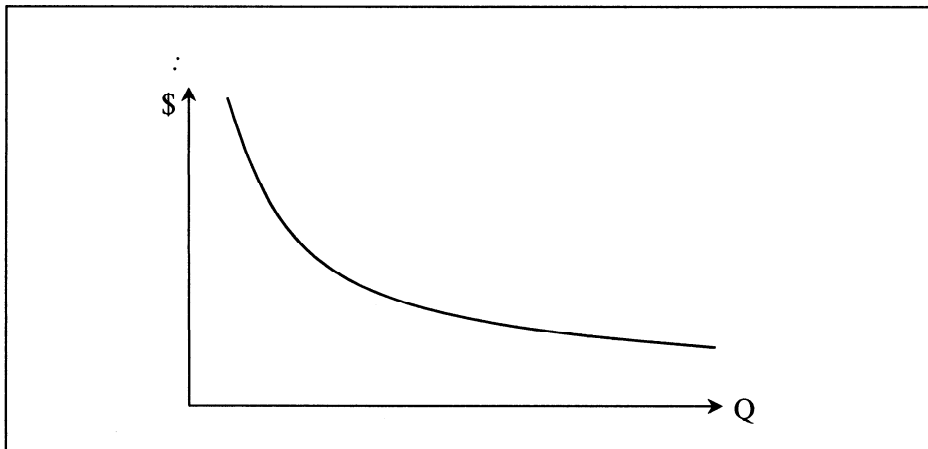


Final exam. Look over the whole test before you begin. There are 51 multiple choice questions for 5 points each, and four written questions that total to 70 points.

This information is for 1 - 4. The market for oats is perfectly competitive. Demand for oats can be described by $QD = 32 - 6P$. Supply of oats can be described by $QS = 10 + 5P$.

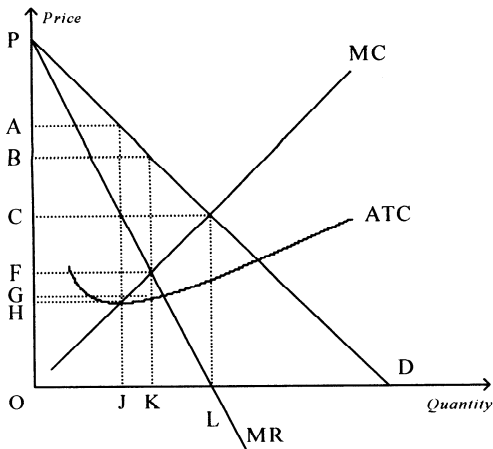
- The equilibrium price and quantity in the oats market are:
a. $P^* = 20, Q^* = 2$ b. $P^* = 11, Q^* = 65$ c. $P^* = 1, Q^* = 24$ d. $P^* = 2, Q^* = 20$ e. none of the above
- The slope of the supply curve is:
a. 5 b. 6 c. $1/6$ d. $1/11$ e. None of the above
- Assuming the equation above describes the long run supply of oats, what do you know about the market for inputs used to produce oats?
a. Oat farmers represent a large part of total demand for inputs used to produce oats.
b. Oat farmers represent a very small part of total demand for inputs used to produce oats.
c. Inputs used to produce oats are likely to be subject to a common resource problem.
d. Inputs used to produce oats are fixed costs in the short run as well as the long run
e. None of the above
- Suppose that chemical fertilizers used to produce oats contaminate rivers downstream from oat farms, requiring city water systems to install costly filtration systems. Then the *socially optimal* quantity of production of oats is likely to be:
a. Zero b. More than zero, less than 20 c. More than 20, less than 40 d. More than 40, less than 60
e. I do not have enough information to answer this question.

