

EC302 - INTERMEDIATE MICROECONOMICS
Loyola University
Fall 2017

Problem Set 1
Discussion Due Date: September 27, 2017

Answer all questions succinctly and thoroughly.

1. Consider the market for bread. Briefly describe what impact each of the following would have on demand, supply, equilibrium quantity, and equilibrium price of bread. Illustrate answers with graphs if helpful.
 - a. A new type for fertilizer increases productivity of the wheat crop.
 - b. The price of butter rises due to a disease affecting cows.
 - c. Concern over food additives reduces the demand for bread.
 - d. A work stoppage by bread producers increases labor costs.
 - e. To support bread prices, the government agrees to buy all surplus bread and pay 10% more than the current market price.
 - f. To help reduce inflation, the government places a ceiling on the price of bread equal to the lower price that existed two years ago.

2. You have estimated the inverse demand for coffee for the following groups in an economics class. The demand curves are

$$\text{Male student demand} = P_c = 100 - Q_{cm}$$

$$\text{Female student demand} = P_c = 100 - 2Q_{cf}$$

Compute the Total demand curve for the entire class

3. Using the information in problem 2, now suppose you are able to determine the supply curve for Coffee as

$$Q_{sc} = 30 + 0.5P_c$$

- a. What is the equilibrium price and quantity for coffee for the class?
- b. If a lump sum tax of 16 is imposed on this market (on the supplier) what is the new price and quantity?
- c. What is the Tax Revenue?

4. Using the information in problem 3, assume that instead of a lump sum tax, a proportional tax of 10% is placed on suppliers, what happens to price and quantity for the entire market?
5. In Washington DC the metro system is priced lower during rush hours when demand is high and the price rises when fewer people are riding during non-rush hour times. Explain this strange pricing system using the market model.
6. (Fill in the blanks) Suppose that the demand and supply functions for good X are

$$Q_d = 75 - 3P \quad \text{and} \quad Q_s = -20 + 6.5P$$

- a. Equilibrium price is \$_____ and equilibrium quantity is _____ units.
 - b. If price is \$8, then a _____ of _____ units occurs.
 - c. If price is \$12, then a _____ of _____ units occurs.
7. A new chemical cleaning solution is introduced to the market. Initially, demand is $Q_d = 1000 - 2P$ and supply is $Q_s = 100 + P$. Determine the equilibrium price and quantity. The government then decides that no more than 300 units of this product should be sold per period, and imposes a quota at that level. How does this quota affect the equilibrium price and quantity? Show the solution using a graph and calculate the numerical answer.
 8. If the demand for toy drums is described by the equation $Q_d = 300 - 5P$, and supply is $Q_s = 60 + 3P$, find the equilibrium price and quantity. How would your answer change if a decrease in consumer income shifted the demand curve to $Q_d = 220 - 5P$?
 9. Suppose the demand for onion flavored ice cream was described by the equation $Q_d = 20 - P$, and the supply was described by $Q_s = 40 + P$. What are the equilibrium price and quantity? Show your answer using a graph.
 10. In a competitive labor market, demand for workers is $Q_d = 9900 - 100W$, and supply is $Q_s = 2000 + 1900W$, where Q is the quantity of workers employed and W is the hourly wage. Suppose the government decides to impose a wage ceiling of \$3 per hour. What would the equilibrium in this labor market?