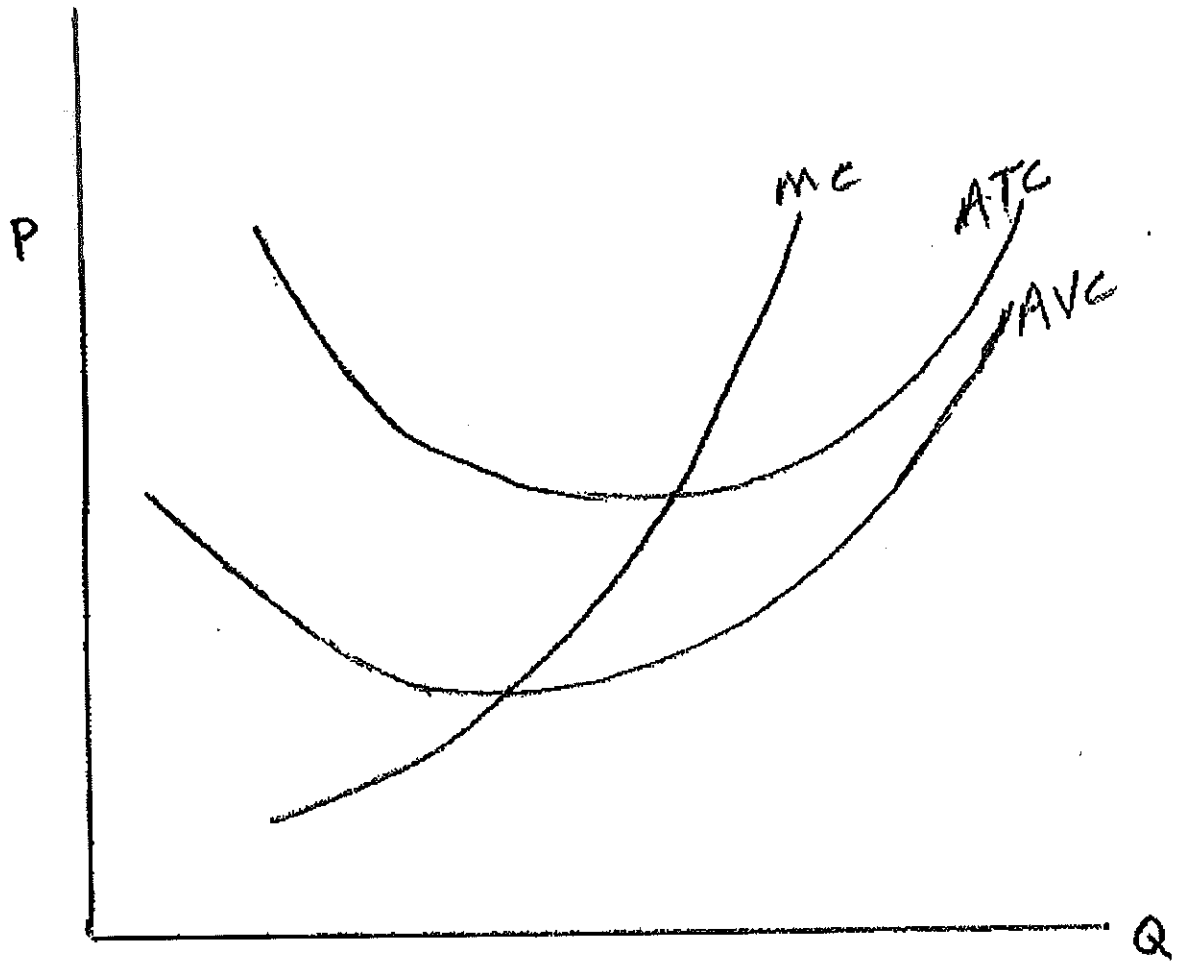
ECO 610 Final Exam
December 2019

Name: _____
4-digit #: _____

100 points total. Point values for each question are as indicated. Answer each question in the space provided. General advice: show your work, including any formulas or diagrams that you use in reasoning through your answers.

