ECON 201 Yoto Yotov
Principles of Microeconomics

Problem Set #2

This Problem Set is due in class on the day of your final exam. No late Homeworks will be accepted!

1 **Perfect Competition.** A perfectly competitive firm has fixed costs of $30 and total costs as indicated in the table below.

Output	Total Fixed Cost	Total variable Cost	Total Cost	Average Fixed Cost	Average Variable Cost	Average Total Cost	Marginal Cost
0			30				
1			39				
2			47				
3			54				
4			60				
5			67				
6			75				
7			84				
8			95				
9			108				
10			123				

a. Fill in the missing values in the table.

b. Graph total fixed cost, total variable cost, and total cost. (Be sure to understand what is behind the shape of each of the curves.)

c. Graph AFC, AVC, ATC, and MC. Mark the two key points as discussed in class. Explain in your own words why the MC curve intersects both the AVC and ATC curves at their minimums.

d. What will happen to the AVC, ATC, and MC if the fixed cost increases by 40.

e. How much will the firm produce if the market price that it faces is $13.5. Will the firm make profits or losses? How much?

f. Answer the questions in part (e) is the price was $8.5.

g. Answer the questions in part (e) is the price was $6.

h. The following table represents the market demand schedule for the industry.

Price	Supply by the	Profit/Loss	Industry Supply	Market Demand
3				1000
4				800
6				700
8.5				600
11				300
13.5				200
15				50

h.1. Fill in the individual supply schedule for the firm

h.2. Calculate the Profit or Loss for the firm and fill column 3 of the table

h.3. Fill in column 4 of the table if there are 100 identical firms in the industry.

h.4. Use column 5 from the table to determine what will be the equilibrium price for the industry. What will be the quantity supplied by each firm in the short run?

2 Monopoly

The following is the cost schedule for a business firm that you saw in the previous question. Thus, you can just copy the numbers for the columns from Total Cost (Column 2) to Marginal Cost (Column 8) from your solution to Question 1. Unlike the previous time, however, this firm now enjoys the power and privileges of a pure monopolist facing the market demand represented by the first and the 9th column in the table below:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	**Total Fixed Cost**	**Total variable Cost**	**Total Cost**	**Average Fixed Cost**	**Average Variable Cost**	**Average Total Cost**	**Marginal Cost**	**Price**	**Total Revenue**	**Marginal Revenue**
0			**30**					**36**		
1			**39**					**33.5**		
2			**47**					**31**		
3			**54**					**28.5**		
4			**60**					**26**		
5			**67**					**23.5**		
6			**75**					**21**		
7			**84**					**18.5**		
8			**95**					**16**		
9			**108**					**13.5**		
10			**123**					**11**		

a. Calculate the Total Revenue and the Marginal Revenue for the monopolist and fill columns 10 and 11 of the table

b. Use the MR=MC principle to determine what will be the quantity produced by the monopolist? What will be the market price?

c. Now write the formula for the profit earned by the monopolist and use it to fill the last column in the table. What will be the quantity produced by the monopolist that will maximize her profits according to the profit numbers that you just calculated? Is this the same quantity that you derived in the previous part?

d. Write down the formula and calculate the profit(loss) per unit for the monopolist?

3 Now, let's use some graphical analysis to represent what we just saw in numbers. Make your graphs big enough and use approximations if you have to in order to most clearly answer the following questions:

a. Assuming that MR and MC for the monopolist are exactly equal to each other at the amount of output produced by the monopolist that you found in Problem 1, draw a graph similar to the ones that we used many times in class to show the equilibrium price and quantity. Assume that we are in the short run and include all the AVC, MC, AC curves as well as the Demand curve and the MR curve.

b. Use RED to border the area representing the total revenue for the monopolist.

c. Use GREEN to border the area representing the total cost for the monopolist.

d. Shade the area representing the profit or loss for the monopolist.

e. Use YELLOW to show the per unit profit or loss for the monopolist.

4 Measuring Competitiveness.

Given the definitions of the Four-Firm Concentration Ratio as the percent of the total industry production that is accounted for by the **four largest** firms in an industry, and the Herfinadhl-Hirschaman Index (HHI) as the sum of the squares of the percentage shares for **ALL** the firms in the industry, use the following schedules for sales in three industries (A, B, and C) to answer questions (a), (b), (c), and (d):

INDUSTRY A		INDUSTRY B		INDUSTRY C	
Firm	Sales	Firm	Sales	Firm	Sales
1	260	1	170	1	43
2	250	2	55	2	42
3	220	3	52	3	41
4	190	4	42	4	40
5	30	5	40	5	39
6	30	6	39	6	39
7	29	7	38	7	37

a. Calculate and interpret the Four-Firm Concentration Ratio coefficients for each industry and based on this information rank the industries from the most competitive to the least competitive.

b. Now calculate the HHI index for each industry and again order them in terms of competitiveness from the most to the least competitive.

c. Do your results support the fact that some economists prefer the HHI coefficient as more accurate measure for market power? Explain.

d. Now, calculate the Five-Firm Concentration Ratios for each industry.

e. Will it make sense to ask for the Seven-Firm Concentration ratio in each industry? If yes, what information will this give us?