Economics 101

Spring 2020

Homework #2

Due 2/20/20

**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. **Please 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, 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!**

1. Answer each of the following questions by drawing a graph that represents the initial situation and the new situation. Label these graphs completely and carefully. Provide a verbal explanation as well.

a. Consider the market for thermal travel mugs that is initially in equilibrium. Suppose that metal, a key input into the production of these travel mugs, is now cheaper due to new trade policies that have been implemented. Given this information what do you predict will happen to the equilibrium price and quantity in the market for thermal travel mugs? Explain your answer fully and completely and use a graph to illustrate this answer.

b. Consider the market for plain yogurt that is initially in equilibrium. Suppose that a report finds that eating ice cream, a substitute for plain yogurt, is bad for one’s health. At the same time, the price of dairy workers rises due to a tightening labor market. What do you predict will happen to the equilibrium price and quantity in the market for plain yogurt? Explain your answer fully and completely and use a graph to illustrate this answer.

c. Consider the market for bicycles in Madison that is initially in equilibrium. Suppose that a new study is published showing that bicycling has the potential to significantly impact the environment in positive ways and that bicycling on a regular basis proves to have significant health benefits. Given this information what do you predict will happen to the equilibrium price and quantity in the market for bicycles in Madison? Explain your answer fully and completely and use a graph to illustrate this answer.

d. Suppose that there are two manufacturers of smartphones initially and that this market is in equilibrium. Then, suppose that two new firms enter this market while, at the same time, new technology for producing smartphones is discovered. This new technology decreases the cost of producing smartphones. What do you predict will happen to the equilibrium price and quantity in the market for smartphones given this information? Explain your answer fully and completely and use a graph to illustrate this answer.

e. Consider the market for bikini swimsuits that is initially in equilibrium. Suppose that there is an increase in the number of people of interested in wearing bikinis and, at the same time, while at the same time people’s incomes fall. Assume that bikinis are a normal good. Given this information what do you predict will happen to the equilibrium price and quantity in the market for bikini swimsuits? Explain your answer fully and completely and use a graph to illustrate this answer.

2. Consider the market for fountain pens. The market demand and supply curves are given by the following equations where Q is the quantity of fountain pens and P is the price per fountain pen:

Demand: Q = 200 – (1/2)P

Supply: Q = (15/8)P – (37.5)

a. Given the above information, find the equilibrium quantity of fountain pens and the equilibrium price for a fountain pen. Show your work.

b. Given the above information, find the value of consumer surplus (CS), producer surplus (PS), and total surplus (TS). Show your work.

c. Draw a well labeled graph of the market for fountain pens. In your graph indicate the equilibrium price and the equilibrium quantity. Also, identify the area that corresponds to CS and the area that corresponds to PS.

d. Suppose that the market supply curve changes to the following:

New Market Supply: P = 20 + (26/25)Q

Given this new market supply curve and holding everything else constant, fill in the following table with your prediction of what will happen to each of the items listed in the table. Then provide a verbal explanation for your predictions.

|  |  |
| --- | --- |
| Item | Prediction of direction of change relative to initial values that were calculated (predictions should be no change, increase or decrease) |
| New equilibrium price, Pe’ |  |
| New equilibrium quantity, Qe’ |  |
| New CS’ |  |
| New PS’ |  |
| New TS’ |  |

e. Calculate the values of Pe’, Qe’, CS’, PS’, and TS’. Show your work.

3. Suppose there are two consumers in the market for muffins and their individual demand curves are given by the following equations where P is the price per muffin and Q is the quantity of muffins:

Mark’s demand for muffins: P = 20 – 2Q

Beth’s demand for muffins: P = 30 – (1/2)Q

a. Draw two different graphs: in the first graph draw Mark’s demand for muffins and in the second graph draw Beth’s demand for muffins. Make sure you label all axes and all intercepts clearly.

b. In a third graph draw the market demand curve for muffins. Make sure you label this demand curve carefully and completely; if there is a “kink” point label the coordinates of this point.

c. Based on your graph in (b), write the equation(s) for the market demand curve. Provide a range of price for any demand curve equation you provide. When writing these equations, use the slope-intercept form and also retain fractions rather than decimals if necessary.

