

Review Questions Second Midterm

Chapter 8.1-8.7: Slutsky Equation

1. For a given price change what does the income effect measure?
2. For a given price change what does the substitution effect measure?
3. What is the sign of the substitution effect?
4. What is the sign of the income effect?
5. Are all ordinary goods inferior goods? Explain
6. Are all Giffen goods inferior goods? Explain
7. Are all inferior goods Giffen goods? Explain
8. Draw a picture illustrating the income and substitution effect for a price increase when two goods are perfect complements. How large is the substitution effect?
9. Draw a picture illustrating the income and substitution effect for a price increase when two goods are perfect substitutes. How large is the substitution effect?
10. Find the income, substitution and total effect when the price of good x increases from $p_x=1$ to $p'_x=2$ when income is $m=100$ and $x=m/(2 p_x)$. First find the original demand when $p_x=1$. Determine how large an income is required if the consumer were to buy the old bundle at the new price, m' . What is optimal demand at m' and p'_x ? How much does the consumer demand at $p'_x=2$ and $m=100$?

Chapter 9.8 - 9.9: Labor Supply

1. Let w denote the wage rate and p the price of other goods. Draw a picture of an individual's budget constraint over L leisure, and C consumption. How does this budget line change when wage increases?
2. Assume that leisure is a normal good and explain why an increase in wage may result in people working fewer hours? Be sure to use the Slutsky equation and explain the sign of the income and substitution effect.
3. When does the labor supply curve have a positive slope? When is it negative?
4. When do we know for certain that an increase in the tax on labor will increase the tax revenue that we are collecting from this source? When might we see an increase in tax causing revenue to decrease?
5. Explain why overtime is more effective in increasing labor supply than a straight increase in wages

Chapter 14.3-5, 14.7, 14.9: Consumer Surplus

1. What does a consumer's consumer surplus measure?
2. Suppose Al has a demand function $D(p) = 10 - 2p$. What is Al's consumer surplus when $p = \$1$? How much money does he spend on the good?
3. What is the producer surplus when the supply curve is $S(p) = -2 + 2p$, and the price is $p = \$5$?

Chapter 15.5 - 15.6, 15.9-15.10: Market Demand

1. What does the price elasticity of demand measure?
2. Is demand elastic or inelastic when the price elasticity of demand is less than -1?
3. Suppose Al's demand is $D_A(p) = 10 - 2p$, Find the price elasticity of demand for Al? Find the price where Al's demand is unit elastic. For what range of prices is Al's demand inelastic? Elastic?
4. At what price is a linear demand function unit elastic? At what price is it elastic? When is it inelastic?
5. Find the price elasticity of supply when $S(p) = 3p^2$?
6. Will revenue increase, decrease or remain the same when quantity increases and the price elasticity of demand is -2? -1? -1/2?
7. What type of goods has an income elasticity less than 0? Greater than 0? Between 0-1? Greater than 1? What kind of preferences are we looking at when the income elasticity of demand equals 1?

Chapter 16: Equilibrium

1. Find the equilibrium price and quantity when demand is given by $D(p) = 100 - 2p$ and supply by $S(p) = p/2$. Determine the excess supply when $p = \$44$. Determine the excess demand when $p = \$10$.
2. Given the demand and supply in question 1, what is the equilibrium quantity when we impose a \$5 tax per unit on the producer? Draw a graph to illustrate the equilibrium with and without a tax? At what price do transactions take place? How large a share of the tax is paid by the consumers and by the producers? Calculate the price elasticity of demand and supply at the no-tax equilibrium (question 1). Use the price elasticities to explain the difference in tax share paid by the consumers and the producers. How large is the deadweight loss of the \$5 tax? How much revenue is collected from the tax? Would the deadweight loss be larger if the demand function was more elastic? What if both the demand and supply function were more elastic.
3. Write an equation to describe how the consumers' price relates to the producers' price when we put a per unit tax, t , on the consumers? Does the equation change if we instead put the tax on the producers? Do the producers care whether the tax is imposed on them or on the consumer? Explain
4. Write an equation to describe how the consumers' price relates to the producers' price when we pay the consumers a per unit subsidy s . How does this equation change if we gave the subsidy to the producers?