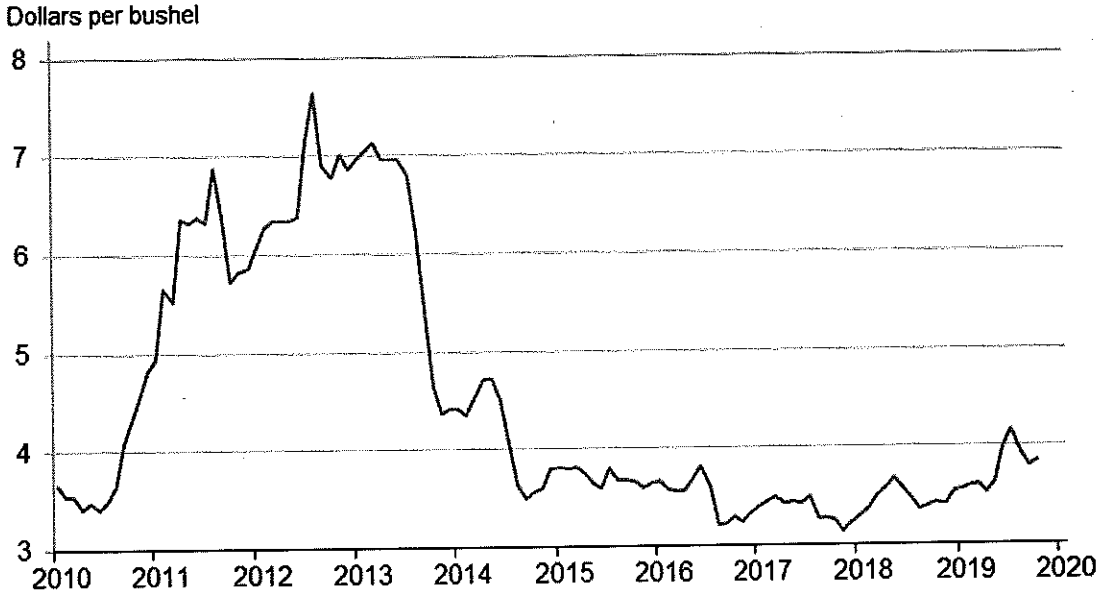
1. (10 pts.) The top ten U.S. Airlines ranked by total number of passengers carried in 2017 were Southwest (162.5 million passengers), Delta (145.9 m), American (145.7 m), United (107.6 m), JetBlue (40.1 m), SkyWest (35.9 m), Alaska (26.7 m), Spirit (24.2 m), Frontier (17.0 m), and Republic (17.0 m). For purposes of answering this question we will ignore the smaller airlines. Suppose that JetBlue and Spirit decide to merge, with the new airline's business strategy centered on operating super fuel-efficient jets that are painted green. How would such a merger change the industry HHI? Show your calculations, including the formula you use.

