SECOND MIDTERM EXAMINATION
## March 29, 2001

Name: _____   **Section:** 10:00 or 11:00?

MULTIPLE CHOICE. Circle the correct response and write a brief explanation. Use graphs as appropriate. (5 pts each)

1. If Boeing produces 9 jets per month, its long-run total cost is $9.0 million per month. If it produces 10 jets per month, its long run total cost is $9.5 million per month. Which of the following statements best describe Boeing?
a. Boeing exhibits constant returns to scale
b. Boeing exhibits increasing returns to scale (economies of scale).
c. Boeing exhibits decreasing returns to scale (diseconomies of scale).
d. The law of diminishing marginal productivity does not hold for Boeing.
e. Boeing's marginal cost is greater than its average total cost.

Long run average total costs decrease as output increases. With 9 jets, ATC= $1.0 million; with 10 jets, ATC=$0.9 million.

Question 2 refers to Figure One.
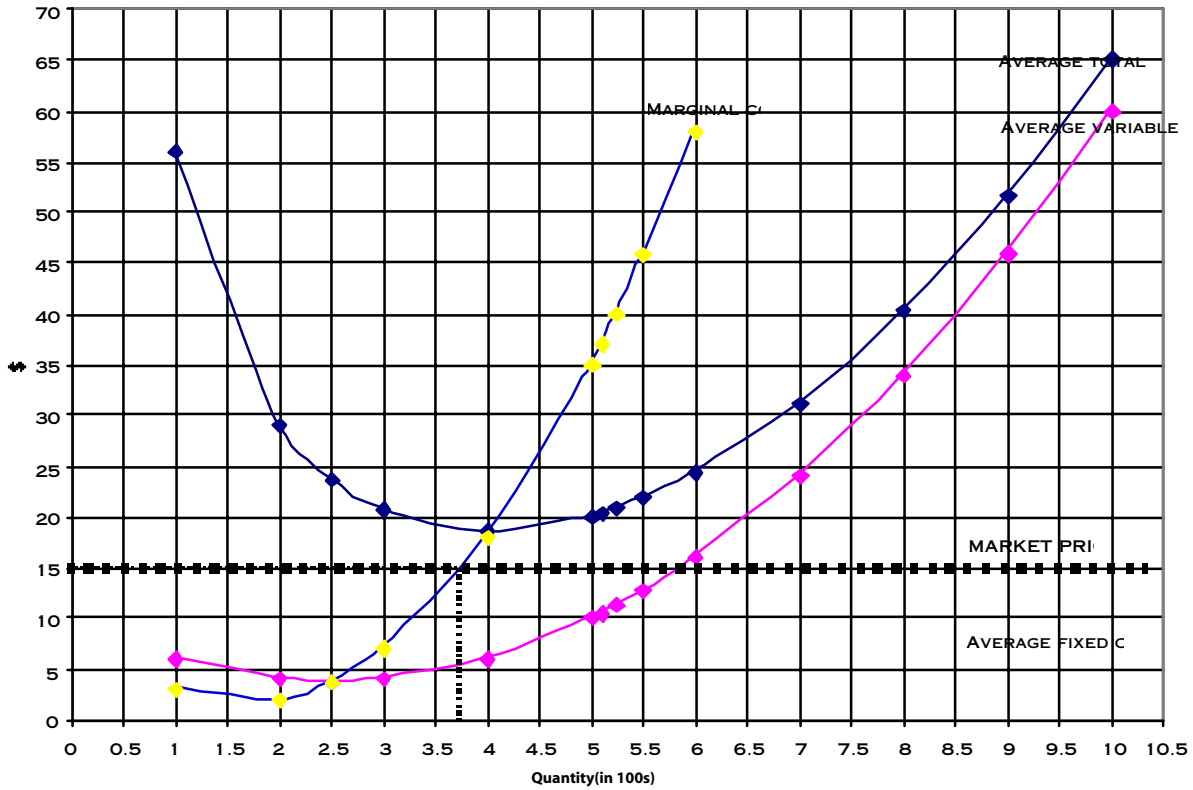
2. If a firm in a perfectly competitive market produces 375 units of output, marginal cost is $15 and increasing, average variable cost is approx. $6 and average total cost is approx. $18. Given that the market price is $15 a unit, what should the firm do to maximize short run profit?

a. Shut down

b. Produce more than 375 units

c. Produce less than 375 units, but not shut down

d. Produce 375 units

e. Increase the market price to $18.

