University of Southern California
Undergraduate Program

ECON 480
Economics of Industrial Organization
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Review Problem #1
To prepare for Exam #1

Solution will be given in class.
Pricing with and without market power

A- There are two types of consumers in the population: type $\theta_1$ in proportion $\lambda$ and type $\theta_2 > \theta_1$ in proportion $1-\lambda$. The utility of a consumer of type $\theta$ is $\theta V(q) - T$ where $q$ is the quantity he consumes and $T$ the payment he makes for this quantity. Moreover $V(q) = \frac{1-(1-q)^2}{2}$. Last, the size of the population is $N$.

(a) What is the demand of a consumer of type $\theta$ who faces a price per unit $p$?

(b) For any given price $p$, what is the total demand in the industry?

B- There is only one regulated firm in the market and the cost of production is $30 per unit. There is no fixed cost. The government requires the firm behaves competitively. An estimate of total demand is available, which can be summarized by the following function:

$D(p) = \begin{cases} 
300 - 8p/3 & \text{if } p < 100, \\
100 - 2p/3 & \text{if } 100 < p < 150, \\
0 & \text{otherwise}.
\end{cases}$

(a) What quantity is produced and at which price?

(b) What is the profit of the firm?

C- After a change in leadership, the new government decides to deregulate the industry. The firm becomes a monopolist. The only constraint imposed by the government is that the firm does not have the right to require a statement of income from his customers to charge them different prices. Nevertheless, the firm does not have the time to get additional information and knows only the previous estimate of demand.

(a) What quantity is produced in equilibrium and at which price?

(b) What is the profit?

D- The manager hires a consultant to get some information about demand. Indeed, the firm thinks that some kind of discrimination could be profitable. The consultant is a specialist on a very similar market and has estimated that the utility of consumers is best approximated by the function $\theta V(q) - T$ where $q$ is the quantity consumed, $T$ the payment, and $V(q) = \frac{1-(1-q)^2}{2}$. He also knows that the preferences of consumers depend on their income and there are two possible values for $\theta$. However, he would need more time to get an estimate of the parameters and ignores the size of the population.

(a) Given this new information, what is the total information the manager has?

(b) How can he use this information to discriminate?

(c) Given your answer in (b) what is the maximization program of the firm? Explain.

(d) What is the equilibrium pricing strategy?