This figure is for questions 5. and 6. It shows average total cost (ATC) for a firm in an industry:

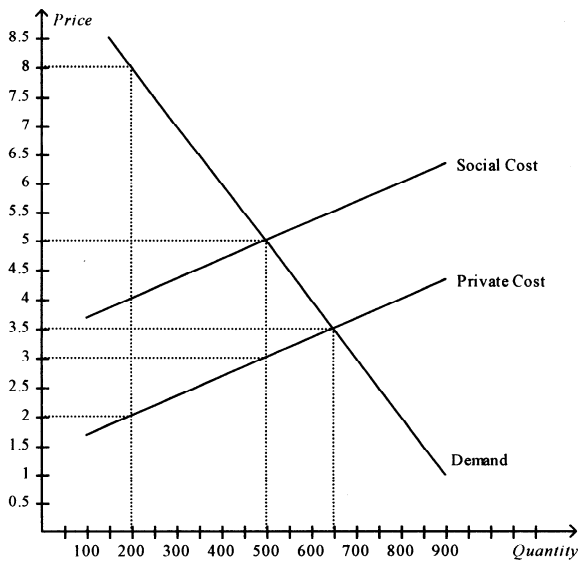


- From this curve, you can guess that the industry is likely to be:
a. perfectly competitive. b. an oligopoly. c. duopoly. d. a natural monopoly. e. none of the above
- For the quantities shown in the figure, where must the marginal cost (MC) curve be relative to the ATC curve?
a. the MC curve is always below the ATC curve. b. the MC curve is always above the ATC curve.
c. the MC curve is below the ATC curve at small quantities, above the ATC curve at large quantities.
d. the MC curve is above the ATC curve at small quantities, below the ATC curve at large quantities
e. none of the above

This figure is for 7. and 8. It illustrates the situation facing a monopolist.

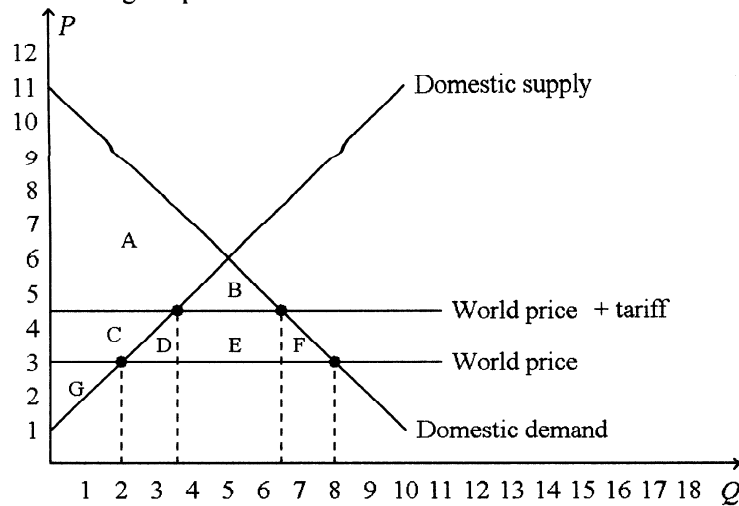


7. What price maximizes the monopolist's profit? a. A b. B c. C d. E e. F
8. What price would cause consumers to buy the *socially optimal* quantity of production? a. A b. B c. C d. E e. F
9. A drought in California destroys many grapes. Grapes are an input into wine. As a result of the drought, what happens to consumer surplus in the market for wine?
 a. increases b. decreases c. is not affected d. I do not have enough information to say
10. This graph shows a perfectly competitive market with an externality. It is the market for hats. The price is in dollars.



- To achieve the socially optimal (efficient) level of production, it is proposed that an excise tax be imposed on the sale of hats, to be paid by sellers. What is the amount of the tax, per hat, that would achieve efficiency?
 a. \$2. b. \$4. c. \$10. d. \$13. e. None of the above.
11. From the graph, which of the following could be true?
 a. Bystanders think hats are pretty. b. Bystanders think hats scare away mosquitoes.
 c. Bystanders like the smell of hats. d. Bystanders think hats provide useful shade to bystanders e. None of the above

The figure below applies to questions 12.- 16. It illustrates the market for a good in a small country where the legislature is considering adoption of a tariff.



