Last Five Digits of Your Student Number:

Final Exam   Economics 304K
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Instructions: You will have 150 minutes for the exam. Points total 100. Do not cheat. Raise your hand if you have a question, but continue to work on the exam while waiting for your question to be answered. Allocate your time like an economist would - do the easy/valuable questions first. Short answer questions should not require more than two lines. Question values are in parentheses. Use the back of the page as scratch paper.

(2 points)   1. Draw and label a market with a perfectly elastic demand and a perfectly elastic supply.
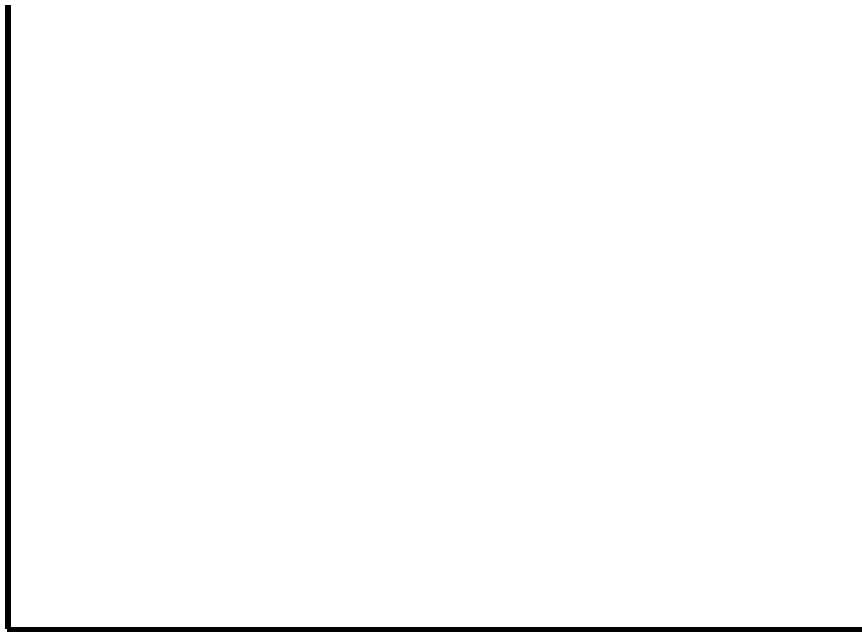
(3 points)   2. (Short answer) What is an normal good, as economists use the term? Provide an example.

(4 points) 3. Suppose the elasticity of demand is 2, the elasticity of supply is 1, and a 10% tax is imposed. By what percentage does revenue change?
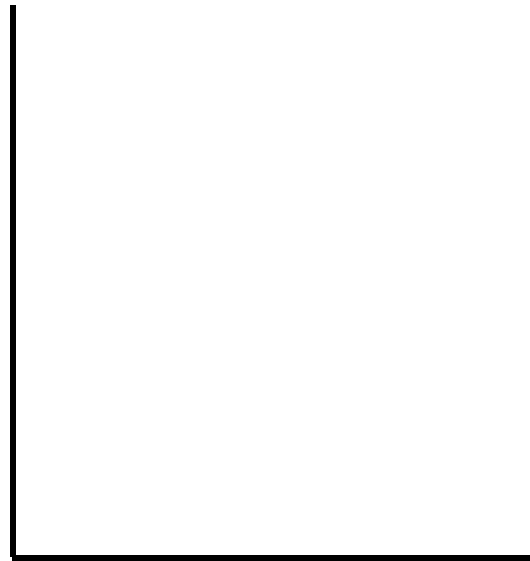
(6 pt)　　4. Bowties and neckties are substitutes in demand.

(i)　　　(Short Answer) If the supply for bowties falls, but the supply for neckties is unchanged, what will happen to the prices of bowties and neckties?

(ii) Illustrate your answer with supply and demand diagrams:
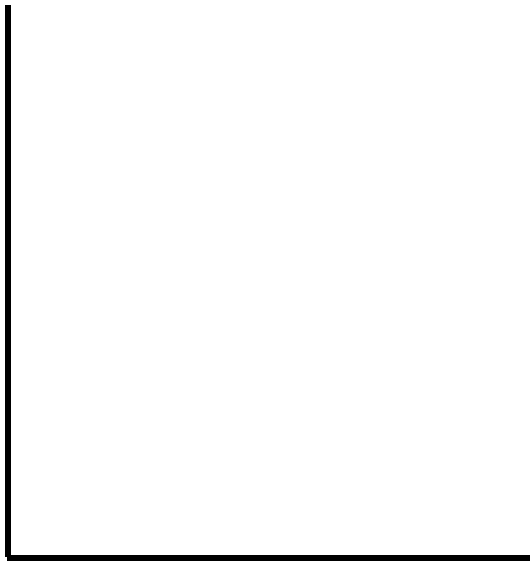
Bowtie Market　　　　　　　　　　　　　　　Necktie Market

5. (3 points, short answer) Does it matter whether a sales tax is imposed on the buyer or on the seller? Why or why not?

