Homework 6 (Due 3/19 at 1:00pm) 30 points

1. (8) Illustrate a graph featuring a monopolist with high fixed costs and a low, constant marginal cost curve. Explain the barrier to entry commonly associated with a firm that has this cost structure. Label the profit maximizing choice for this firm. Label the regulated price that maximizes total surplus for society. Explain how this price is different than a regulated price for a monopolist with typical cost curves. List and explain two potential problems (or strange incentives) with this regulation.

2. (7) List an example of third degree price discrimination and explain how it fits the definition of third degree price discrimination. Explain what a firm needs in order to implement (necessary conditions) this price discrimination. Compare consumer, producer, and total surplus of a perfectly price discriminating (or first degree) monopolist to a perfectly competitive outcome.

3. (6) Explain why a monopolistically competitive market is inefficient. Explain how product differentiation affects the level of inefficiency. Given this, should we pass laws requiring all monopolistically competitive industries to produce a homogeneous product? Explain why or why not.

4. (9) Why is an oligopoly so difficult to analyze? Explain the concept of a cartel. Why would firms create a cartel? Why might a cartel be extremely rare (even if it is legal)? Was OPEC responsible for the increase in the price of gasoline between February 24th, 2003 and March 10th, 2003? Explain.
1. (8) See graph for natural monopoly. The barrier to entry is that expected profits from entry are less than zero. Thus, the firm chooses not to enter the market. The profit maximizing choice for the firm is to choose the quantity where marginal revenue equals marginal cost. The regulated price that maximizes total surplus for society is average cost pricing (ATC=D). This price is different than a monopoly with typical cost curves. The price you would choose for a monopoly with typical cost curves is the price where marginal cost equals demand (MB). This price is not possible for a natural monopoly because profits are less than zero at this price (so the firm is unwilling to produce a quantity greater than zero because it is better off shutting down). There are many problems/strange incentives with average cost pricing. Thus, there are several acceptable answers to this question. Several of them come from the elimination of the profit incentive. Average cost pricing yields an economic profit equal to zero (an accounting profit equal to a fair rate of return).

\[(P_0, Q_0) - \text{outcome if not regulated}\]
\[(P_1, Q_1) - MB=MC \text{ regulation, } P_1<ATC \text{ at } Q_1\]
\[(P_2, Q_2) - \text{average cost pricing regulation}\]

\[\text{profits } = 0 \quad P_2 = ATC\]
2. (7) Answers will vary. Any example where a firm sells a product and charges different prices for different groups of consumers. A firm needs market power, information on the groups of people, prevent resale, and a profit incentive to implement the price discrimination. The graph of a perfectly price discriminating monopolist and a perfectly competitive market is below.

\[ P \quad Q \]

\[ Q_0 \]

\[ P_0 \]

\[ P_0, Q_0 \] - perfectly competitive outcome

\[ Q_0 \] - quantity produced with First Degree Price Discrimination

<table>
<thead>
<tr>
<th></th>
<th>Perfect Competition</th>
<th>1st Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumer</strong></td>
<td>( a )</td>
<td>( \emptyset )</td>
</tr>
<tr>
<td><strong>Producer</strong></td>
<td>( b )</td>
<td>( ab )</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>( ab )</td>
<td>( \frac{ab}{ab} )</td>
</tr>
</tbody>
</table>
The monopolistically competitive firm produces a quantity where price exceeds marginal cost (not at minimum average total cost). Thus, the production is inefficient (you can do the firm and consumer analysis to confirm this). The amount of product differentiation affects the slope of the demand curve (ceteris paribus). As there is more differentiation, the demand curve becomes relatively steeper and the difference between price and marginal cost grows. We should not pass laws to require homogenous products because consumers value the ability to choose from different product characteristics. This valuation of choice is not included in the measure of efficiency. I included a graph that shows the firm producing a quantity where price exceeds marginal cost in a long run equilibrium.

\[
\begin{align*}
(P_0, Q_0) &= \text{LR equilibrium, profits } = 0 \\
\text{ } & \\
P_0 &> MC_0 \\
\text{ } & \\
ATC_0 &> \text{ min } ATC
\end{align*}
\]
4. (9) The oligopoly market is particularly difficult to analyze because of the interdependence of the firms who participate in the market. With few firms, the actions of any one firm affect the market outcome. In perfect competition, a single firm was too small to alter the market outcome. In monopolistic competition, there was also a large number of firms and the actions of a single firm had a negligible effect. However, with an oligopoly, the actions of one firm directly affects the profit maximizing decision of another. If firms form a cartel, then they collectively decide what output to produce (this output is less than if they made an independent decision). A cartel might be rare because, at least in one time period, each individual firm has an incentive to produce a higher quantity than the agreed upon quantity (profits will be greater if the firm increases its production). OPEC did not make any announcement to decrease production and appeared to keep production steady or even increase production during this time frame. Instead, the market is reacting to the continued strike in Venezuela and the fear of what might happen in Iraq.