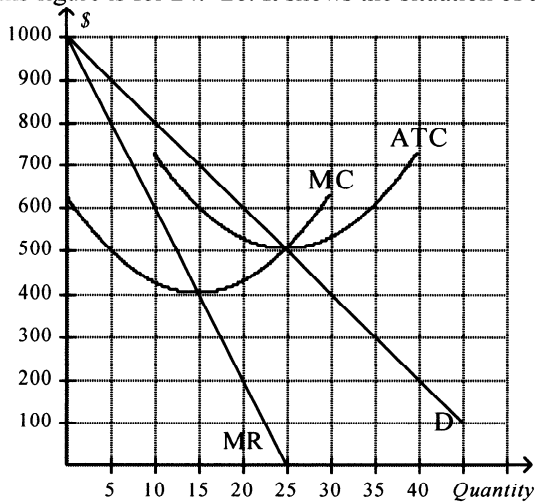
12. Under free trade, what is the quantity imported?
a. 6 b. 5 c. 3 d. 6 and 1/2 e. 8
13. Under the proposed tariff, what would be the quantity imported?
a. 6 b. 5 c. 3 d. 6 and 1/2 e. 8
14. How much would producers be willing to pay to bribe legislators to adopt the tariff? An amount of money equal to area:
a. ABCDEF b. CDEF c. DEF d. E e. None of the above
15. How much would consumers be willing to pay (in theory) to bribe legislators to not adopt the tariff?
a. ABCDEF b. CDEF c. DEF d. E e. None of the above
16. What is the deadweight loss created by the tariff, relative to free trade?
a. ABCDEF b. CDEF c. DEF d. E e. None of the above
17. What is the price elasticity of demand in the following situation? At a price of 8, quantity demanded is 10. At a price of 4, quantity demanded is 14.
a. 4 b. 2 c. 1/2 d. 1/4 e. None of the above
18. Archibald sells hot dogs from a cart. The price elasticity of demand for his hot dogs is 5/3. What will happen to Archibald's total revenue if he raises the price of his hot dogs a little bit?
a. Increase b. Decrease c. Remain the same d. I do not have enough information to say
19. Again assuming that the price elasticity of demand for Archibald's hot dogs is 5/3, what will happen to Archibald's *profit* if he raises the price of his hot dogs a little bit?
a. Increase b. Decrease c. Remain the same d. I do not have enough information to say
20. Now suppose the price elasticity for Archibald's hot dogs is 3/4. What will happen to Archibald's *profit* if he raises the price of his hot dogs a little bit?
a. Increase b. Decrease c. Remain the same d. I do not have enough information to say

21. Consider an excise tax levied in a perfectly competitive market for a good. The burden of the tax will fall mostly on *producers* if:
- a. Supply is elastic, demand is inelastic
 - b. Supply is inelastic, demand is elastic
 - c. Both supply and demand are elastic
 - d. Both supply and demand are inelastic

22. Consider two "industries": growing apples, and growing pears. The elasticity of demand for pears is the same as the elasticity of demand for apples. Apple-growing requires a particular kind of fertilizer, which is not used for anything other than apple-growing. Pear growing requires no inputs other than unskilled labor and land - any kind of land. The legislature needs to raise some revenue through an excise tax. In order to minimize the ratio of deadweight loss to tax revenue, the legislature should:
- a. collect the tax from producers in either the apple industry or the pear industry - it does not matter which
 - b. collect the tax from consumers in either the apple industry or the pear industry - it does not matter which
 - c. collect the tax from producers in the apple industry
 - d. collect the tax from producers in the pear industry
 - e. I do not have enough information to answer this question.

23. A monopolistically competitive industry is characterized by
- a. many firms selling products that are similar but not identical.
 - b. many firms selling identical products.
 - c. a few firms selling products that are similar but not identical.
 - d. a few firms selling highly different products.
 - e. None of the above

This figure is for 24.- 26. It shows the situation of a firm in a monopolistically competitive industry.

