Homework 5 (30 Points)

1. See graph below for cost curves. The profit function is total revenue minus total cost. Profit = 30*q - (20 - 2q + 2q^2). To solve for the profit maximizing quantity, the firm will set marginal revenue equal to marginal cost. 30 = -2 + 4q or q = 8. Given this quantity, the profit for the firm is 108. If there are positive economic profits in a perfectly competitive market, then other firms will want to enter and can because there is free entry and exit in a perfectly competitive market. Thus, this is a short run equilibrium. Profits must be equal to zero to be in a long run equilibrium.
2. See the graph for the comparison of surplus amounts. The rest of the answer will vary. One aspect I would like you to cover is about the statement from airline executives who predicted havoc and bankruptcies if the market was deregulated. The book appears to dismiss this idea for the period of time immediately following deregulation. Now we read in the news that United declared bankruptcy and American is threatening to do the same without a new labor contract. These are two of the largest carriers that are having financial difficulties. I think it is fair to say that the market for air travel is currently fairly uncertain.

Regulated Price = P1, Q2 - firms recognize that P1 \rightarrow (Q_5 > Q_0)
but still produce more than Q_0

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<th>Perfect Competition</th>
<th>Price Regulation</th>
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3. See graphs for the relative elasticities. The burden of the tax is determined by the relative elasticities. When supply is more inelastic than demand, the producer has the majority of the burden. This is illustrated by the difference in price received before and after the tax relative to the difference in the price paid by the consumer before and after the tax. When demand is more inelastic, the consumer has the majority of the burden. This is illustrated by the difference in price paid before and after the tax relative to the difference in the price received by the suppliers before and after the tax.

\[(P_0 - P_r) > (P_i - P_0)\]  
\[(P_0 - P_r) < (P_i - P_0)\]
4. See graph for curves. The profit maximizing quantity is found by equating marginal revenue and marginal cost. $200 - 4q = 20 + 2q$. The profit maximizing quantity is 30. Given this, profit is 2600. Other firms have an incentive to enter because profit is greater than zero. However, there is some barrier to entry that makes this market a monopoly and thus, entry will not occur (assuming barriers stay in place). Even though a static evaluation of welfare might lead to a monopoly having less total surplus than perfect competition (see graph), this analysis does not account for benefits of innovation. If firms expect positive economic profits (theoretically, perfect competition has zero economic profits in the long run) by coming up with a new product, then they have an incentive to spend money on research and development to develop these products. Thus monopoly profits provide an incentive to innovate.

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**Perfect Competition**

C.S. \( abcde \) > \( ab \)

P.S. \( fgh \) < \( cdgh \)

Total \( abcdefgh \) > \( abcd\) \( gh \)