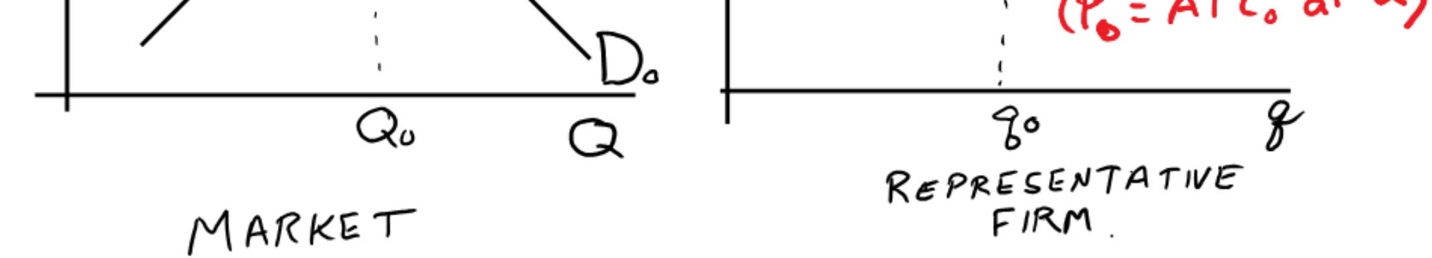
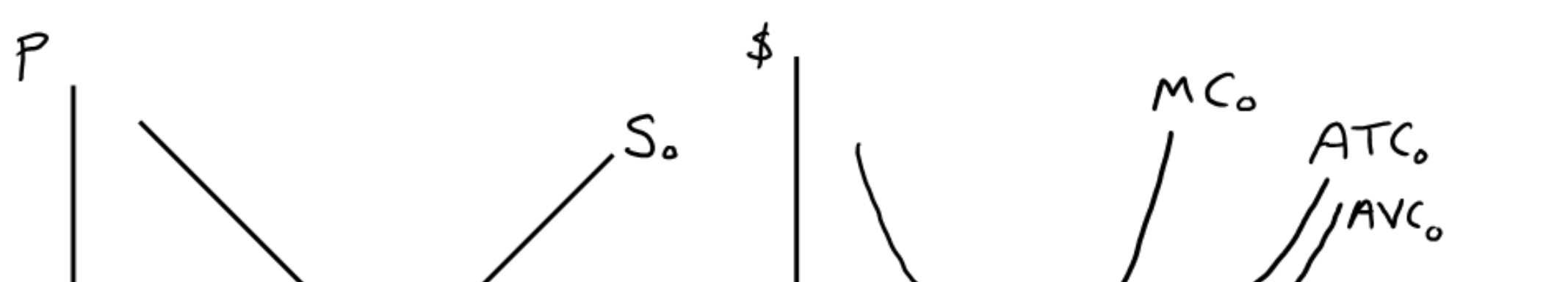
Answer Key – Practice Final Exam – Econ 528 – Fall 2019

For questions 1, 2, and 3, consider the retail market for regular gasoline. Assume, for purposes of these first three questions, that this market is currently a perfectly competitive market with the following conditions: 1) Downward sloping demand; 2) Upward sloping supply; and 3) U-shaped Average Total Costs and Marginal Costs for individual firms.

Question 1) Graphically (using side-by-side graphs) depict the perfectly competitive market price and quantity as well as individual firm's profit maximizing quantity under the assumption that we are initially in Long Run Equilibrium. (Both a graph and a narrative are needed for this question - upload both in one file here.)