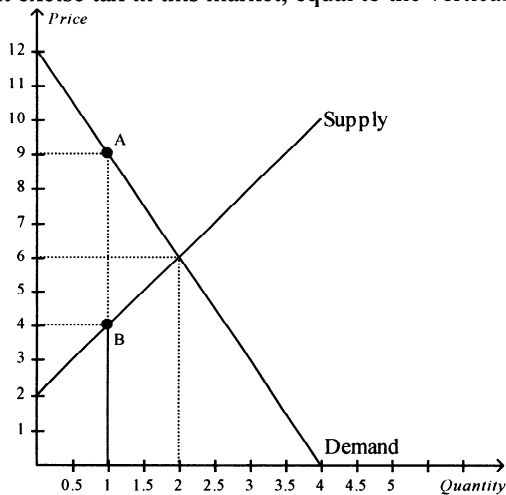


24. In this industry, how will things change in the long run?
- a. Nothing. The graph depicts a long-run equilibrium.
 - b. Entry of new firms
 - c. Exit
 - d. The cost curves will shift up
 - e. None of the above
25. What is the firm's "mark-up"?
- a. 100
 - b. 200
 - c. 300
 - d. 400
 - e. I do not have enough information to say
26. Assuming there are no externalities in this industry, what is the level of production that equates what people are willing to pay for another unit of the good to the social cost of producing another unit of the good?
- a. 10
 - b. 15
 - c. 20
 - d. 25
 - e. I do not have enough information to say

27. Suppose there are two monopolistically competitive industries, industry A and industry B. Cost curves for an individual firm are *exactly the same* in industry A as in industry B. In industry A, one firm's product is just a little different from products of other firms - they are close, though not perfect substitutes - so the elasticity of demand for each individual firm's product is relatively high. In industry B, one firm's product is quite different from products of other firms - they are somewhat substitutable, but not close substitutes. a close substitute - so the elasticity of demand for each individual firm's product is relative low. *Assuming both industries are in long-run equilibrium*, what do you know about the prices charged by firms in each industry?

- a. Firms in A and B charge the same prices b. Firms in A charge higher prices than firms in B
 c. Firms in B charge higher prices than firms in A d. I cannot say which industry's firms will charge higher prices.

The figure below is for 28.-31. It represents a perfectly competitive market. Suppose the government starts collecting a per-unit excise tax in this market, equal to the vertical distance between points A and B, from either producers or consumers.



28. The imposition of the tax causes the quantity sold to

- a. increase by 1 unit.
 b. decrease by 1 unit.
 c. increase by 2 units.
 d. decrease by 2 units.
 e. none of the above

29. The imposition of the tax causes the cost of the good to buyers (including any tax they must pay) to

- a. decrease by \$2.
 b. increase by \$3.
 c. decrease by \$4.
 d. increase by \$5.
 e. none of the above

30. The imposition of the tax causes the revenue per unit sold received by sellers (net of any tax) to

- a. decrease by \$2.
 b. increase by \$3.
 c. decrease by \$4.
 d. increase by \$5.
 e. none of the above