(9 pt) 6. Consider a competitive market with 8 consumers, each of whom will buy at most one unit of the good, and 9 sellers, each of whom will sell at most one unit of the good. The distribution of buyer values (or buyer reservation prices) is as follows:

Buyer Value	Number of Buyers
$4	4
$6	2
$8	2

The distribution of seller costs (or seller reservation prices) is as follows:

Seller Cost	Number of Sellers
$3	3
$5	3
$7	3

6 (i). In this market, what price (P) and quantity (Q) would arise in a competitive equilibrium?

6 (ii) What are seller profits?

6 (iii). How large is consumer surplus?

6 (iv). If the good creates a **positive** externality of $2 per unit sold, what is the efficient quantity?

6 (v). What level of tax or subsidy imposed on the sellers will lead to an efficient allocation?

6 (vi) Draw the supply and demand diagram for this market, and illustrate the effect of the tax or subsidy you found in part (v), assuming that tax or subsidy is imposed on the sellers.
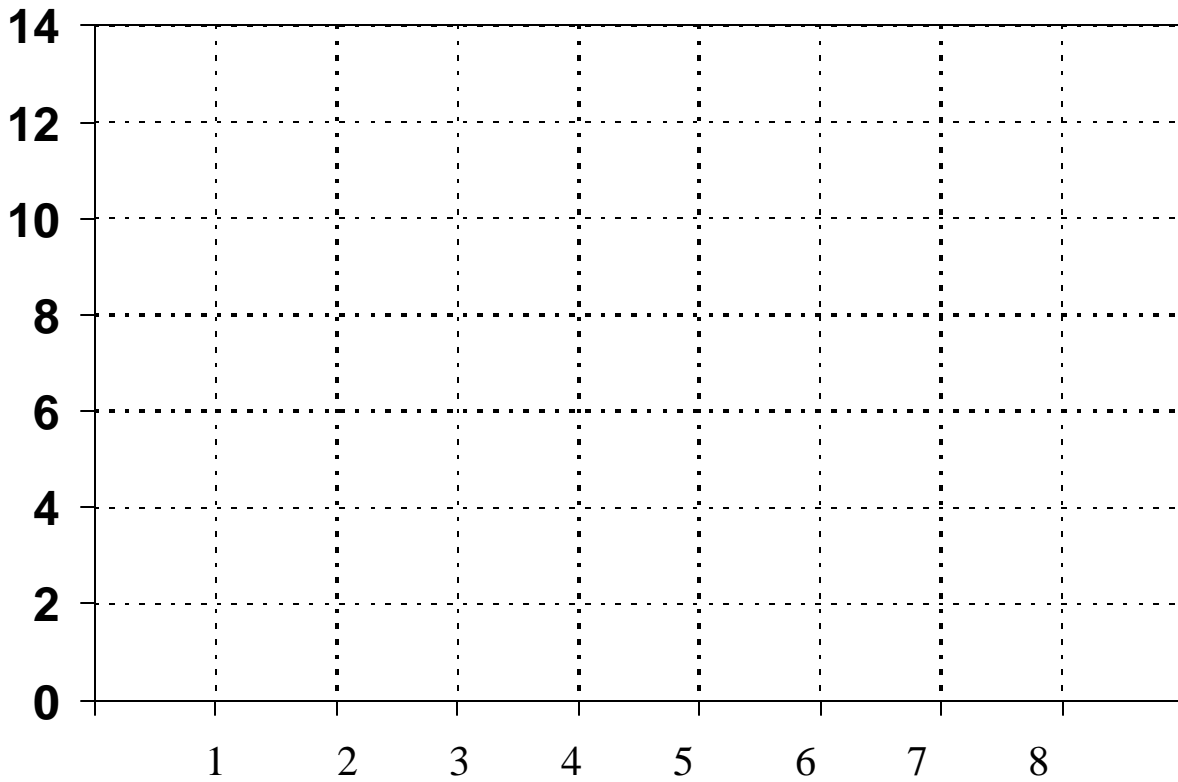
7. (6 points) The Distant Early Warning System detects incoming missile attacks in time to fire missiles and get planes into the air before they are destroyed by the attack. Suppose that the distant early warning system has gone blind and that this is known to both the US and the USSR (take these two to be enemies). Both sides can either fire their missiles, or not. If neither fires, the US gets 10 and the USSR gets 2. If the US fires and the USSR does not, the US gets 8 and the USSR gets nothing. If, in contrast, the USSR fires and the US does not, the USSR gets 8 and the US gets nothing. If both fire, both get 1. Fill in the game payoffs and compute the equilibria.

