LAB 7

Principles of Economics

Due: Wednesday, Oct. 13 at start of class

Lab Time: 12:50 or 2:15

NAME: ________________________________

1. You ask one of your economists to fill out the following table of costs for your firm. Unfortunately, this person did not finish the job and left several areas blank. Fill in the open cells.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>TC</th>
<th>MC</th>
<th>ATC</th>
<th>AVC</th>
<th>AFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100</td>
<td>----</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>4</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td></td>
<td>15.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Below is the U.S. domestic market for lumber. Assume the U.S. does not allow trade in lumber. Label both axes, the demand curve, the supply curve, the equilibrium price as $P_0$ and the equilibrium quantity as $Q_0$.

A. Assume the U.S. opens up to trade and the world price of lumber is $\frac{1}{2}P_0$ and the U.S. is a very small part of the world market for lumber (small country model). In the graph above, label the domestic production as $Q^p$, domestic consumption as $Q^c$, and the price of lumber in the U.S. as $P_{\text{TRADE}}$.

B. Are consumers better-off or worse-off with free trade?
   - Label the corners of the area that illustrates the gains or losses to consumers from trade (b,b,b,b).

C. Are producers better-off or worse-off with free trade?
   - Label the corners of the area that illustrates the gains or losses to producers from trade (c,c,c,c).

D. The U.S. has decided to place a tariff on lumber. The tariff is $= \frac{1}{4}P_0$. Show the effects of introducing a tariff in this market. Label the following; new domestic production as $Q^{pT}$, new domestic consumption as $Q^{cT}$, and the new price $P_T$.

E. Does the introduction of a tariff lead to a deadweight loss? If so, clearly show an area(s) that illustrates the deadweight loss from this policy.

![Graph](image)

A. Properly label both curves, both lines, and both axes.
B. Determine the profit-maximizing price and level of output for this firm. Label these $P_0$ and $Q_0$, respectively.
C. Show an area representing either the profit or losses to the firm.
D. Label the Technical Efficient level of output $Q_T$.
E. Label the Allocative Efficient level of output $Q_A$.
F. Clearly show an area that depicts the level of deadweight loss associated with the profit maximizing level of output.

4. Kenny, a perfectly competitive seller of coffee, has the following costs per month as a function of output.

<table>
<thead>
<tr>
<th>Cups of Coffee</th>
<th>Total Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>155</td>
</tr>
<tr>
<td>10</td>
<td>175</td>
</tr>
<tr>
<td>20</td>
<td>200</td>
</tr>
<tr>
<td>30</td>
<td>235</td>
</tr>
<tr>
<td>40</td>
<td>300</td>
</tr>
<tr>
<td>50</td>
<td>395</td>
</tr>
<tr>
<td>60</td>
<td>575</td>
</tr>
<tr>
<td>70</td>
<td>900</td>
</tr>
</tbody>
</table>

A. If the market price of a cup of coffee is $3.50/cup, what is the profit maximizing number of cups of coffee? _______________________
- What is the profit to Kenny? _________________

B. If the market price of a cup of coffee increases to $9.50/cup, what is the profit maximizing number of cups of coffee? _______________________
- What is the profit to Kenny? _________________

5. The graph to the right shows the cost curves of a perfectly competitive firm in a constant cost industry. Label all three cost curves using the common abbreviations used in the book and in class.

A. Assume the market price is $21/unit. Label the profit maximizing quantity as $Q_{21}$.
B. At $P = 21$, does this firm make zero, positive or negative economics profits? If positive or negative, clearly indicate the area of profits or losses in the graph. Label that area as $\Pi_{21}$.
C. Assume the market price is $9/unit. Label the profit maximizing quantity as $Q_9$.
D. At $P = 9$, does this firm make zero, positive or negative economics profits? If positive or negative, clearly indicate the area of profits or losses in the graph. Label that area as $\Pi_9$.
E. Assuming the market price is $5/unit, label the profit maximizing quantity as $Q_3$. At $P = 5$, what are the profits of the firm? Be as specific as you can.
6. Consider a consumer with $200 to spend on two goods, Jam and Coffee. You know the following about prices, $\text{P}_{\text{Jam}} = \$5/\text{jar}$, $\text{P}_{\text{Coffee}} = \$10/\text{unit}$. Currently he is spending all of that budget on of your income on the two goods. – At this level of consumption the $\text{MU}$(Jam) = 25 and the $\text{MU}$(Coffee) = 40. Given this information is he maximizing his utility? If not, how could he alter his consumption of the two goods to increase utility? Explain carefully what you are comparing to make this determination and the intuition behind that comparison.

7. A. A profit-maximizing business incurs an economic loss of $10,000 per year. Its fixed cost is $15,000 per year. Should it produce or shut down in the short run? Should it stay in the industry or exit in the long run?

B. Another profit-maximizing business incurs an economic loss of $10,000 per year, but this business has a fixed cost of $6,000 per year. Should it produce or shut down in the short run? Should it stay in the industry or exit in the long run?
8. The City of Georgetown needs your help. They are negotiating with a cable provider, Time Warner, who wants to provide cable TV to the citizens of Georgetown. If awarded the contract, they will be the sole provider of cable in the area. Below is the market demand for cable in this market. Quantity is measured in number of homes with cable. Label both axes.

A. Add the MR curve for this monopolist.

B. Add ATC and MC curves for this Natural Monopolist. Be sure to draw an ATC curve that would allow the monopolist to make a positive profit at some quantities.

C. If we grant Time Warner the exclusive right to provide cable in this market and we make no attempt to regulate the price they charge, determine the price and number of homes that will be hooked up to cable. Label these $P_T$ and $Q_T$.

D. Show the deadweight loss associated with producing $Q_T$ level of output.

E. Instead we could attempt to force Time Warner to Produce the Allocative Efficient level of output. Label the efficient price and quantity, $P_E$ and $Q_E$ respectively. Why will that allocation be difficult to achieve?

D. Instead, allow Time Warner to earn a Normal Profit (Economic profit = 0). Label the price and quantity associated with that level of regulation, $P_D$ and $Q_D$ respectively.