31. The tax revenue will be:

- a. \$2.50. b. \$4. c. \$5. d. \$9. e. none of the above

32. What does the "Coase theorem" say?
- If there are no transactions costs, there is always a private solution to an externality problem, no matter who has the power to forbid or allow the activity in question.
 - In the absence of government interference (such as subsidies, Pigovian taxes or cap-and-trade [tradable permit] systems), a market subject to an externality will always produce too much or too little of a good.
 - The availability of a private solution to an externality problem depends on who has the power to forbid or allow the activity in question.
 - Whether or not there are transactions costs, there is always a private solution to an externality problem, no matter who has the power to forbid or allow the activity in question.
33. Consider an industry that is an oligopoly. Which of the following leads to the best outcome for the owners of the firms?
- The firms collude and act as a cartel.
 - "Cournot competition" (each firm chooses a quantity to produce, given its guess at the quantity the other firm will produce).
 - "Bertrand competition" (each firm chooses a price, given its guess at the price the other firm will choose).
 - The government breaks up the oligopoly firms into a very large number of small firms.
 - Either c. or d.
34. Consider an industry that is an oligopoly. Which of the following leads to the best outcome for society as a whole?
- The firms collude and act as a cartel.
 - "Cournot competition" (each firm chooses a quantity to produce, given its guess at the quantity the other firm will produce).
 - "Bertrand competition" (each firm chooses a price, given its guess at the price the other firm will choose).
 - The government breaks up the oligopoly firms into a very large number of small firms.
 - Either c. or d.
35. Consider the imposition of a binding price ceiling on a perfectly competitive market for a good. In one of the following situations, imposition of such a price ceiling can be a potential pareto improvement (PPI). Which one?
- There are no externalities of production or consumption.
 - There is a positive externality of consumption.
 - There is a positive externality of production.
 - There is a negative externality of production.
 - None of the above
36. In which of the following market structures is price equal to marginal cost in long-run equilibrium?
- Perfect competition
 - Monopoly
 - Monopolistic competition
 - Both a. and b.
 - Both a. and c.
37. In which of the following market structures is there "free entry" of new firms?
- Perfect competition
 - Monopoly
 - Monopolistic competition
 - Both a. and b.
 - Both a. and c.
38. Suppose the industry that produces good A is perfectly competitive. Good A is a *substitute* for good B. Which of the following events is likely to result in entry of new firms into the industry producing A?
- For reasons unrelated to conditions in these two industries, there is an increase in the price of an input used to produce A
 - For reasons unrelated to conditions in these two industries, there is an increase in the price of an input used to produce B.
 - For reasons unrelated to conditions in these two industries, there is a decrease in the price of an input used to produce B.
 - There is a decrease in incomes of purchasers of good A.
 - None of the above.
39. Suppose that, for reasons I cannot explain, a boy named Eric Cartman becomes owner of an amusement park. A person can enter the amusement park only with Cartman's permission. When another person enters the amusement park, that does not diminish the enjoyment of the people already in the amusement park. Cartman's amusement park is a:
- Private good
 - Public good
 - Common resource
 - Club good
 - None of the above
40. For similarly inexplicable reasons, Cartman becomes the cook in a hamburger stand. A person can eat one of Cartman's hamburgers only with Cartman's permission. If one person eats a hamburger, no one else can eat the same hamburger. Cartman's hamburgers are a:
- Private good
 - Public good
 - Common resource
 - Club good
 - None of the above

41. Suppose that in the city of Hapeville there is a bad neighborhood, right next to a tourist area. The inhabitants of the bad neighborhood can mug tourists who wander into the bad neighborhood. If just a few tourists get mugged every month, no one pays much attention. If many tourists are mugged in a month, newspapers will publish stories warning tourists to stay out of the bad neighborhood and tourists will stay out of the bad neighborhood. This is a story about a:

- a. Private good b. Public good c. Common resource d. Club good e. None of the above

42. Owen Lars is a moisture farmer on the desert planet of Tatooine. His revenue is 500 credits. His costs for materials and the land he rents (he owns no land) are 200 credits. In farming, he is assisted by a robot. Owen purchased the robot for 200 credits. If he did not use the robot on his farm, he could rent out the robot to another farmer for 100 credits. The economic profit of Owen's moisture farm is: a. 400 credits b. 300 credits c. 200 credits d. 100 credits e. Zero or less than zero credits

43. Now suppose Owen Lars is *also* assisted by his nephew Luke. If Luke were free to leave the farm, Luke would overthrow the evil galactic emperor and the grateful inhabitants of the former empire would shower him with money. In this case, the economic profit of Owen's moisture farm is likely to be:

- a. 400 credits b. 300 credits c. 200 credits d. 100 credits e. Zero or less than zero credits

44. Consider two countries, Italy and Germany. Under what circumstances can Italy gain from trade with Germany?

- a. Italians are more productive than Germans in the output of all goods.
b. Germans are more productive than Italians in the output of all goods.
c. Italians are more productive than Germans in the output of just a few goods.
d. Italians are more productive than Germans in the output of most, but not all goods.
e. All of the above.

The following information is for 45.-48. Sam and Dean are two brothers who share a room. Dad put Sam in the bed next to the window and Dean in the bed next to the door. Dean would prefer the bed next to the window so that he can easily sneak out at night to engage in mischief. He would be willing to pay Sam \$5 to switch beds with him. Of course, Dean has no intention of paying Sam anything. If Sam does not agree to the switch, Dean will beat Sam up and take the bed next to the window, anyway.

45. Suppose that Sam would rather be in the bed next to the door, so that he can more easily get to the bathroom in the middle of the night. In this case, the proposed switch is:

- a. a PI b. a PPI, but not a PI c. neither a PI nor a PPI
d. the concepts of PI and PPI cannot be applied here, because we are not talking about markets
e. I cannot say, because I don't know how much Sam is willing to pay to be next to the door.