Chapter 21.1-3: Cost Functions

1. Are marginal cost always decreasing when the average cost are decreasing?
2. Are the average cost increasing or decreasing when the marginal costs are larger than the average cost? Explain.
3. What is the relationship between average variable cost, average cost and average fixed cost?
4. What happens to average fixed cost as output increases?
5. How does the gap between average variable cost and average cost change when output increases?
6. When is the average cost equal to the marginal cost?
7. At what two points are the average variable cost equal to the marginal cost?
8. Find AVC , AC , AFC and MC when the cost function is $c(y) = y^2 + 100$. What is the minimum average variable cost and minimum average cost?
9. Suppose the cost function is $c(y) = 4y^2 + 100y + 100$. What is the average variable cost of producing 25 units of output?
10. Is the average fixed cost curve ever U-shaped? Why?

Chapter 22.1-7: Firm Supply

1. Explain in plain English what MR and MC measures?
2. Why should $MR=MC$ at the profit maximizing output level?
3. How does a firm in a perfectly competitive market perceive the market demand curve?
4. What is the MR for a firm in a perfectly competitive market?
5. Illustrate all of the cost curves for a firm with a *U-shaped* average variable cost curve. Label all the curves carefully. On the same graph illustrate the firm's supply curve. Pick a point on the supply curve where the firm is making positive profit. Illustrate the profit on the graph. Now choose a point on the supply curve where the firm is making a negative profit yet stays in business. Finally, choose a point on the supply curve where the firms negative profit is so large that the firm is better off not producing any output.
6. A firm has a cost function $c(y) = y^2$ and the price of y is $p = 20$. How much will the firm supply? How much profit will the firm make? At what price level will the firm choose to produce zero output?
7. A firm has a short run cost function $c(y) = y^2 - 2y + 30$. The cost of producing zero units of output is $c(y=0) = 30$. If the price is $p = 10$ how much will the firm supply? How much profit will the firm make? If the price is $p = 4$ how much will the firm supply? How much profit will the firm make?
8. Explain why a firm may operate in the short run even if it is losing money.
9. A firm has a short run cost function $c(y) = y^2 + 4y + 20$. The cost of producing zero units of output is $c(y=0) = 20$. At what price would this firm stop doing business in the short run.
10. You are working as a consultant for a firm which has a cost function $c(y) = 20 + y^2$ and the price of y is $p = 100$. The firm is currently producing 40 units of output, how would you suggest that they increase their current profit? Explain why this change will increase the firms profit.

Chapter 24.1-6: Monopoly

1. How does the MR for a monopolist differ from that for a firm in a perfectly competitive market? Explain the difference.
2. Suppose the market demand function is $p=10-2y$, and that the per unit cost of producing y is \$2. What level of output will maximize the monopolist's profit? What price will the consumers pay? What is the firm's profit? Illustrate the demand curve, the MR and MC curves, the total cost of production and the associated revenue at the profit maximizing output level.
3. Draw a graph of total revenue ($TR=p \cdot y$) when the inverse demand function is $p=a - by$. How many units should be produced to maximize total revenue?
4. Find the *Marginal Revenue Curve* when the market demand function is $p=a-by$.
5. Will a monopolist ever operate on the inelastic part of the market demand curve? Explain.
6. Why might a monopolist choose a supply that does not maximize revenue?
7. Is a monopolist markup relatively larger or smaller when the market demand is more elastic?
8. What is the monopolists profit maximizing markup when the market demand function is $D(p)=34p^{-5}$?
9. Suppose the market demand is $p=150-y$ and the monopolist's cost function is $c(y)=0.5 y^2$. Find the monopolist's profit maximizing output choice, and the price that the consumer will pay. What would the optimal output and price be if this was a competitive market? What is the dead weight loss from having a monopoly in the market?
10. Explain why a monopoly is inefficient.
11. Suppose a profit-maximizing monopolist chooses an output level that maximizes total revenue. Under what conditions will profit maximization and total revenue maximization result in the same output choice?
12. The demand for a monopolist's output is $D(p)=10,000 p^{-2}$. The monopolist produces at a constant marginal cost of \$5. What is the profit-maximizing supply and price? How much will the monopolist's price increase when the government imposes a sales tax of \$10 per unit on the monopolist's output?
13. A profit-maximizing monopolist faces a downward-sloping demand curve that has a constant elasticity of -3. The firm finds it optimal to charge a price of \$72 for its output. What is its marginal cost at this level of output?
14. The inverse market demand for good y is $p=140-6y$. The cost of making the good is $c(y)=4y^2$. What is the *Marginal Revenue Function* for y ? What is the monopoly output and the monopoly price? What output and price would maximize the sum of Producer's and Consumer's surplus?