The firm maximizes profits by operating where P=MC as long as P>AVC. In this case, P=MC at an output of 375 units. Price is greater than AVC so the firm will operate.   [Some of you are still not persuaded that the profit maximum occurs where P=MC. I'm going to post on the web site a simulation exercise (an Excel Spreadsheet) to help you convince yourself.)

Questions 3 &4 refer to Figure Two that shows the saddle market in Argentina.
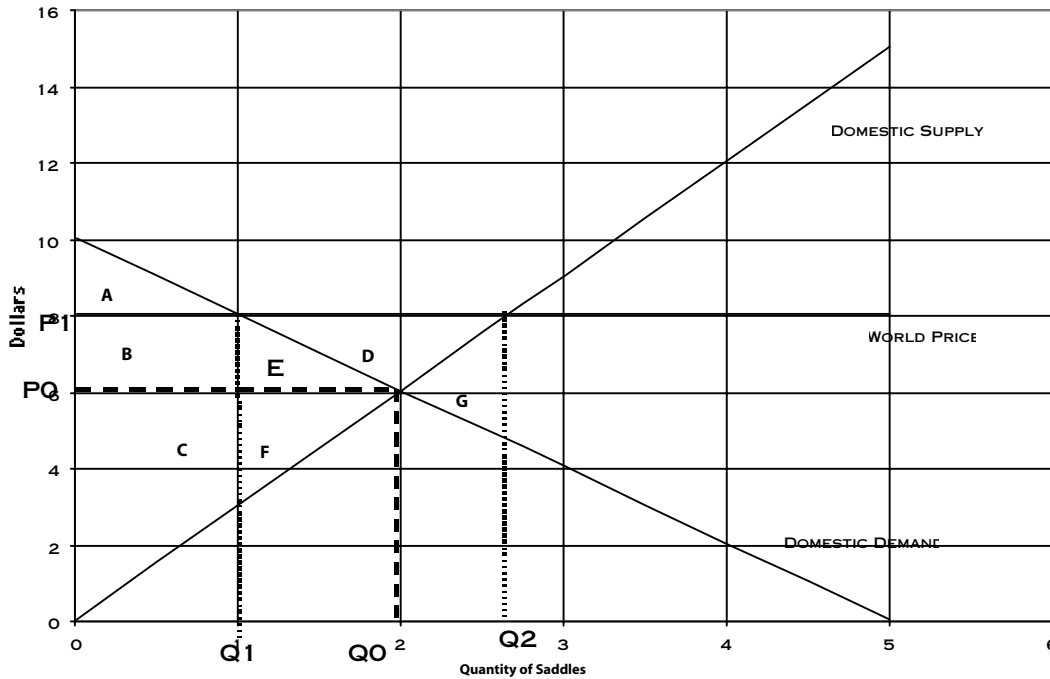
3. According to the graph, the equilibrium price and quantity demanded of saddles in Argentina after trade would be

a. P1, Q1
b. P1, Q2
c. P1, Q0
d. P0, Q0
e. P0, Q1

After trade, the price of saddles in Argentina will rise to the world price. The quantity demanded of saddles in Argentina will decrease in response to the price increase.

4. According the graph, consumer surplus in Argentina before and after trade is

	Before Trade	After Trade
a.	A+B+C+E+F	A+B
b.	A	A+B+E+D
c.	A+B+E	A+B+E+D
d.	C+F	C+F+B+E
e.	**A+B+E**	**A**

Consumer surplus is the area under demand and above the price. Before trade, the price is P0. After trade, P1.