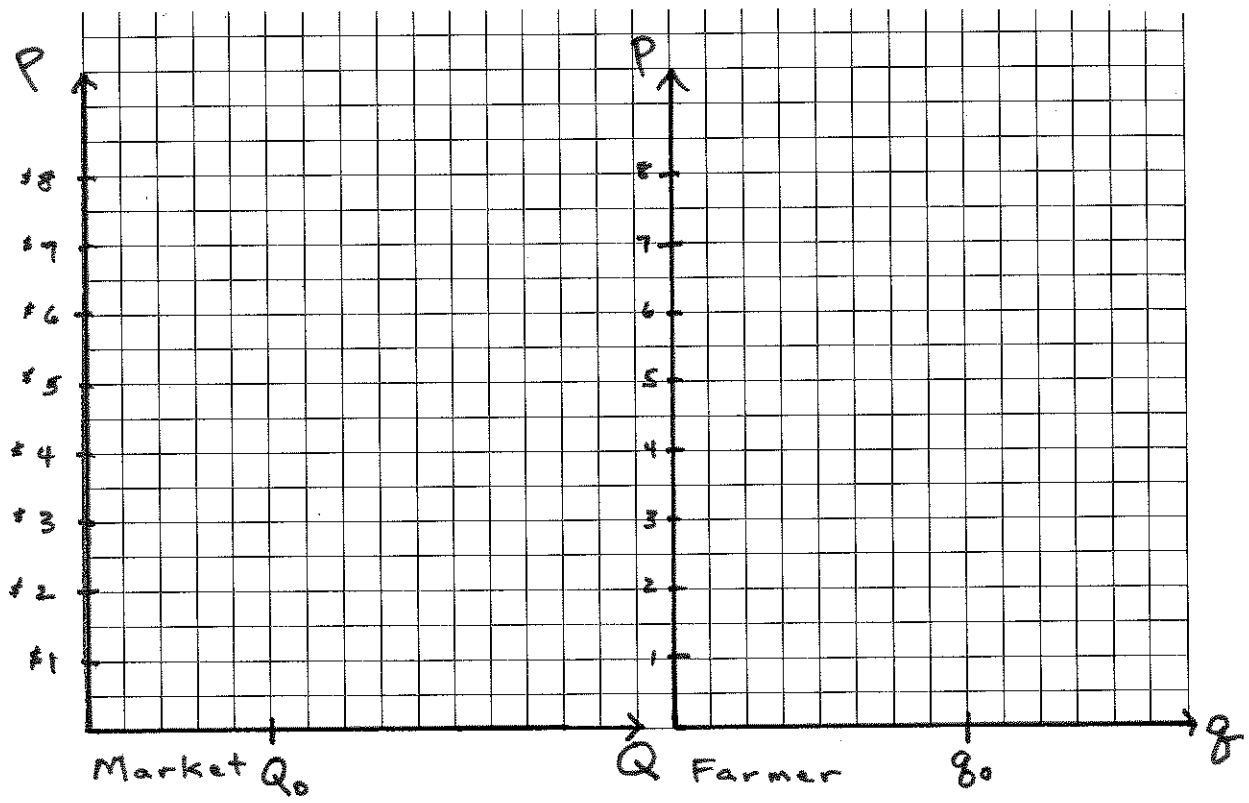
2. (10 pts.) Shown below are the AVC, ATC, and MC curves for one of several miniature golf courses in a large beach resort. Illustrate and label demand curves consistent with each of the following situations. Briefly explain your answers:
   a) D_1: It is wintertime and when we drive by the golf course, a sign says "closed for the season."
   b) D_2: It is springtime and the golf course is open. The owner tells us that she couldn't survive if business were like this all year round.
   c) D_3: It is the peak of the season, the parking lot is full, and the owner has a smile on her face.



