# Economics 10: Problem Set 7

1. For the firm pictured in the table do the following tasks and answer the questions:

Q	P	TC	TR	MR	MC	AC	TR-TC
0	0	10	0	0	-----	-----	-10
1	90	20	90	90	10	20	70
2	85	40	170	80	20	20	130
3	80	70	240	70	30	23.33	170
4	75	110	300	60	40	2705	190
5	70	160	350	50	50	32	190
6	65	220	390	40	60	36.67	170
7	60	290	420	30	70	41.43	130
8	55	370	440	20	80	46.25	70
9	50	460	450	10	90	51.11	-10
10	45	560	450	0	100	56	-110

(a) Fill in the blanks.

(b) Find profit maximizing output and price. **Q=5, P=7**

(c) Is the monopoly producing at minimum AC? **No.**

(d) Do you think this is a natural monopoly? **No—another firm can enter and make positive profits. Notice that the firm's average cost curve rises as output rises.**

(e) Show the profit-maximizing solution graphically.
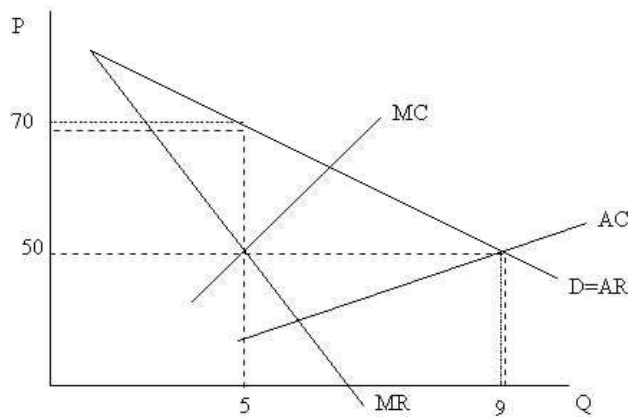
(f) Suppose the government forces the monopolist to behave as a competitive firm. What would be the new equilibrium price and quantity? **The firm's supply curve will be the MC curve. Q=6, P=65**

(g) Suppose the monopolist is forced to get price and quantity equal to that of a

<u>competitive industry</u>. Show the new price and quantity. Would the monopolist still be earning profits? **Here the firm will produce at profits=0 (where AC=AR). Q=9, P=50.**

2. On a price-quantity graph, depict a monopolist's demand curve, marginal revenue curve, average cost curve, and marginal cost curve.

1. Explain why marginal revenue is always less than price. **Each additional unit commands s a lower p and lowers the p of all units. Price is, of course, average revenue, and when the average revenue curve is falling, marginal revenue must be below it.**
2. How does the profit-maximizing monopolist determine the quantity to produce and the price to charge? Show the profit maximizing price-quantity combination on your graph. **The monopolist produces where MC=MR. (Output level = Q*, Price = P*)**
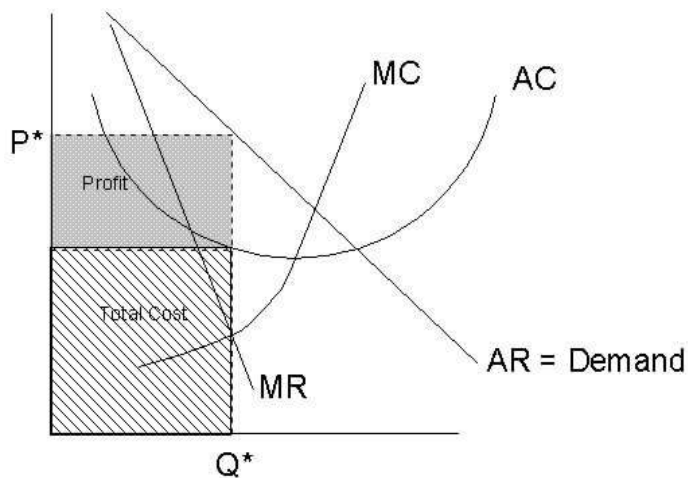
3. Show total costs, total revenue, and profits on your graph.

TC=Q*AC(@Q*)

TR=Q*P*

Profit=Q*P*-Q*AC(@Q*)

3. Does a monopoly allocate resources efficiently? Explain.

Because it is protected from entry, a monopolist may earn profits greater than the opportunity cost of capital. Also, a monopoly my be inefficient in resource allocation by producing too little quantity and charging too high a price.