Suppose that Matt, a third consumer, enters this market and has the following demand for muffins:

Matt’s demand for muffins: P = 10 - Q

d. Draw a fourth graph that represents the market demand curve for muffins when the market includes Mark, Beth, and Matt. Label all intercepts, all axes, and all “kink” points clearly and carefully.

e. Based on your graph in (d), write the equation(s) for the market demand curve. Provide a range of prices for any demand curve equation you provide. When writing these equations, use the slope-intercept form and also retain fractions rather than decimals when necessary. Check that your answers are correct and that your math is accurate!!

4. Suppose that there are two firms that produce muffins and their individual firm supply curves are given as follows where P is the price per muffin and Q is the quantity of muffins:

Supply curve for Firm A: P = (4/25)Q

Supply curve for Firm B: P = (2/25)Q

HINT: In this problem you will find it helpful to retain your fractions as fractions. You will also find it helpful to use a calculator for some of the multiplication and division that is required. Do NOT despair-you can do this set of problems!

a. If there are just these two firms in the market, what is the market supply curve? Show how you found this answer.

b. Given the market demand curve you found in question 3e, and this new information about the firms that produce muffins, calculate the equilibrium price and quantity in the market for muffins.

c. Given your answer in (b), how many muffins will Mark consume? How many muffins will Beth consume? How many muffins will Matt consume? Show how you found your answer.

5. Suppose the market for walnuts is described by the following market demand and supply curves where P is the price per unit of walnuts and Q is the quantity of units of walnuts:

Demand: P = 500 – 2Q

Supply: P = 20 + 8Q

a. Suppose a price floor of $90 per unit of walnuts is implemented in the almond market. Describe the impact of this price floor on this market.

b. Suppose a price floor of $420 per unit of walnuts is implemented in the almond market. Describe the impact of this price floor on this market. Which side of the market is the “short” side of the market?

c. Given the price floor described in (b), calculate the value of consumer surplus (CS), producer surplus (PS), total surplus (TS), and deadweight loss (DWL). Show your work. Include a graph depicting this market, the price floor and the various areas mentioned.

6. Suppose the market for gasoline in Websterville, a small economy is described by the following two equations where P is measured in dollars per gallon and Q is measured in gallons per month:

Market demand for gasoline: P = 20 – (1/50)Q

Market supply of gasoline: P = (1/150)Q

a. Given this information, determine the equilibrium price and quantity in this market. Show your work.

b. Suppose that the government of Websterville decides that gasoline is too expensive and they decide there should be a price ceiling on gasoline. What must be true about this price ceiling in Websterville if it is to be effective? Explain your answer carefully and with complete sentences.

c. Suppose that the government of Websterville decides that too much gasoline is being consumed in Websterville and they decide to remedy the situation by imposing a price floor that results in 300 gallons of gasoline being consumed each month. Determine the price floor price that the government has imposed given this information. Explain how you got your answer.

7. Suppose that the market for wheat can be described by the following equations where P is the price per bushel and Q is the quantity of bushels:

Market Demand: P = 200 – (1/100)Q

Market Supply: P = 60 + (1/600)Q

a. Suppose that the government implements a price floor program in this market and sets the price floor at $85 per bushel. Describe the effect of this price floor on this market: where possible make numerical calculations of the impact. Assume that the government purchases any surplus that is produced in this market given this price floor. Will this price floor be effective?

b. Given the price floor described in (a), what is the direct cost to the government of this price floor? Assume that the government is willing to buy up any surplus in the market and store this surplus indefinitely. Show how you calculated this cost to the government.

c. Given the price floor described in (a), what is the amount that consumers expend in buying this good? Show how you calculated this cost to the consumers.

d. Given the information you have been given, draw a graph of this market clearly labeling all intercepts, axis, and intersection points. Also, include the price floor, the area that represents the direct cost to consumers of this price floor, and the area that represents the direct cost to the government of this price floor.

e. Suppose that you are told that the storage costs for the government are equal to $4 per bushel per year. What is the total annual cost of this program to the government including the cost of storage? Show how you computed your answer.

8. Suppose that you have the same market as in (7), but instead of a price floor the government implements a price guarantee of $90 per bushel.

a. Given this price guarantee, how many bushels of wheat will consumers purchase? What will the price per bushel be for the consumer given this price guarantee? Explain how you got your answers.

b. Given this price guarantee, how many bushels of wheat will the government purchase? Explain your answer.

c. What will the cost per bushel to the government of this price guarantee program? Explain your answer.

d. What will be the total cost to the government of this price guarantee program? Explain your answer.