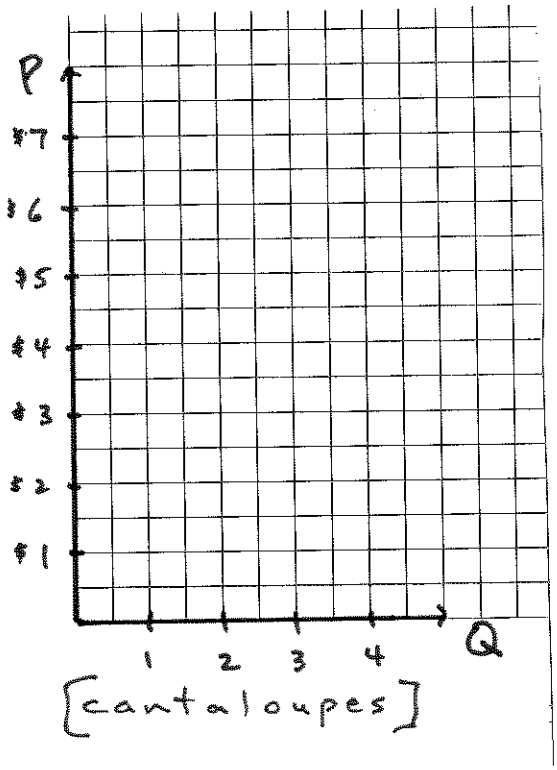
3. (20 pts.) Assume that the market for corn in the U.S. was in long-run equilibrium in 2010. The typical farmer produced q_0 bushels of corn, and market quantity exchanged was Q_0. Legislation was passed that mandated the use of ethanol in gasoline sold in the U.S. Most of the ethanol that was mixed with gasoline was produced using corn.
   (a) Based on the figure below, illustrate in the diagram on the next page the initial long-run equilibrium in the corn market and the situation of the typical corn farmer in 2010. Explain how market price and output are determined, and what output maximizes profit for the farmer. Also explain the economic profitability of corn farming in 2010.
   (b) Illustrate how the ethanol program affected the corn market in 2011-2013. Make sure your illustration is consistent with the price data contained in the figure below. Also illustrate the impact of these market changes on the output and profitability of the typical corn farmer. Explain your answers.
   (c) Now illustrate what must have been happening in 2014, 2015, and later years. Does the industry seem to be in long-run equilibrium again? Explain your reasoning. Make sure you show the optimal output and economic profitability of a typical corn farmer in the 2015-2019 period.

Prices Received for Corn by Month – United States




P
$8
$7
$6
$5
$4
$3
$2
$1
Market Q_0
Q
P
8
7
6
5
4
3
2
1
Farmer
q_0
q

4. (20 pts.) You are the only farmer in the area who grows cantaloupes. As such, when you take your melons to the local farmer's market, you are something of a monopolist. Your costs of growing cantaloupes are MC = AC = $2. The typical customer has a demand curve as follows. They will pay no more than $4 for a melon. If the price drops to $2, they will buy two melons. Only if you are giving them away will they demand three, since that is a lot of cantaloupe to eat in one week!
   (a) Illustrate the profit-maximizing price and output per customer for your cantaloupes.
   (b) Without using the arc elasticity formula for own-price elasticity of demand, can you determine the elasticity of demand at that point on the demand curve? Briefly explain the formula/approach you use to calculate your answer.
   (c) One Saturday, you show up at the farmer's market with your cantaloupes. It starts raining, and after an hour or so you realize that only half of the usual number of customers are showing up. Fresh cantaloupes do not age well, so anything you don't sell today will have to be thrown away. You understand the concept of BOGO (buy one at the regular price and get a second one at x% off.) How would you change your pricing strategy given these market conditions? Explain.



5. (15 pts.) You own and operate a gasoline station along Route 66 in eastern New Mexico in the 1960's, during the period when the television show "Route 66" was popular and long before the internet and other modern stuff. The next-closest gas station is five miles down the road, and there is not another gas station for forty miles in either direction. You and your rival must manually set the prices on the gas pumps each morning when you open. Then you must get on a step ladder and set the price on the sign out front. The payoffs to you and your rival are listed in the table below. Treat this as a simultaneous-move one-shot game. What price will you and your rival end up charging? Explain in a step-by-step fashion how you arrive at your answer, using the solution concepts we developed in class.

		Your Rival		
		\$0.279	\$0.289	\$0.299
You	\$0.269	1, 2	1, 2	0, 3
	\$0.279	4, 0	1, 3	0, 2
	\$0.289	3, 1	2, 1	1, 2
	\$0.299	0, 2	0, 1	2, 4

6. (15 pts.) Suppose your rival drives by your gas station each morning on the way to open her station. She is able to observe your price, and then sets her own when she gets to work. So you are the first mover, and then she sets her price second. How will this game turn out? Draw the game tree and explain how each of you will choose your prices, using the solution approach we developed in class.

7. (10 pts.) Choose an industry from one of the required (or optional) outside readings, and describe and discuss the pertinent characteristics of market structure. Explain what type of market structure it is.