

Economics 102  
Spring 2017  
Homework #2  
Due February 23, 2017

**Directions:**

- The homework will be collected in a box **before** the lecture.
- Please place **your name, TA name** and **section number** on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade.
- Late homework will not be accepted so make plans ahead of time.
- **Show your work.** Good luck!

**Please realize that you are essentially creating “your brand” when you submit this homework. Do you want your homework to convey that you are competent, careful and professional? Or, do you want to convey the image that you are careless, sloppy, and less than professional. For the rest of your life you will be creating your brand: please think about what you are saying about yourself when you do any work for someone else!**

**Part I: Production Possibility Frontier**

- 1) Four of your friends Felipe, Morgan, Amanda, and Ulysses decide to open a bakery together. Each hour Felipe can make 5 cakes or 24 doughnuts, Morgan can make 10 cakes or 12 doughnuts, Amanda can make 4 cakes or 16 doughnuts, and Ulysses can make 8 cakes or 20 doughnuts. All four friends have linear production possibility frontiers in these two goods.
  - a. Write down each friend’s opportunity cost of producing one doughnut in terms of cake. Write down each friend’s opportunity cost of producing one cake in terms of doughnuts.
  - b. Knowing that you are a bright economics student, your friends ask you for help finding their pastry production possibilities per hour. Draw their joint PPF based upon each individual working one hour, representing the total possible output for this bakery per hour, with doughnuts on the horizontal axis. Be sure to label all of the kink points, and label each of the line segments of this PPF with its respective slope.
  - c. Now suppose, due to conflicting views on the best cake flavor, your friends decide to split up and each start their own bakery. What is the range of trading price for doughnuts in terms of cakes for the four bakeries? Illustrate this and label any points at which certain bakeries switch from buying to selling doughnuts

## **Part II: Supply and Demand**

- 2) Consider the market for movie tickets. Given each of the following changes, specify whether the new equilibrium price and quantity is higher or lower than the initial equilibrium price and quantity. For each of the scenarios, suppose that the market starts in equilibrium. Drawing a graph for each of the scenarios will be helpful.
- Hockey tickets are a substitute for movie tickets. Suppose the price of hockey tickets decreases.
  - Many film companies have stopped providing movie theaters with 35mm film and only provide digital copies of movies. Suppose that it is now more costly for movie theaters to project the digital copies of movies.
  - Popcorn is a complement to movie tickets. Suppose the price of popcorn decreases. Also, suppose the events of part (b) also take place at the same time.
  - Suppose that several new and very popular movies are released in theaters. At the same time the cost that theaters have of printing and distributing tickets has declined.
- 3) Suppose that after you graduate college you become employed by a business that wants to make a change to a product. This change will make the product more costly to produce, but will increase the product's demand. For this problem, suppose that you work for the sole producer of winter coats in the area. Also, assume that both the demand for winter coats and the supply of winter coats are linear relationships. Your boss patents the brilliant idea of the electric winter coat, and is considering whether or not the company should switch from producing regular winter coats to producing electric winter coats instead. These electric winter coats cost \$50 more per coat to produce. You do some market research and conclude that switching from regular coats to electric coats will increase the demand for the firm's coats. You must now report back to your boss.
- Under what scenario will switching to producing the electric coats benefit both your firm and your customers? Draw this scenario on a supply and demand diagram and explain your reasoning.
  - Under what scenario will switching to producing the electric coats be detrimental to both your firm and your customers? Draw this scenario on a supply and demand diagram and explain your reasoning.

(Hint: Consider three scenarios here. One scenario where consumers are willing to increase the amount they are willing to pay for each coat by exactly \$50, another scenario where consumers are willing to pay an additional amount that is less than \$50 for each coat, and a third scenario where consumers are willing to pay an additional amount that is greater than \$50 for each coat.)

4) Market Supply and Demand:

- a. You are given the following information about the 10 buyers of raspberries in your area. The two equations given for each buyer's demand are equivalent, just written in different forms. What is the market demand for raspberries? Draw the market demand curve and label each kink point. Label each line segment on your graph with the equation describing it.

| <u>Buyer</u> | <u>Demand for Raspberries</u> | <u>Demand for Raspberries</u> |
|--------------|-------------------------------|-------------------------------|
| 1            | $p = 10 - 5q$                 | $q = 2 - (1/5)p$              |
| 2            | $p = 20 - (1/2)q$             | $q = 40 - 2p$                 |
| 3            | $p = 10 - q$                  | $q = 10 - p$                  |
| 4            | $p = 30 - (1/4)q$             | $q = 120 - 4p$                |
| 5            | $p = 30 - 5q$                 | $q = 6 - (1/5)p$              |
| 6            | $p = 20 - q$                  | $q = 20 - p$                  |
| 7            | $p = 10 - (1/5)q$             | $q = 50 - 5p$                 |
| 8            | $p = 20 - 2q$                 | $q = 10 - (1/2)p$             |
| 9            | $p = 30 - q$                  | $q = 30 - p$                  |
| 10           | $p = 10 - (1/3)q$             | $q = 30 - 3p$                 |

- b. You are given the following information about the 5 suppliers of raspberries in your area. The two equations given for the amount supplied by each seller are equivalent, just written in different forms. What is the market supply for raspberries? Draw the market supply curve and label each kink point. Label each line segment on your graph with the equation describing it.

| <u>Seller</u> | <u>Supply of Raspberries</u> | <u>Supply of Raspberries</u> |
|---------------|------------------------------|------------------------------|
| 1             | $p = q + 3$                  | $q = p - 3$                  |
| 2             | $p = (1/2)q + 3$             | $q = 2p - 6$                 |
| 3             | $p = 4q + 1$                 | $q = (1/4)p - (1/4)$         |
| 4             | $p = (1/5)q + 3$             | $q = 5p - 15$                |
| 5             | $p = 2q + 1$                 | $q = (1/2)p - (1/2)$         |

- c. With the market supply and demand curves that you found in parts (a) and (b) solve for the equilibrium market price and quantity.

### Part III: Measuring GDP

- 5) The following is information about all transactions that took place in the tiny country of Mendota in 2016.

| Item | Description   | Amount   |
|------|---|----------|
| A    | Consumer purchases of ice skates                                | \$12,000 |
| B    | Exports of ice skates   | \$1,700  |
| C    | Wages to figure skaters   | \$9,900  |
| D    | Transfer payments from the government to those who cannot skate | \$1,200  |
| E    | Interest income   | \$700    |
| F    | Government spending on cheese                                   | \$7,300  |
| G    | Profits of firms  | \$9,400  |
| H    | Investment by firms   | \$5,700  |
| I    | Rent paid to igloo owners                                       | \$3,000  |
| J    | Imports of fishing poles  | \$3,700  |

- a. Which of the above items would we include in GDP using the expenditure approach? Calculate the 2016 GDP of Mendota using the expenditure approach.
- b. Which of the above items would we include in GDP using the income/factor payments approach? Calculate the 2016 GDP of Mendota using the income approach.
- c. Suppose that in 2017 the above information used in your calculation of GDP under the expenditure approach is exactly the same, except for one change. Instead of purchasing ice skates from firms, some ice skate buyers decide to barter with other individuals for their skates. Now consumer purchases of ice skates equals \$6,000 while the market value of all the skates traded through bartering equals \$6,000. Using the expenditure approach, calculate the 2017 GDP for Mendota.