

Recitation 1: 55 points

Name _____, Email _____, Section _____

1. Production Possibility Frontier:

- a. (1 point) Draw a simple possibility frontier for Selfie Sticks and Apple Watches with specialized factors of production.
- b. (1 point) Show me where production is feasible but inefficient. Label the area "FBI."
- c. (1 point) Show me where a production is not feasible. Label the area "NF."
- d. (1 point) Show me a technological advance allowing more efficient production of Apple Watches.
- e. (1 point) From d., what happens to the opportunity cost of producing Apple Watches.

2. Marginal Analysis:

(1 point) How many people should Frank Cross hire with the following production schedule if he pays each worker \$60,000.

Number of Workers	Total Revenue
1	\$90,000
2	\$170,000
3	\$240,000
4	\$300,000
5	\$350,000

3. Marginal Analysis:

(1 point) Given the following marginal revenue function and that marginal cost of labor is equal to the wage (w), solve for the equilibrium amount of labor when $A=100$, $\alpha=2/3$, $K=1$ and $w=5$.

$$\alpha A L^{\alpha-1} K^{1-\alpha}$$

4. Comparative Advantage and Trade:

Two allied countries with the same amount of resources, Wardonia and Waristan, can only produce 2 goods, guns and knives. The following table shows the amount of each they can produce if they put all resources in to one or the other. They can also choose to produce a combination of both.

	Guns (per year)	Knives (per year)
Wardonia	100,000	200,000
Waristan	25,000	100,000

- (1 point) What is the opportunity cost of producing guns and knives for both countries?
- (1 point) Who has the absolute advantage in each product?
- (1 point) Who has the comparative advantage in each product?
- (1 point) What were the parameters of trade that would have worked in terms of guns per knife?

5. Market Supply and Demand:

(1 point) Draw separate market equilibrium graphs with the supply and demand curves for doughnuts and bear claws. Show me what in both graphs happens if there is a revolutionary technology that allows more efficient mixing of doughnut batter.



6. Elasticity:

Draw two demand curves on the same graph for each of the following pairs of goods, demonstrating the relative elasticity.

- (1 point) Heart medication; Fluffy bunny slippers.
- (1 point) Gasoline during the course of a week; Gasoline during the course of a year.
- (1 point) Broccoli; Vegetables
- (1 point) Tickets to a regular season NFL game; Tickets to the Super Bowl.

7. Elasticity and Revenue:

(1 point) Calculate the total revenue at each price level and calculate price elasticity of demand from \$5 to \$4, from \$4 to \$3 and from \$3 to \$2.

Assuming zero costs, at which price point does it make sense to raise the price?

Price	Quantity	Total Revenue	Elasticity
5	4		NA
4	6		
3	8		
2	10		
Calculated using midpoint method.			

8. Income Elasticity:

Suppose that a decrease in income from \$500 per week to \$350 per week result in an increase in the quantity purchased of “Sand Paper” brand toilet paper from 0 to 5 rolls per week.

- (1 point) What is the income elasticity of demand for the toilet paper using the midpoint method?
- (1 point) What type of good is this?

9. Price Ceiling:

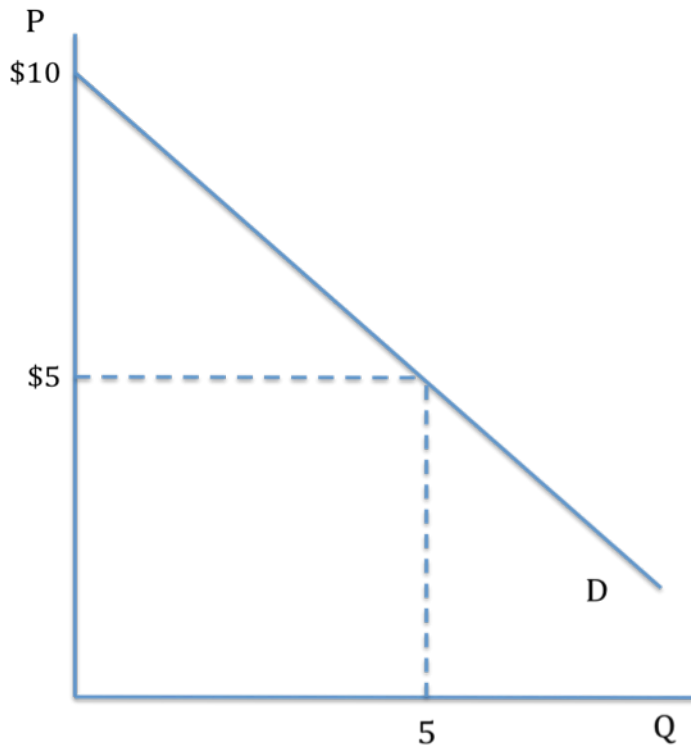
- a. (1 point) Draw a supply and demand graph for the rental apartment market.
- b. (1 point) Draw in a binding price ceiling and show me the quantity supplied and the quantity demanded.
- c. (1 point) Is there a shortage or a surplus?
- d. (1 point) In the long run, will the shortage/surplus get smaller or larger? Show me in a new graph.

10. Taxes:

- a. (1 point) Draw the aggregate supply and demand graph for the goods market showing the effects of a tax levied on the buyers but whose burden falls more heavily on the sellers. Include the shift (either supply or demand) the price buyers pay, the price sellers receive and the tax wedge.
- b. (1 point) Explain why the burden falls more heavily on the sellers.

