1. Assume a monopolist faces a market demand curve $P = 100 - 2Q$, and has the short-run total cost function $C = 640 + 20Q$. What is the profit-maximizing level of output? What are profits? Graph the marginal revenue, marginal cost, and demand curves, and show the area that represents deadweight loss on the graph.

2. In question #1 above, what would price and output be if the firm priced at socially efficient (competitive) levels?
3. Show graphically that if a firm is a natural monopoly, a government policy that forces marginal cost pricing will result in losses for the firm.

4. A monopolist sells in two states and practices price discrimination by charging separate prices in each state. The monopolist produces at constant marginal cost $MC = 10$. Demand in market 1 is $Q_1 = 50 - p_1$. Market 2 demand is $Q_2 = 90 - 1.5p_2$. What price will be charged in each market?
5. a monopolist that serves 2 groups of consumers. Group 1 has a demand \( q = 10 - p \) and group 2 has a demand \( q = 10 - 2p \). The marginal cost of production is 1.

a) What is the consumers’ surplus, producer’ surplus, total welfare in each group?

b) If the monopolist cannot discriminate, what is the aggregate demand? What is the monopoly price? What is the consumers’ surplus, producer’ surplus, total welfare?
6. A monopolist sells in two states and practices price discrimination by charging separate prices in each state. The monopolist produces at constant marginal cost $MC = 10$. Demand in market 1 is $Q_1 = 50 - p_1$. Market 2 demand is $Q_2 = 90 - 1.5p_2$. What price will be charged in each market? Suppose a third party enters the market, not as a producer, but as a reseller, capable of reselling by transporting the goods from market to market at a cost of $4 per unit. How does this affect the monopolist?
7. Suppose a monopolist’s costs are described by the function \( C = 200 + 2Q^2 \), and it faces a demand curve of \( Q = 240 - p \). If it cannot price discriminate, what are the profit-maximizing price and quantity? What are profits? If the monopolist is able to practice perfect price discrimination, what are the values of output, profit, and consumer surplus?

8. Tuan lives in a town with only one movie rental store. Suppose Tuan’s demand for movie rentals per month is \( Q = 16 - 2P \). The movie store currently charges $5 per movie, but is thinking of adding a flat monthly cardholder fee, and dropping the price to $2 per rental. At this new price, what is the largest cardholder fee that Tuan will pay? If the rental store has a constant marginal cost of $2, which strategy is more profitable?
9. Consider the following strategic game:

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<tr>
<td>l</td>
<td>6,1</td>
<td>1,2</td>
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<tr>
<td>m</td>
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<td>0,2</td>
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<tr>
<td>r</td>
<td>4,0</td>
<td>1,1</td>
<td>2,2</td>
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a) Is any action of either player strictly dominated?

b) Find the Nash Equilibrium of the game. (Give both the equilibrium action profiles and the payoffs associated with them.)