

**ECON 2106H** — Prof. Trandel — Spring 2009  
**Short Assignment #5** (due Thursday, March 26th)

Name: \_\_\_\_\_

*MONOPOLY*

A true “monopoly” — in which a certain good is sold by only one firm — could exist because:

- it has a large cost advantage, due either to some special skill or to pure size (in an industry in which big firms have lower costs),
- it controls a scarce (and vital) resource,
- it holds a crucial patent,
- there are advantages to all consumers from using the same firm’s product (network effects), or
- the government maintains the firm’s position\*

For a true monopoly the *firm demand curve* is the same thing as the *market demand curve*.

The earlier profit-maximizing rule still holds: The firm should sell all units for which the marginal revenue from selling that unit is larger than is the marginal cost of producing it (or should sell up to the quantity at which  $MR = MC$ ).

*Question #1:* Fill the missing values in the following table.

Q	P	TR	MR	TC	MC	ATC	$\Pi$
27	26.5	715.5	—	470	—	17.4	245.5
28	26	728		480		17.1	
29	25.5			490		16.9	
30	25			500		16.7	
31	24.5			510		16.5	

*Question #2:* Use the formula for marginal revenue given the March 26th notes to find the marginal revenue the monopoly collects from selling unit #28. [*Your answer should match the relevant value you filled in the table.*]

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\*From the *Atlanta Journal-Constitution*, June 21, 2001:

The way Georgia’s system has worked for nearly 70 years, manufacturers of alcoholic beverages must name a single company, or distributor, as a middle man between them and retailers in geographic territories the brewers set for the state.

Distributors or wholesalers keep the franchise as long as they and the brewer want to. The state rarely intervenes because its main concern is for distributors to collect beer taxes and send them to the treasury. The distributor can set any price for beer, and faces competitive pressure only from sellers of other brands. A shopkeeper who sells Budweiser to consumers in Buckhead, for example, has no choice in selecting a distributor; he must pay the price set by the Bud man designated for the Atlanta territory. . . .

Georgia is among 32 states that have built systems around licensed retailers and distributors. All but two of them grant exclusive franchises to distributors, said Joseph Lackey, president of the Indiana Grocery and Convenience Store Association. The sale and distribution of alcohol in the 18 other states are controlled by the state government, often with retail purchases confined to state-operated stores. . . .

We would find any effort to eliminate or soften or weaken the exclusive territories totally unacceptable to us,” said [Mark] Wolfe, Anheuser-Busch’s governmental affairs director.

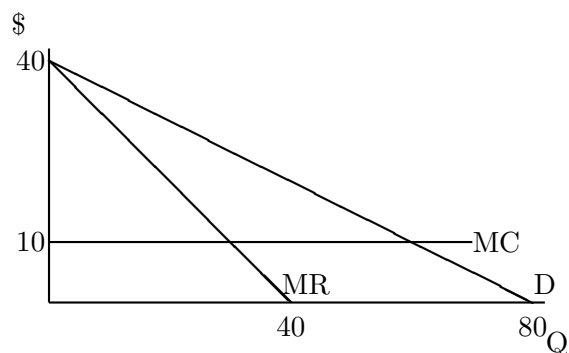
*Optional Question #3:* This is only for those of you who are comfortable with calculus. Find the marginal revenue from unit #28 in yet another way. The above price and quantity numbers are based on the following demand curve:  $P = 40 - .5Q$ . Use this formula to: find a formula for total revenue expressed only in terms of  $Q$  (i.e., multiply the price formula by  $Q$ ), and then find marginal revenue =  $MR = \frac{dTR}{dQ}$  (i.e., differentiate  $TR$  with respect to  $Q$ ). Finally, use this formula to find marginal revenue when  $Q = 28$ . [Note the slight difference in answers; this arises because the formula gives  $MR$  right at  $Q = 28$ ; the value in the table is the marginal revenue of going from  $Q = 27$  to  $Q = 28$ .]

*Question #4:* Use the standard  $MR=MC$  rule for profit maximization to find the number of units this monopoly firm should sell to maximize its profits. [You can do this using either the values in the table, or by using the  $MR$  formula you may have found in the previous (optional) question.]

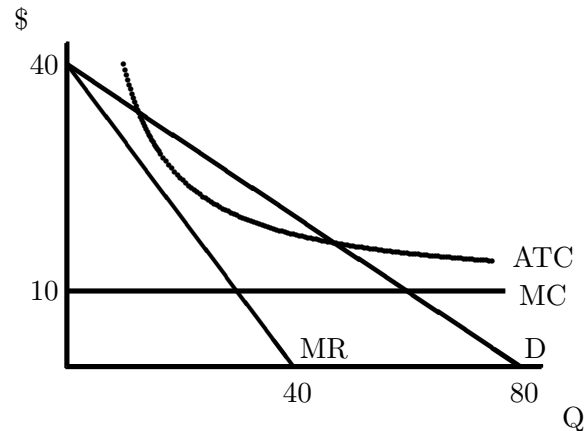
*Question #5:* What price should the monopoly firm set to sell the quantity that matches your answer in part #4? [If you want, you can answer this question by using your answer to #4 along with the demand curve formula from #3.]

*Question #6:* Use the (second) definition of profit  $\Pi = (P - ATC)Q$  to find the monopoly firm's profit when it sells at the point on the demand curve (the price and quantity) you have specified. [Use the  $ATC$  value from the table.]

*Question #7:* When graphed, the above table (or above formulae) looks like this. Illustrate and label the profit-maximizing quantity and the profit-maximizing price.



*Question #8:* This version of the graph also the firm's ATC curve. Illustrate the area that represents the monopoly firm's profit. [Note: the scale on this diagram may not perfectly match the numbers in the table.]



Note that, while a monopoly firm charges a price above its marginal cost of production, there's a limit on how high it wants to raise its price — it doesn't want to charge the "highest price it can". If it charged a price higher than the profit-maximizing price, it would not be collecting as large a profit as it could.

Why does a monopoly firm find that raising its price eventually stops increasing its profit? In deciding on its price, the monopoly must compare

- the gain due to collecting more money from each customer who still buys, with
- the loss due to losing some of its customers, and
- must also consider how its production costs change as its sales change.

The  $MR = MC$  approach accounts for all of these factors.

The existence of a monopoly hurts consumers (price is above, and quantity below, the competitive level), and thus reduces consumer surplus. Monopoly control helps the seller, and thus raises producer surplus. But do the gain to the seller completely offset, or not, the losses of the consumers?

*Questions #9:* Suppose that production was increased by one unit relative to the quantity you found above. What value would some consumer place on that additional unit? What is the marginal cost of producing that additional unit? Would the production of that unit create a net gain or a net loss for society as a whole? What can we conclude about the following question: does the outcome that results from monopoly control over a market produce the largest value of economic surplus that could possibly exist in the market?