46. Now suppose that Sam does not care which bed he sleeps in. In this case, the proposed switch is:

- a. a PI b. a PPI, but not a PI c. neither a PI nor a PPI
d. the concepts of PI and PPI cannot be applied here, because we are not talking about markets
e. the concepts of PI and PPI cannot be applied here, because Sam has no preference.

47. Now suppose Sam would rather sleep in the bed next to the window. He would be willing to pay \$3 to remain in the bed next to the window. In this case, the proposed switch is:

- a. a PI b. a PPI, but not a PI c. neither a PI nor a PPI
d. the concepts of PI and PPI cannot be applied here, because we are not talking about markets
e. the concepts of PI and PPI cannot be applied here, because Dean isn't going to pay Sam anyway.

48. Now suppose Sam would rather sleep in the bed next to the window, and he would be willing to pay \$6 to remain in the bed next to the window. In this case, the proposed switch is:

- a. a PI b. a PPI, but not a PI c. neither a PI nor a PPI
d. the concepts of PI and PPI cannot be applied here, because we are not talking about markets
e. the concepts of PI and PPI cannot be applied here, because Dean isn't going to pay Sam anyway.

49. Consider the short-run and long-run supply curves in perfectly competitive industries. Which of the following is true?
- In all industries, both are upward sloping.
 - In all industries, the short-run supply curve is upward-sloping, the long-run supply curve is flat.
 - In some industries, both the short-run supply curve and the long-run supply curve are flat.
 - In some industries, the short-run supply curve is flat but the long-run supply curve is upward-sloping.
 - None of the above.

50. Two companies, ABC and XYZ, each decide whether to produce a high level of output or a low level of output. In the figure, the dollar amounts are payoffs and they represent annual profits for the two companies.

ABC's Decision

		ABC's Decision	
		High output	Low output
XYZ's Decision	High output	ABC's profit = \$3 million XYZ's profit = \$3 million	ABC's profit = \$2.5 million XYZ's profit = \$4 million
	Low output	ABC's profit = \$4 million XYZ's profit = \$2.5 million	ABC's profit = \$3.5 million XYZ's profit = \$3.5 million

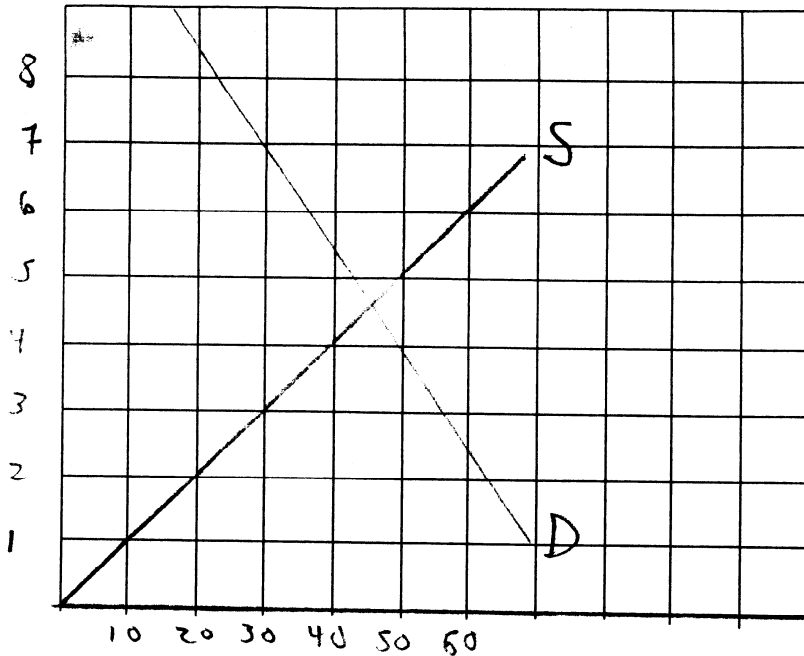
The outcome will be:

- both firms produce a low level of output.
 - ABC produces a low level of output and XYZ produces a high level of output.
 - ABC produces a high level of output and XYZ produces a low level of output.
 - both firms produce a high level of output.
 - either both firms will produce high, or both firms will produce low - both are equilibria.
51. Consider the situation depicted for 50, but now suppose that, if both firms produce a low level of output, both firms will receive annual profits of \$5 million. Then the outcome will be:
- both firms produce a low level of output.
 - ABC produces a low level of output and XYZ produces a high level of output.
 - ABC produces a high level of output and XYZ produces a low level of output.
 - both firms produce a high level of output.
 - either both firms will produce high, or both firms will produce low - both are equilibria.