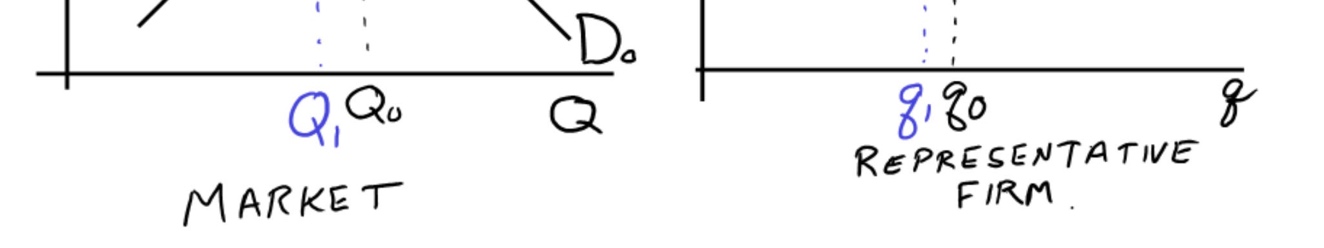
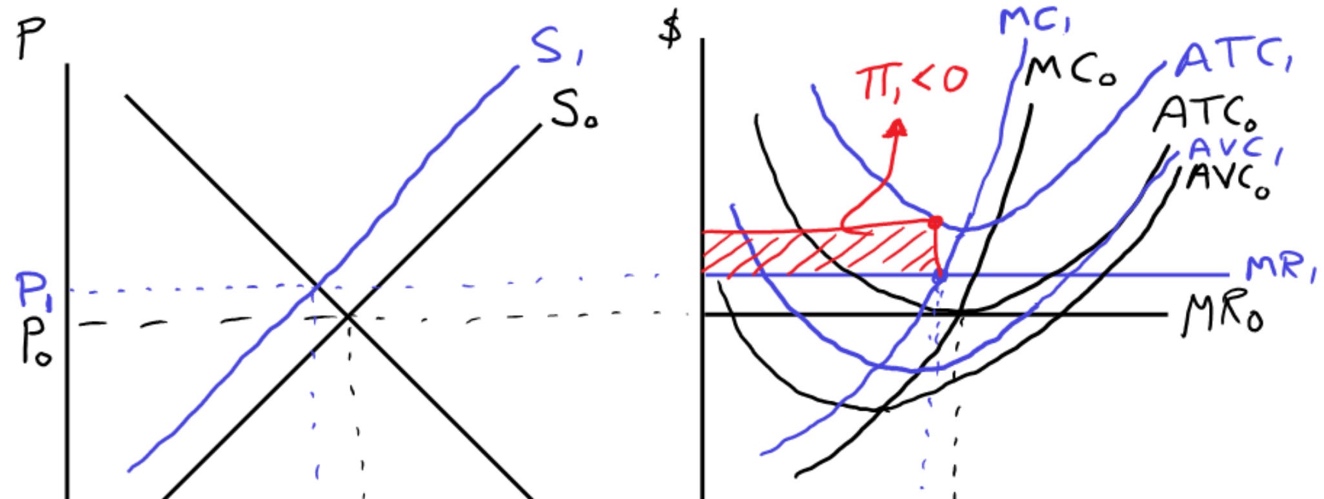
a) .



**On the Market panel, P0 and Q0 where D=S. For the Representative Firm panel, q0 is where MC0 hits MR0. And, LRE means that ATC is just tangent to the MR0 at q0.**

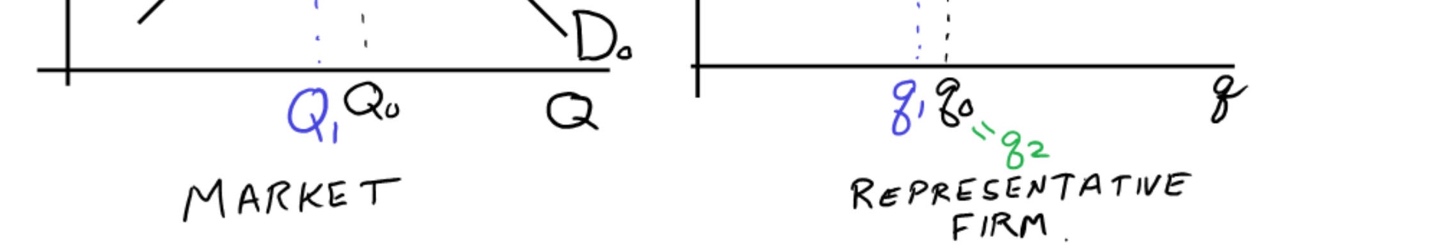
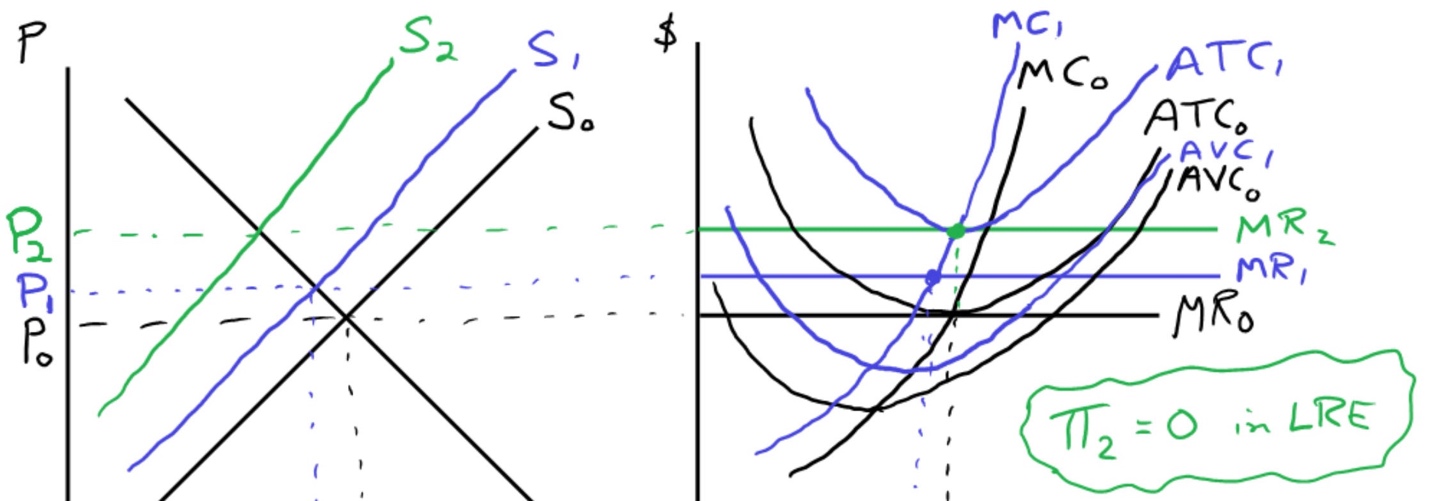
2) On September 14, 2019, a drone attack struck two oil factories in Saudi Arabia. The attack has produced significantly higher oil prices. These higher oil prices have forced retail gasoline stations to pay more to refineries to acquire gasoline. For this question, assume the effect of this higher cost for inputs will be to shift the MC *and the ATC* of each retailer upward by exactly the same vertical amount per gallon. [Hint: this parallel shift in both curves will, then, leave the minimum ATC above the same output as you had shown in question (1) above.] Discuss and depict the movement to a **short run equilibrium** under these conditions. Be sure to graphically indicate the original and new prices and quantities, the size of the cost increase, the number of firms, and the size of profits. (Both a graph and a narrative are needed for this question - upload both in one file here.)