However, a monopoly may aid innovation by allowing the market to provide an incentive for research and development.

Natural monopolies exist because single firm production is cheaper and there are increasing returns to scale.

4. Explain why a monopolist has no supply curve. **A monopolist's decisions are based on the demand curve—it sets both P and Q. A supply curve shows how a firm adjusts quantity supplied in response to an externally determined market price.**

5. How does the monopolist's quantity and price compare with a perfectly competitive industry? Draw graph below and explain. Find P* and Q* and area of profits. **The monopolist, if forced to act like a perfectly competitive industry would equate MC and Price. Price would fall to Pc and Output would rise to Qc. This firm would still show profits, but they would be lower.**
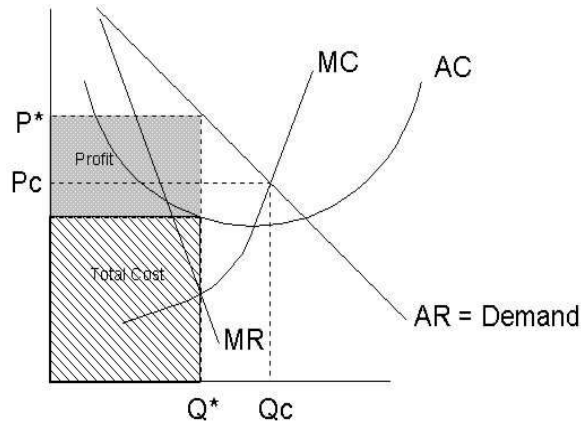
6. Characterize the monopolistically competitive firm. **The monopolistically competitive firm is faced with free entry and exit and many other firms in the industry. However, through product differentiation and advertising the firm can "tilt" the demand curve for its product, thereby allowing it to charge a higher price that a perfectly competitive firm could.**

7. State the main consequence of product differentiation. **As above, product differentiation allows the firm to face its own downward sloping demand curve. Equating MR & MC leads to a higher price than a competitive firm would charge.**

8. Give some examples of monopolistically competitive firms (bars, beauty parlors, etc.). **Students' choice!**
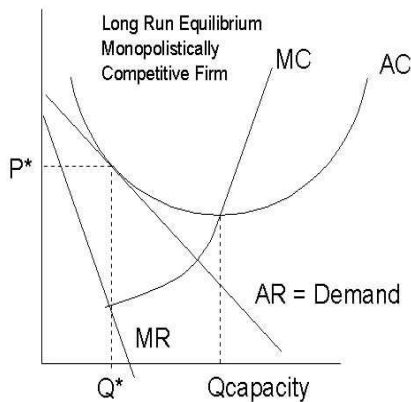
9. What happens to the demand curve of the monopolistic competitive firm in the long run? (Show in graph above) **Free entry drives the demand curve to the left until it's just tangent to the LRAC curve.**

1. Does price equal MC in the long run? **No, its aboveMC**
2. Is the firm producing at minimum average cost? **No, it's producing above min**

AC

3. Is the firm operating at optimal capacity? **No, it's operating below optimal capacity. This is called the "excess capacity theorem" for monopolistic competition.**

10. Should the free market be allowed to determine the price for the following, or should government intervene? Defend your choice for each. **Discussion question; defend your answers.**

a) Transit fares

b) Plastic surgery

c) Garbage collection

d) Postal delivery of newspapers and magazines

e) Fire protection for churches

f) Ice cream

11. The following activities have known harmful effects. In each case identify any divergence between social and private costs.

a) Cigarette smoking **second hand smoke**

b) Driving a car at the national (rural) speed limit of 65 mph **increased risk of accidents with other people**

c) Private ownership of guns **gun accidents and crimes**

d) Drilling for offshore oil **pollution**

12. What market failure(s) does public support of higher education seek to remedy? How would you go about evaluating whether the benefits of this support outweigh the costs?

13. The president of Goodyear Tire and Rubber Company complained that government regulation had imposed $30 million per year in "unproductive costs" on his company, as listed below. How would one determine whether these costs were "productive" or "unproductive?"

a) Environmental regulation, $17 million

b) Occupational safety and health, $3 million

c) Motor vehicle safety, $3 million

d) Personnel and administration, $3 million