Homework 2 Solutions Ross Summer Connection 2021 Due: Sunday August 8th @ 11:59pm

Question 1: Suppose you must buy course notes, and the only place that sells them is the campus bookstore. Which of the assumptions of a competitive market fails?

- a) Many buyers and sellers.
- b) All individuals are price takers.
- c) Homogenous good or service.
- d) Both a and b.

Question 2: Now suppose that the market for course notes is competitive, but that an electronic version is posted on canvas free of charge. How does the market for course notes change?

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- a) Demand increases.
- b) Demand decreases.
- c) Supply increases.
- d) Supply decreases.

Question 3: Now suppose instead that the suppliers of course notes have a new printer that is twice as fast. How does the market for course notes change?

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- a) Demand increases.
- b) Demand decreases.
- c) Supply increases.
- d) Supply decreases.

Question 4: Suppose that the marginal product of the first unit of labor is 5. Then the marginal product of the fifth unit of labor must be ______ for diminishing returns to hold.

- a) = 5.
- b) > 5.
- c) < 5.
- d) 0.

Question 5: The following is the market demand schedule in our class for a Diet Cola.

a) Using the demand schedule below, draw the demand curve for a Diet Cola.

The curve should be downward sloping with a vertical intercept at 2.

b) The price of a bottle of Diet Cola has increased from \$1.00 to \$1.75. How do we represent this on the demand curve?

A movement along the demand curve.

c) Over the course of the semester a number of the students in class find out they are diabetic. How will this affect the demand curve?

The demand for Diet Cola will increase as a result and thus the curve will shift to the right.

d) Many students work part-time jobs which sometimes give raises. As a result, quantity demanded at every price falls. This indicates that Diet Cola is what type of good?

Inferior good.

Y	Quantity 0 10		
Pri <mark>c</mark> e	Quantity		
2	0		
1.75	10		
1.50	20		
1.25	30		
1	40		
0.75	60		

Question 6: Consider the market for minivans. For each of the events listed here, identify which of the determinants of demand and supply are affected, and how each curve shifts, and what the final effect on market price and quantity is.

a) People decide to have more children.

Demand increases as a result of changes in consumer tastes. The demand curve will shift to the right and the price and quantity will increase.

b) A stille by steelworkers raises steel prices.

Supply falls as a result of a change in input prices. The supply curve will shift to the left. The equilibrium price will increase and the quantity will fall.

c) Engineers develop new automated machinery for the production of minivans.

Supply increases as a result of a change in production technology. The supply curve will shift to the right. The equilibrium price will fall and the quantity will increase.

d) The price of sports utility vehicles rises.

Demand increases as a result of a change in the price of a substitute good. The demand curve will shift to the right and the price and quantity will increase.

e) A stock-market crash lowers people's wealth.

Demand falls as a result of changes in consumer income. The demand curve will shift to the left and the price and quantity will decrease.

Question 7: Four students walk downtown on a sunny summer day. To get some relief from the heat, they stop at an ice cream parlor. Consider the willingness to pay for ice cream of each of the students in the table below. If the price per scoop is \$5, what is the total consumer surplus in this market? Show all of your steps and explain with words as well as math!

Quantity	April	Dyanne	Thomas	Luis	🔥 🖸=
	7 10	11	5	18	
2	9	0	4	14	5 + 2
3	8	0	3	11	
4	7	0	2	6	
5	6	0	1	3	
6	5	0	0	1	
7	4	0	0	0	
8	3	0	0	0	

For each person, we compute their quantity demanded at \$5, find the surplus for each unit, find their total surplus across all units, and then add up everyone's consumer surplus:

• April will consume $Q_B = 6$ units of the good, with individual surplus of

$$CS_B = (10-5) + (9-5) + (8-5) + (7-5) + (6-5) + (5-5) = 15$$

- Dyanne will consume $Q_D = 1$ unit with individual surplus $CS_D = 11 5 = 6$.
- Thomas will consume $Q_J = 1$ unit with individual surplus $CD_J = 5 5 = 0$.
- Luis will consume $Q_M = 4$ units with individual surplus $CS_M = 29$.

Thus, total consumer surplus will be $CS = CS_B + CS_D + CS_J + CS_M \neq 50$.

Question 8: Using a simple supply and demand model of a competitive high skilled labor market, illustrate the main empirical result from Cortes & Pan (2017). That is, using graphs and definitions of consumer and producer surplus, illustrate what happens to female labor supply when low skilled migrants enter the location of a particular high skilled labor market. How does welfare change?

There is an increase in female hours worked (in this particular market), which we can think of as a rightward shift in the labor supply curve, which slopes upward. Producer surplus represents our measure of the welfare of female workers (the producers here!) and comparing how it changes after this policy shows that welfare generally increases.



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Question 9 (Optional): Continuing from the last question, note that Cortes & Pan (2017) also find that the increased hours they are able to work (given the increased availability of childcare from low skilled immigrants) enables women to also <u>switch</u> into higher paying jobs and occupations. Illustrate, using words or math or whatever seems comfortable, how this "occupational migration" of women is similar to the results from Question 5 on Homework 1!

Improved access childcare enables women to (occupationally) migrate from high skilled jobs that do not require long hours (but pay less) to other high skilled jobs (or even occupations!) which require overtime but pay high wages. This is similar to migration, where occupations are instead countries and females (versus males) are instead migrants (versus natives). Mobility, either geographic or occupational, from low to high productivity "places" will generally increase output and welfare. The gains to closing these gaps are huge.