5. Suppose that a steel factory emits a certain amount of air pollution and that this pollution constitutes a negative externality. If this market is not required to internalize the externality,
a. the supply curve would adequately reflect the marginal social cost of production.
b. consumers will be required to pay a higher price for steel than they would have if the externality were internalized.
c. the market equilibrium quantity will be greater than the socially optimal quantity
d. the market equilibrium quantity will be equal to the socially optimal quantity.
e. producers will produce less steel than they otherwise would have if the externality were internalized.

A negative externality implies that the MSC >MPC. The market equilibrium occurs where supply equals demand. Supply represents the MPC. Demand represents the MSB=MPB. So, the market equilibrium occurs where MSB=MPC, but at that output MSB<MSC. Since Marginal Social Cost exceeds Marginal Social Benefit, too much is produced.

[This is a case where "a picture is worth a thousand words."]

6. Which of the following would be considered a common resource good?
a. cable television
b. bottled natural water
c. a local cable television service
d. electricity consumption by a household
e. lobsters off the coast of Maine

A common resource good has two characteristics: (a) nonexcludable and (b) depletable or rivalrous. Lobsters in the open sea are nonexcludable. However, they are depletable. If I catch the lobster, it will not be available for anyone else to catch.

7. Harry's Hotdogs is a small street vendor business owned by Harry Huggins. Harry is trying to get a better understanding of his costs by categorizing them as fixed or variable. Which of the following costs are most likely to be considered fixed costs?
a. hotdog buns
b. mustard
c. cost of bookkeeping services
d. wages paid to workers that sell hotdogs
e. napkins

A fixed cost is a cost that does not vary with output (at least in the short run). In this case, usage of hot dog buns, mustard, and napkins clearly varies directly with output. Workers may not vary proportionately with output, but if the quantity sold increases, you'll need more worker units

(hours or persons) to make the hot dogs and to serve customers. In constrast, bookkeeping services are required regardless of output and are unlikely to vary with output.

8. For a firm in a perfectly competitive market, the price of the good is always equal to
a. marginal revenue
b. average revenue
c. equilibrium market price
e. all of the above
d. none of the above

Marginal revenue is the change in total revenue from selling an additional unit of the good. A firm in perfect competition is a price taker so if the firm sells an additional unit, revenue increases from PQ to P(Q+1). MR=P. Average revenue is total revenue divided by quantity: PQ/Q or P. Because a firm is a price taker, the price of the good is defined by the equilibrium market price.

SHORTER ANSWERS
Figure Three illustrates the demand curve for a monopoly firm. Use the graph to answer questions 1-3.

FIGURE THREE
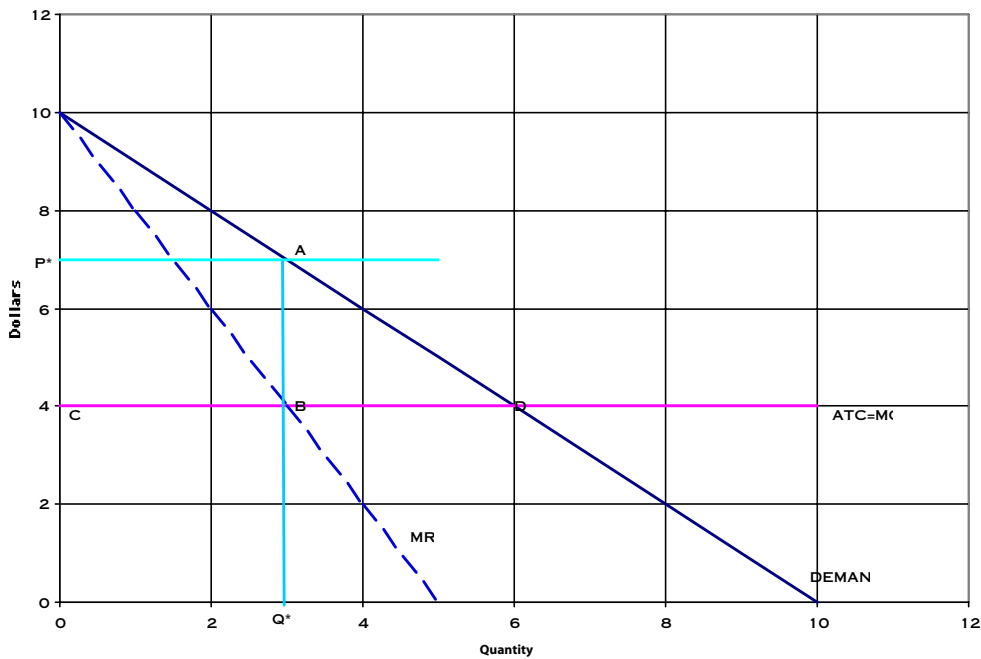
1. (10 pts) Show the monopolist's profit maximizing price and output.