Written questions.

I) 15 points. The figure below shows the demand for a good in a perfectly competitive industry, and the supply of the good from *some* of the producers in the industry. The other producers in the industry will always produce and sell 10 units of the good, no matter what the price is.

a. On the graph, draw a line that represents *total* supply in the industry.



b. The equilibrium price is: _____. The equilibrium quantity is: _____

c. Suppose that the other producers in the industry exit the industry: they cease selling the 10 units they used to. On the graph, *shade in* the area that represents the resulting loss in *consumer surplus*.

II) 25 pts. Consider two countries, Westeros and Essos. Each country can produce two goods, wheat and swords, with productivities as given below. Westeros has 200 workers. Essos also has 200 workers.

	<u>Output from one worker</u>		<u>Opportunity cost</u>	
	Wheat	Swords	Wheat	Sword
Westeros	4	2	_____	_____
Essos	2	2	_____	_____

a) Fill in the "opportunity cost" part of the table above.

b) Which country has a comparative advantage in wheat? _____ (Westeros, Essos, neither)

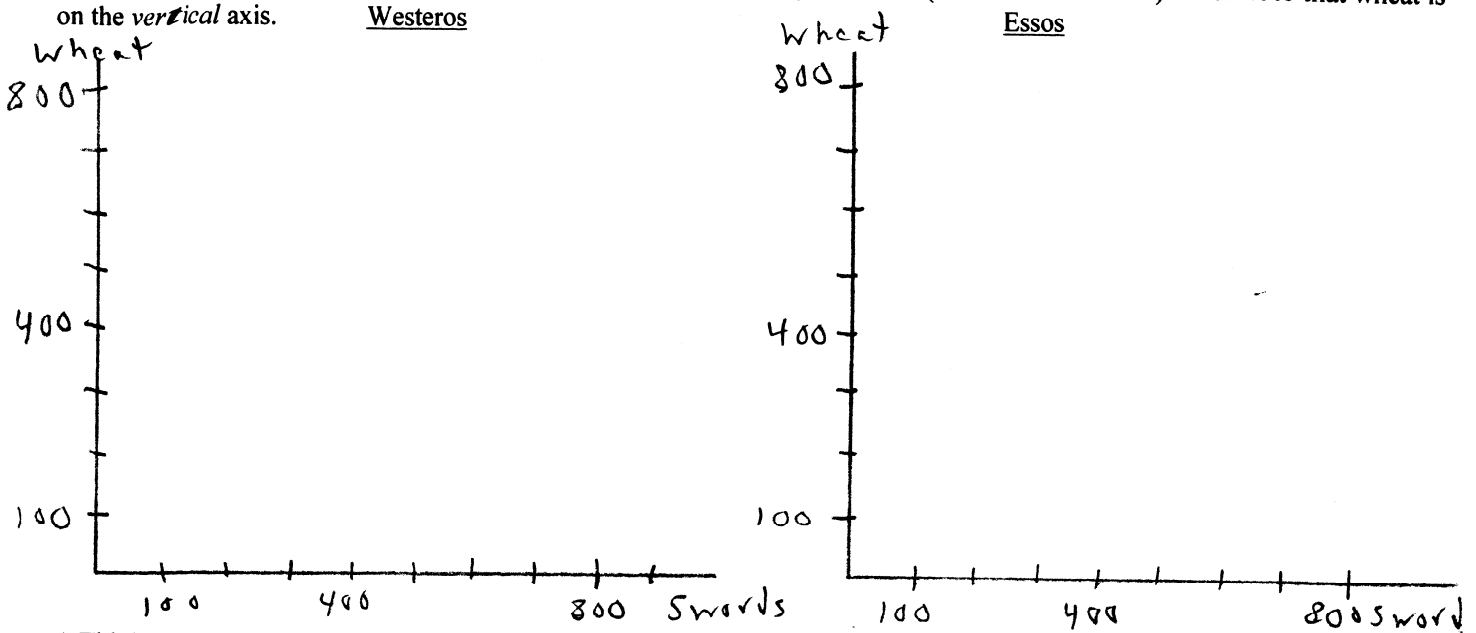
Which country has a comparative advantage in swords? _____ (Westeros, Essos, neither)

