

PROBLEM SET 3 – Tutorial Week 5 (September 5–9)

Deadline: 11:59 p.m. two days before your tutorial. Please submit a PDF in groups of 2–3 within your tutorial group. On the first page, write your full names (as on the roster) in alphabetical order. Start each question on a new page. Name your PDF “PSet # – LastName LastName LastName,” e.g., “PSet 3 – Banerjee Duflo Kremer.” Points will be deducted for not adhering to the instructions. You only need to submit your answers to Section B.

Section A

1. Read the following article:
The New York Times. February 21, 2010. “Networks Wary of Apple’s Push to Cut Show Prices.”
<http://www.nytimes.com/2010/02/22/business/media/22itunes.html>
 - (a) What did Apple believe about the price elasticity of demand for downloaded TV shows on iTunes? Illustrate with a graph.
 - (b) What did the television networks believe about the price elasticity of demand for downloaded TV shows on iTunes? Illustrate with a graph.
2. Francesco consumes a pint of gelato each week. His friend, Lorenzo, consumes \$10 of gelato each week.
 - (a) What is Francesco’s price elasticity of demand?
 - (b) What is Lorenzo’s price elasticity of demand?
3. Read the following article:
The New York Times. March 14, 2020. “He Has 17,700 Bottles of Hand Sanitizer and Nowhere to Sell Them.”
<https://www.nytimes.com/2020/03/14/technology/coronavirus-purell-wipes-amazon-sellers.html>
 - (a) What is “price gouging”?
 - (b) What is “retail arbitrage”?
 - (c) What is the difference between “price gouging” and “retail arbitrage”?
4. The supply of and demand for amaranth are described by the following equations, where Q is in bushels, and P is in dollars per bushel:
$$\begin{array}{ll} \text{Supply:} & Q^S = 5P - 20 \\ \text{Demand:} & Q^D = 50 - 5P \end{array}$$
 - (a) Graph the market for amaranth. What is the equilibrium price and quantity?
 - (b) Calculate consumer surplus, producer surplus, and total surplus at the equilibrium.

5. In Florida, “January’s freezing temperatures weakened groves, adding to lingering impacts from hurricanes, causing citrus trees to drop fruit early while plant disease left behind smaller oranges.” (Source: <https://www.bloomberg.com/news/articles/2022-04-14/orange-crop-killer-and-frosts-strain-world-s-dwindling-juice-supply>)
 - (a) Use a graph to show what happens to consumer surplus in the market for oranges.
 - (b) Use a graph to show what happens to consumer surplus in the market for orange juice.

6. The government decides to reduce the use of petrol in order to reduce air pollution in the country. It imposes a \$1 tax on each gallon of petrol sold.
 - (a) Should the government impose this tax on producers or consumers? Draw a supply-and-demand graph if the tax is imposed on producers, and a separate supply-and-demand graph if the tax is imposed on consumers.
 - (b) Suppose the demand for petrol were price inelastic (relative to the supply of petrol). Is this tax effective in reducing the quantity of petrol consumed? What if the demand for petrol were price elastic (relative to the supply of petrol)? Draw supply-and-graphs to illustrate. Explain in words.
 - (c) Are consumers of petrol helped or hurt by this tax? Are workers in the oil industry helped or hurt by this tax? Explain.
 - (d) Summarize the key points emphasized in this question.

Section B

1. (a) China’s nouveau riche have developed a taste for art. What happens to the equilibrium price and the equilibrium quantity of van Gogh’s paintings? (Note: Vincent van Gogh (1853–1890) was a post-Impressionist artist.)
 - (b) There is technological improvement in the production of salt. What happens to the equilibrium price and the equilibrium quantity of salt?

2. Bernardo has decided to always spend a quarter of his income on gelato.

- (a) What is his price elasticity of demand for gelato?
- (b) What is his income elasticity of demand for gelato?

Suppose Bernardo decides to increase his spending on gelato to half of his income.

- (c) What happens to his demand curve for gelato?
- (d) What happens to his price elasticity of demand?
- (e) What happens to his income elasticity of demand?
- (f) Identify the concepts highlighted in this question. Summarize the steps you took to answer this question.

3. Read the following article:

The New York Times. May 20, 2020. "The Law of Supply and Demand Isn't Fair."

<https://www.nytimes.com/2020/05/20/business/supply-and-demand-isnt-fair.html>

- In the early months of the coronavirus crisis in 2020, empty shelves in supermarkets all over the world were a common sight. The supply-and-demand model predicts that prices should rise when there is an increase in demand. Why didn't supermarkets raise their prices?
 - What was the response of supermarkets to increased demand for certain goods?
 - Compare the response of supermarkets that refrained from raising prices to the response of individuals like Matt Colvin, who bought tens of thousands of bottles of hand sanitizer to resell at huge markups. Explain the difference in their responses.
 - Price is a rationing mechanism. Under what scenarios would you say that the ability to obtain a good should not be solely dependent on an individual's willingness and ability to pay for that good?
4. Read the excerpts from Tim Harford's *The Undercover Economist*, Chapter Ten. Agricultural output in China increased by 10 percent a year in the first half of the 1980s. Why?
5. A recent study found that the demand and supply schedules for toy airplanes are as follows:

Price (per toy airplane)	Quantity Demanded (toy airplanes per year)	Quantity Supplied (toy airplanes per year)
\$9	250	1,350
\$8	500	1,050
\$7	750	750
\$6	1,000	450
\$5	1,250	150

- What are the equilibrium price and quantity of toy airplanes?
- Manufacturers of toy airplanes persuade the government that the production of toy airplanes improves scientists' understanding of aerodynamics and is thus important for national security. The government decides to impose a price floor that is \$1 above the equilibrium price. What is the new market price? How many toy airplanes are sold?
- Irate NUS students march on Orchard Road and demand a reduction in the price of toy airplanes. The government decides to repeal the price floor and impose a price ceiling that is \$1 below the equilibrium price (in (a)). What is the new market price? How many toy airplanes are sold?
- Can you think of a different policy that would be preferred by the manufacturers of toy airplanes? By the irate NUS students?

6. Suppose the government introduces a subsidy of \$4 per umbrella.
 - (a) Draw a supply-and-demand graph if the subsidy is given to producers, and a separate supply-and-demand graph if the subsidy is given to consumers. Explain what happens in scenario.
 - (b) Suppose the demand for umbrellas is more price inelastic than the supply of umbrellas. Who enjoys a greater share of the subsidy incidence — consumers or producers?
 - (c) Do consumers gain or lose from this policy? Do producers gain or lose? Does the government gain or lose? Explain.
 - (d) Summarize the key points emphasized in this question.