q^i, q^e)$ and $\pi^e(q^i, q^e)$.



Question 2. (2 points)

Suppose we are in a homogenous market, with symmetric firms, setting prices. Demand is certain over time and production costs vary over time in a very predictable seasonal pattern. That is, cost increases starting in the Spring, reaches its highest in the Summer and then decreases until reaches its lowest in the Winter, to restart again in the same cycle. Suppose firms in this market are thinking of colluding in the beginning of the Spring, just when costs are rising. The alternative is to delay and only start colluding in the beginning of the Fall, when costs are falling. If someone breaks the agreement the next day they enter a six months to 9 months (that is, not permanent) punishment phase. Firms discount future gains and losses, off course. The collusive agreement is more likely to break down in the Spring than in the Fall. Is this statement correct? (Explain briefly)

Question 3. (10 points)

Mercedes is the only producer of Mercedes-C in the U.S. and there is no possibility that any other firm can import that vehicle into the U.S. Assume that the marginal cost of producing one Mercedes-C is c=$8,000. Assume consumer demand for the Mercedes-C in the U.S. is given by $p = 50,000 \cdot \alpha - \frac{1}{2}Q$, and where α is the level of advertising that is done for Mercedes-C.

(i) (2 points) Given a certain level of advertising, if Mercedes signs an exclusive deal with a distributor/dealership (that pays Mercedes a wholesale price *r* for every car and that has zero retail marginal costs of distribution) how many Mercedes-C will be sold in the U.S. and at what price *p* to consumers (as a function of that level of advertising)? What price *r* does Mercedes charge to its exclusive dealership (also as a function of advertising)?

(ii) (2 points) If advertising α is only done by the dealer, not by the manufacturer Mercedes, and the cost of advertising α is given by a function g(α,β) where $\left.\frac{\partial g(.)}{\partial \alpha}\right|_{\beta} > 0, \left.\frac{\partial g(.)}{\partial \beta}\right|_{\alpha} < 0, \left.\frac{\partial^2 g(.)}{\partial \alpha \partial \beta}\right| < 0, \left.\frac{\partial^2 g(.)}{\partial \alpha \partial \alpha}\right| > 0$, derive the condition that defines implicitly the level of advertising chosen to be provided by the Dealer. [If you have not solved (i) assume that dealer's profit as a function of advertising is given by $\pi^D(\alpha) = \frac{(50,000\alpha - 8,000)^2}{8} - g(\alpha, \beta)$].

(iii) (2 points) Assume that beta is the stock of brand reputation that the manufacturer Mercedes has build over time, how does optimal α provided depend on the reputation stock β?

(iv) (1 point) If the manufacturer instead owned the dealer, how would you setup the problem of deciding the optimal level of price to consumers, the optimal quantity sold, as a function of alpha and beta? (You do not have to solve for the optimal p, r and quantity sold…)

(v) (3 points) Given a certain level of advertising and brand reputation, does the sum of manufacturer and dealer profits increase if the firms are vertically integrated? Please explain.