Which country has an absolute advantage in wheat? _____ (Westeros, Essos, neither)

Which country has an absolute advantage in swords? _____ (Westeros, Essos, neither)

c) In order to make both countries better off, a trade deal must cause Westeros to specialize in production of _____, Essos to specialize in production of _____

d) On the two graphs below, draw the PPFs for Westeros and Essos, with *solid* (not dotted or dashed) lines. Note that wheat is on the *vertical* axis.



e) Think up a particular trade deal that will make both countries better off than under autarchy. Describe the deal below.

In order to get one sword, the wheat-producer must hand over _____ units of wheat.

In order to get one unit of wheat, the sword-producer must hand over _____ swords.

III) 15 pts. On the figure below, draw the situation of a natural monopoly.

a) Draw a flat line representing marginal cost, a line representing average total cost, and a demand curve.

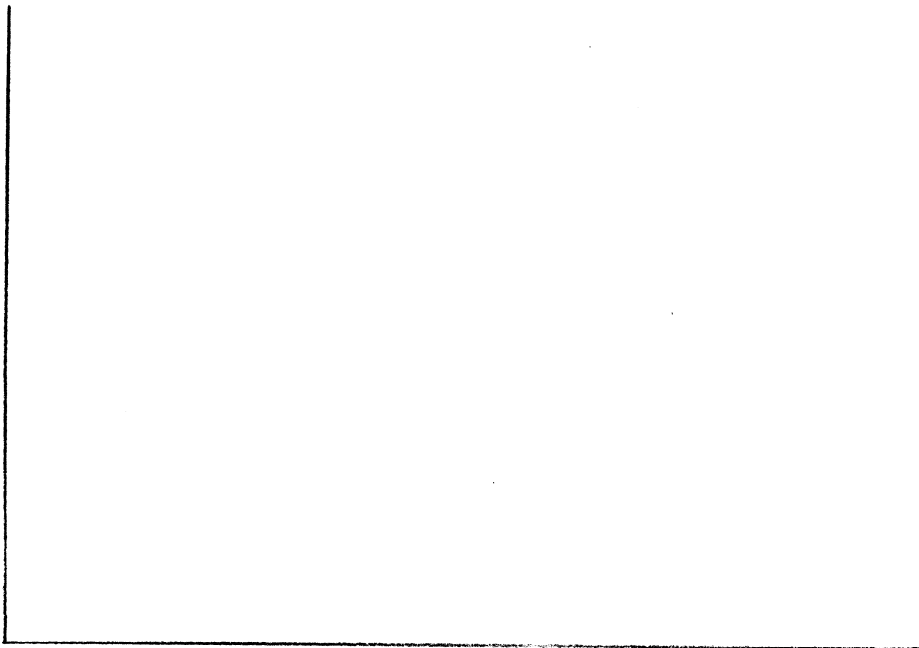
b) On the vertical axis, mark three prices, using the following symbols:

P_1 is the price the firm would choose if it is left unregulated

P_2 is the price the firm would choose if it is subject to "average cost pricing" regulation

P_3 is the price the firm would choose if it is subject to "marginal cost pricing" regulation

c) Shade in the area that represents the *increase in consumer surplus* that would result if the regulator switched from average-cost pricing to marginal-cost pricing.



IV) 15 pts. On the figure below,

a) add lines to depict a situation in which a government regulator is using a tradable-permit or cap-and-trade system to solve a problem created by a negative externality of production in a perfectly competitive market.

b) On the horizontal axis, mark two quantities, using the following symbols:

Q_1 is the quantity that will be produced absent any kind of regulation

Q_2 is the socially optimal quantity of production.

c) Suppose the government auctions off the permits. Shade in the area that represents the total amount of money collected by the government in the auction.

