

# ASSIGNMENT 4

Principles of Economics EC 110-001  
June 28, 2007

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

by writing my name i swear by the honor code

**Read all of the following information before starting the Assignment:**

- You are not allowed to share your work with other students in the class. This is an individual assignment.
- Show all work, clearly and in order, if you want to get full credit. I reserve the right to take off points if I cannot see how you arrived at your answer (even if your final answer is correct).
- Justify your answers algebraically whenever possible to ensure full credit. When you do use your calculator, sketch all relevant graphs and explain all relevant mathematics.
- Circle or otherwise indicate your final answers.
- Please keep your written answers brief; be clear and to the point. I will take points off for rambling and for incorrect or irrelevant statements.
- This assignment has 5 problems and is worth 100 points. It is your responsibility to make sure that you have all of the answers!
- This assignment is due Tuesday, July 3 in class.
- Good luck!

**1.** (*20 points*) PROBLEM 1: This question has 5 parts:

**a.** (*4 pts*) PART A: Why is a monopolist's marginal revenue less than the price of its good? Can marginal revenue ever be negative? Explain.

**b.** (*4 pts*) PART B: Describe the two problems that arise when regulators tell a natural monopoly that it must set a price equal to marginal cost.

**c.** (*4 pts*) PART C: Give two examples of price discrimination. In each case, explain why the monopolist chooses to follow this business strategy.

d. (4 pts) PART D: What kinds of behavior do the antitrust laws prohibit?

e. (4 pts) PART E: Does a monopolistic competitor produce too much or too little output when compared to the most efficient level? What practical considerations make it difficult for policymakers to solve this problem?

**2.** (20 points) PROBLEM 2: Mr. Bruno's 'Funkyzeit mit Bruno' fashion-design company, an Austrian monopolist, has the following cost and revenue information:

Costs			Revenues				
Quantity Produced	Total Cost	Marginal Cost	Quantity Demanded	Price	Total Revenue	Marginal Revenue	Profit
0	100	-	0	170		-	
1	140		1	160			
2	184		2	150			
3	230		3	140			
4	280		4	130			
5	335		5	120			
6	395		6	110			
7	475		7	100			
8	565		8	90			

**a.** (4 pts) PART A: Compute total revenue and profit at each quantity. What is Bruno's fixed cost? Given that he is a profit-maximizing fashion-designer, how many shirts will he choose? What price would he charge?

**b.** (4 pts) PART B: Compute marginal revenue. How does marginal revenue compare to the price? Explain.

c. (4 pts) PART C: Approximately graph the marginal-revenue, marginal-cost, and demand curves. At what quantity do the marginal-revenue and marginal cost curves cross? What does that signify?

d. (4 pts) PART D: In your graph shade in the deadweight loss. Explain in words what this means.

e. (4 pts) PART E: Suppose that Bruno was not profit maximizing but was concerned with maximizing the efficiency of the market for fashion-design clothing. What price would he charge for the book? How much profit would he make at this price?

**3.** (20 points) PROBLEM 3: Mr. Bruno realizes there are money to be made outside Austria as well. Therefore, he targets the *US* fashion-design market and manages to achieve a monopoly position on T-Town's clothing market. However, due to his bad English and even-worse *CFO*, information regarding his business practice is scarce:

Quantity	Price	Total Revenue	Average Revenue	Marginal Revenue
1	35	35		
2		64	32	29
3	29			
4				17
5	23			11
6		120		
7	17			-1
8				-7
9		99	11	-13
10		80	8	

a. (4 pts) PART A: Bruno argues that his clients are smart enough to fill in the missing information. Given that he is always right, what are the prices and total revenue for each  $Q$ ?

b. (4 pts) PART B: If Bruno wants to maximize his revenue, how many units should he sell?

c. (4 pts) PART C: What is his average revenue for every  $Q$ ?

d. (4 pts) PART D: What is his marginal revenue for every  $Q$ ?

e. (4 pts) PART E: Assume that Bruno's marginal cost is constant at \$12. What quantity of output will he produce and what price will he charge?

**4.** (20 points) PROBLEM 4: Consider a small town that has two grocery stores from which residents can choose to buy a gallon of milk. The store owners each must make a decision to set a high milk price or a low milk price. The payoff table, showing profit per week, is provided below. The profit in each cell is shown as (Store 1, Store 2).

		Store 2	
		Low Price	High Price
Store 1	Low Price	(500,500)	(800,100)
	High Price	(100,800)	(650,650)

**a.** (3 pts) PART A: If grocery store 2 sets a low price, what price should grocery store 1 set? And what will grocery store 1's payoff equal?

**b.** (3 pts) PART B: If grocery store 2 sets a high price, what price should grocery store 1 set? And what will store 1's payoff equal?

**c.** (3 pts) PART C: If grocery store 1 sets a low price, what price should grocery store 2 set? And what will grocery store 2's payoff equal?

**d.** (3 pts) PART D: If grocery store 1 sets a high price, what price should grocery store 2 set? And what will grocery store 2's payoff equal?

**e.** (3 pts) PART E: What is grocery store 1's dominant strategy?

**f.** (3 pts) PART F: What is grocery store 2's dominant strategy?

**g.** (2 pts) PART G: What is the Nash equilibrium of this price-setting game?

**5.** (20 points) **PROBLEM 5:** (Monopolistic Competition Problem) The following table presents cost and revenue information for Traci's Hairstyling (i.e., she is one salon among many in the market for hairstyling):

Costs			Revenues				
Quantity Produced	Total Cost	Marginal Cost	Quantity Demanded	Price	Total Revenue	Marginal Revenue	Profit
0	10	-	0	50		-	
1	15		1	45			
2	21		2	40			
3	28		3	35			
4	36		4	30			
5	45		5	25			
6	55		6	20			
7	66		7	15			
8	78		8	10			

**a.** (5 pts) **PART A:** Calculate total revenue for each quantity.

**b.** (5 pts) **PART B:** Calculate profit for each quantity. What is the profit maximizing output and price?

**c.** (5 pts) **PART C:** Calculate marginal revenue and marginal cost for each quantity. Given the cost and revenue data, is Traci's in a long-run equilibrium?

**d.** (5 pts) **PART D:** If the government required Traci's to produce at the efficient scale of output, how many hair treatments would Traci's sell? What is the maximum profit Traci's could earn? Who would be better-off/worse-off in this case: Traci's, its customers or no one?

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