5

First, we need to sketch MR (the dashed line in my figure) Profit maximizing output occurs where MR=MC and price is read off the demand curve: P*, Q*

2. (5 pts) Use the graph to show the monopolist's profits.
Profits are rectangle CP*AB

3. (5 pts) Use the graph to illustrate the deadweight loss associated with monopoly power in this market.
Deadweight loss is triangle ABD.

4. (10 pts) Explain why the services of a lighthouse are sometimes given as an example of a public good.
A public good has two characteristics: (a) nonexcludability and (b) nonrivalrous (or nondepletable). A lighthouse is nonexcludable. Once it is turned on, it is impossible to keep any ship the vicinity from using the light to protect them from harm. It is nonrivalrous. One ship's use of the light does not reduce the benefit to another ship.
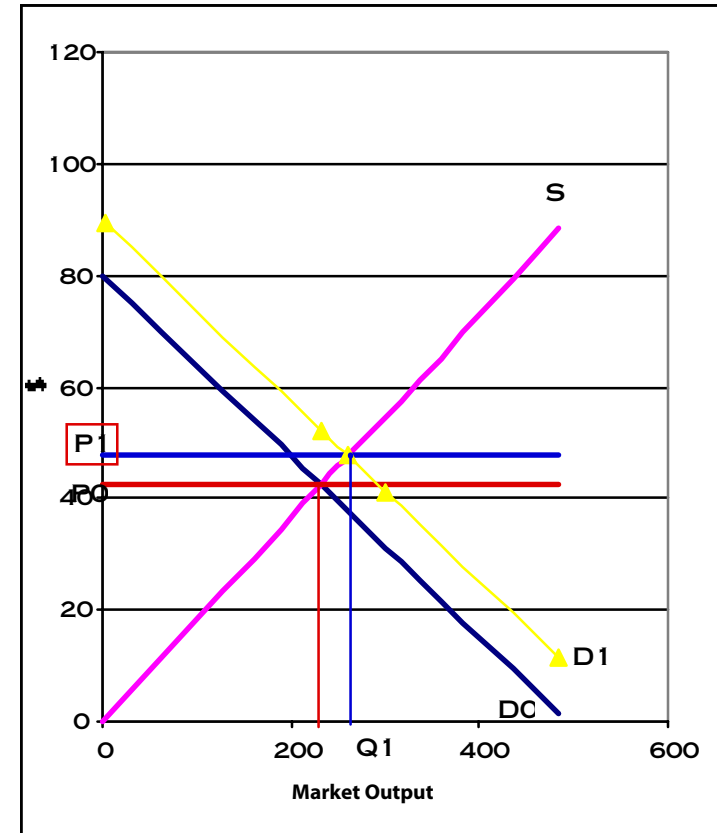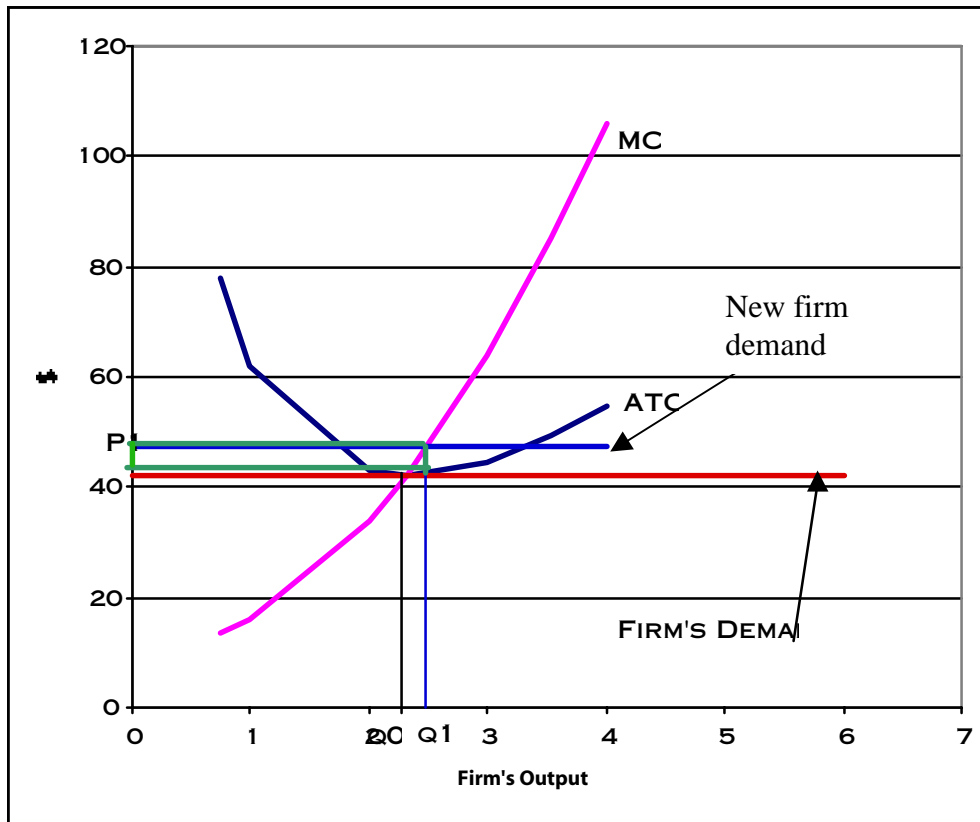
5. (25 pts) In the late 1990s a study sponsored by the California Agricultural Board found that moderate daily consumption of red wine reduced the incidence of heart disease in laboratory rats. As a result of national press coverage of the report, the demand for red wine increased dramatically. Assume that the wine market satisfies all of the attributes of a competitive market.