		USSR	
		Fire	Don't
US	Fire		
	Don't		

7. (ii) What outcome(s) are predicted? In fact, neither side fired their missiles. Is this consistent with the predicted outcome? Comment on the applicability of this game to the problem of nuclear deterrence.

8. (short answer -- 3 points) What is an advantage of rate-of-return regulation over price regulation?

9. (short answer -- 3 points) What is an advantage of permitting the resale of pollution permits?

10. (short answer, 5 points) If an industry is competitive, what share of a tax is paid by consumers in the long run? Why? No diagrams are necessary to answer this question.

11. (6 points) Which of the following are examples of price-discrimination? Explain briefly.

(i) "Early-bird" special which discounts meals prior to 5PM

(ii) A coupon to buy one, get a second at half-price

(iii) Six rolls of paper towels, packaged together, sell for the same price as three individual rolls

(iv) Ten percent off given to students at the bookstore

(v) Airline tickets with a Saturday-night stayover requirement are 1/3 of the price.

(vi) IBM LaserPrinter E

12. (5 points) Fill in the following table. Ignore blacked out spaces.

Output	Total Cost	Variable Cost	Fixed Cost	Marginal Cost	Average Total Cost	Average Variable Cost	Average Fixed Cost
0	6	0					
1		6					
2						7	
3					10		
4	42						
5				14			

13. (5 points, short answer) Describe the effects of a strict rent control law on the quantity of housing offered, the quantity demanded, the prevailing price and the dead weight loss (excess burden). What kinds of illegal behavior might arise to circumvent the law?

14. (4 points) A monopolist faces the following demand curve. Fill in the missing rows and compute the price that maximizes profit.

Price	10	9	8	7	6	5	4	3	2	1
Quantity	0	1	2	3	4	5	6	7	8	9
Revenue										
MR										
MC	1	1	1	2	2	2	3	3	4	5

Profit maximizing price =

15.   (6 points) There are many bagel restaurants in the United States. Consider the supply of bagel sandwiches as a competitive industry in long run equilibrium. Now suppose that consumer tastes change and the demand for bagels drops substantially. Trace out the short and long run effects (on quantity, price, the number of suppliers and supplier's profits) of this demand decrease. You will need two diagrams, one for the market and one for the firm.

16.   (6 points) Adrian and Barbara are having a dinner party. Adrian can make two pastries per hour, or one quiche per hour. Barbara can make two pastries per hour, or three quiches per hour.

(i)   Draw and label Adrian's and Barbara's production possibilities frontiers if they have one hour to work.

(ii)   Who has the comparative advantage in making pastries? Does either have an absolute advantage? Why?

(iii)   Suppose Adrian and Barbara want to produce twelve pastries and twelve quiches. What is the minimum amount of time it will take the pair of them to do so? Provide the logic supporting your solution

17. (1½ points each) For the following six games **circle** the pure strategy equilibria. Drawing the arrows in *not* enough! Do not compute mixed strategy equilibria even if they exist!

(i)

		Bob Left	Right
Ann	Up	(3,2)	(11,1)
	Down	(4,5)	(8,0)

(ii)

		Bob Left	Right
Ann	Up	(3,3)	(0,0)
	Down	(4,4)	(6,6)

(iii)

		Bob Left	Right
Ann	Up	(0,1)	(1,0)
	Down	(1,0)	(0,1)

(iv)

		Bob Left	Right
Ann	Up	(7,2)	(0,9)
	Down	(8,7)	(8,8)

(v)

		Bob Left	Right
Ann	Up	(1,1)	(2,4)
	Down	(4,1)	(3,2)

(vi)

		Bob Left	Right
Ann	Up	(4,2)	(2,3)
	Down	(3,8)	(1,5)

18. (3 points each) For the following two games, compute the mixed strategy equilibria. What is the probability that Bob plays Right and the probability that Ann plays Up?

(i)	Bob		
		Left	Right
Ann	Up	(0,2)	(2,0)
	Down	(1,2)	(1,3)

(i) Probability that
Ann plays Up:
Bob plays Left:

(ii)	Bob		
		Left	Right
Ann	Up	(1,3)	(3,1)
	Down	(2,2)	(1,3)

(ii) Probability that
Ann plays Up:
Bob plays Left:

19. (Short answer, 3 points) Consider a game between Ann and Bob. Now consider a second game that differs from the first in that $2 is added to Ann's payoffs for each outcome. What relationship do the equilibria of these games have? Explain briefly.

20. (short answer, 3 points) What is the winner's curse? How does one adjust for the winner's curse?

21. (short answer, 3 points) What is an advantage of an English (oral ascending) auction over a sealed-bid auction?