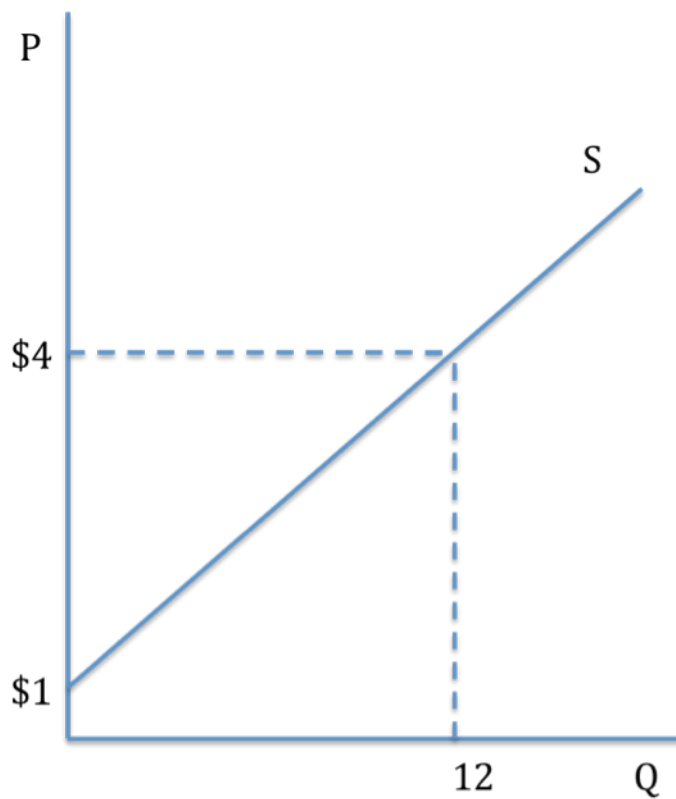
11. Consumer Surplus and Prices:

- a. (1 point) Shade in the area of initial consumer surplus and calculate it.
- b. (1 point) Show me the effect of a decrease in price, label the region of “additional consumer surplus to the initial customer” and label the region of “consumer surplus to new customers.”
- c. If the new price = \$3 and the new quantity = 7, then calculate:
 1. (1 point) additional consumer surplus to the initial customer.
 2. (1 point) consumer surplus to new customers.
 3. (1 point) total consumer surplus.



12. Producer Surplus and Prices:

- (1 point) Shade in the area of initial producer surplus and calculate it.
- (1 point) Show me the effect of an increase in price, label the region of “additional producer surplus to the initial producers” and label the region of “producer surplus to new producers.”
- If the new price = \$5 and the new quantity = 16, then calculate:
 - (1 point) additional producer surplus to the initial sellers.
 - (1 point) producer surplus to new sellers.
 - (1 point) total producer surplus.



13. Dead Weight Loss of Taxation:

- a. (1 point) Draw a market supply and demand graph and label the market equilibrium price as \$5 and quantity as 10.
- b. (1 point) Institute (draw) a tax in the graph and label the quantity with the taxes, the price the buyers pay and the price the sellers receive.
- c. If the quantity buyers demand at \$9 is equal to 0, the quantity supplied at \$1 is 0, the quantity with taxes is 5, the price the buyer pays after taxes is \$7 and the price the seller receives after taxes is \$3, then calculate:
 1. (1 point) Consumer surplus before and after taxes.
 2. (1 point) Producer surplus before and after taxes.
 3. (1 point) Tax revenue.
 4. (1 point) Deadweight loss.
- d. (1 point) With the same size tax, tell me what happens to the deadweight loss and tax revenue if supply becomes more elastic.

14. Dead Weight Loss of a tariff:

- a. (1 point) Draw a market supply and demand graph and label the market equilibrium price as \$9 and quantity as 20.
- b. (1 point) Institute (draw) a world price that would induce a country to import from the rest of the world and label the quantity of domestic demand 30 and the quantity of domestic supply 10.
- c. (1 point) Now institute (draw) a new price with the introduction of a tariff and label the quantity of domestic demand 25 and the quantity of domestic supply 15.
- d. If the quantity buyers demand at \$17 is equal to 0, the quantity supplied at \$1 is 0, the price without the tariff is \$5 and after the tariff is \$7 calculate:
 1. (1 point) Consumer surplus before and after the tariff.
 2. (1 point) Producer surplus before and after the tariff.
 3. (1 point) Tax revenue.
 4. (1 point) Deadweight loss.

15. Negative Externality:

Let's say that the production of cabbage results in a negative externality due to the suffering we all have to endure smelling it while it is cooking.

- a. (1 point) Draw a market supply (private cost) and demand (private value) graph for cabbage and label the equilibrium price and quantity.
- b. (1 point) Show me (draw) the social cost and label the socially optimal quantity.
- c. (1 point) How could a social planner influence the private market to internalize the externality?

16. Positive Externality:

Let's say that basic research in medicine results in a positive externality due to the benefits we all receive from it.

- a. (1 point) Draw a market supply (private cost) and demand (private value) graph for c basic research in medicine and label the equilibrium price and quantity.
- b. (1 point) Show me (draw) the social value and label the socially optimal quantity.
- c. (1 point) Show me how a social planner can influence the private market to produce the socially optimal level of basic research in medicine?