a. Use Figure Four to illustrate the short run effect of this increase in demand on (i) the market price; (ii) industry output; (iii) the demand facing a representative firm; (iv) the output of a representative firm; and (v) the profits of a representative firm.
See Below.

b. What will be the impact of an increase in demand on the long run equilibrium price of wine? Explain.

The long run equilibrium price of wine will be P0. Although the new short run price is higher than P0, positive economic profits will attract entry. Entry of new firms will shift supply out to the right. As supply shifts out, the market price will fall. A new equilibrium will be established where there are no further incentives for entry or exit. This occurs where economic profits are zero at P0.

Left graph labels: 120, 100, 80, 60, P, 40, 20, 0 (y-axis); MC; New firm demand; ATC; FIRM'S DEMA; O, 1, 2, Q1, 3, 4, 5, 6, 7 (x-axis); 20; Firm's Output

Right graph labels: 120, 100, 80, 60, P1, 40, 20, 0 (y-axis); S; D1; DO; O, 200, Q1, 400, 600 (x-axis); Market Output

a. Price after the increase in demand is P1 and industry output Q1. The increase in the market equilibrium price leads to an increase in the demand facing the representative firm (a shift from the red line to the blue line).   With this higher price, the firm will produce a higher output (q1). (The firm produces where P=MC.) The firm will now earn positive economic profits as defined by the green rectangle. (Please note that ATC is found by drawing a vertical line from q1 to the ATC curve. The ATC of producing q1 units is greater than the ATC of producing q0 units.)