**Answer: The increase in the price of oil shifts up the MC, ATC and AVC as well as the S. Market Q and firm q drop. Profits are negative (since S shifts vertically by the same amount as MC and ATC, P1 does not shift up the full increase in cost due to the slope of D).**



3) For this question, discuss and depict the movement from the Short Run Equilibrium in question (2) to the new Long Run Equilibrium in this industry. Be sure to graphically indicate the original and new prices and quantities, the number of firms, and the size of profits. (Both a graph and narrative are needed for this question - upload one file with both here.)

**Answer: the negative SR profits cause firms to exit. This shifts S back to the Northwest in the left-hand panel below. The exit continues until P (that is, MR) gets high enough to just become tangent to the new ATC1 at its minimum point. And, of course, this is where MR = MC. And, of course, profits are zero. In the new LR equilibrium, the number of firms has fallen.**

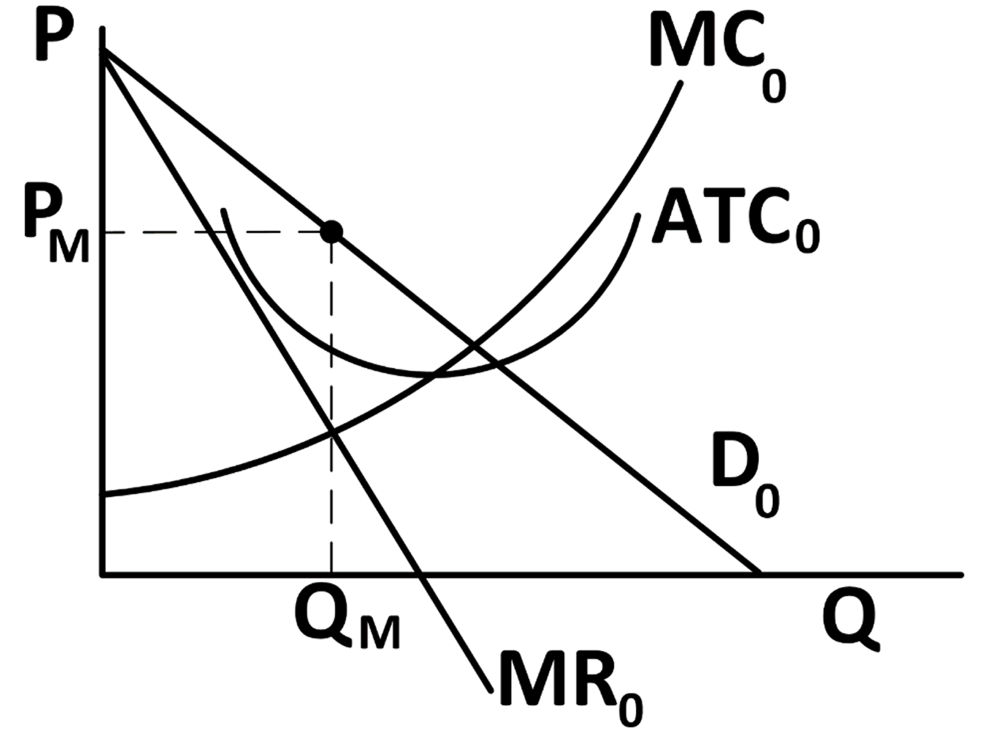


Questions 4, 5, and 6 concern a market that has a monopoly supplier. Figure 1 below shows the marginal cost, MC0 faced by the monopolist as well as the linear demand curve, D0, showing consumer behavior.

4) Using Figure 1 as your template, create a graph which depicts the profit maximizing monopoly outcome including the profit maximizing output and price. On that same graph, draw a conventional U-shaped Average Total Cost curve such that Profit is positive. Graphically indicate the size of Consumer Surplus and Producer Surplus and Deadweight Loss. (Both a graph and a narrative are needed for this question - upload both in one file here.)

40 points

Since Demand is linear, the monopolist’s MR will also be linear with the same vertical intercept as D and twice the slope of D. The profit maximizing output is QM and the resulting price is PM. Price is greater than ATC at QM so profit is positive. Consumer surplus is the blue shaded region (below D above PM) and the Producer Surplus is the green shaded area below PM and above MC.



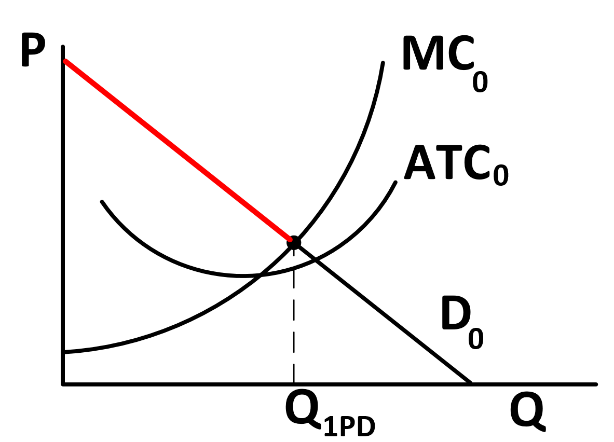
5. Now suppose this monopolist has discovered a method which allows the firm to practice First Degree Price Discrimination (sometimes called Perfect Price Discrimination). Again, using Figure 1 as your template, graphically indicate the profit maximizing output under this new scheme. What is the pricing arrangement? Graphically indicate the size of Consumer Surplus and Producer Surplus and Deadweight Loss. (Both a graph and a narrative are needed for this question - upload one file with both here.)

45 points

Since the firm does not have to lower price to high value customers when it lowers price to attract low value customers, the price each extra customer pays is actually the true MR of that customer. Thus, for a first degree price discriminating monopolist, the D curve *is* the MR curve. So, Q1PD is where MR=MC.

With first degree price discrimination, the monopolist can charge each consumer exactly their marginal willingness to pay. Thus, the monopolist will sell to each point along

D0 from **α** to **β** (the red-shaded part of the demand curve D0). Total quantity sold will be Q1PD as shown.



There is zero Consumer Surplus, as each consumer along the red shaded part of the demand curve is charged exactly the maximum amount they would pay for that unit of output. Producer Surplus is the green shaded area; that is, PS is the area between the D0 and MC0.

6. If this monopolist is to be successful in its attempt to practice Price Discrimination, it must be able to solve two very important problems. Discuss each of these conditions and discuss why each of them are crucial to making price discrimination work. (Do not discuss any issues related to antitrust laws such as the Robinson-Patman Act of 1936).

(No graph is needed, enter your narrative response in the box provided.)

40 points

The two conditions are:

1. Be able to segment the market. That is, be able to determine how much each segment is willing to pay. For example, in the case of first degree price discrimination, the firm needs to have a mechanism to understand each consumer’s marginal willingness to pay. If you cannot uncover this information, you will be unable to practice price discrimination as you cannot identify high value consumers from low value consumers.
2. They have to be able to prevent arbitrage. That is, they have to be able to prevent low- price-buyers from reselling to consumers that the firm would otherwise sell to for a higher price. If you cannot prevent this reselling, high value consumers will just make a deal with low value consumers to get the product at a low price.