

Homework assignment 1

Name (first and last) _____

Due at **7:30 am Pacific** on Monday, September 7th. Please upload a single .pdf file of your completed homework to the box.com folder (ECON 50, Fall 2020/Homework assignments). Name your file using the following naming convention: lastname_HW1.pdf. If you find you need extra space, please use extra sheets as necessary.

PLEASE SHOW WORK FOR FULL CREDIT AND FOR PARTIAL CREDIT WHERE APPROPRIATE.

1.

Suppose there are three possible airports that you could use for a flight to Houston. At the closest airport you find an airfare of \$400, the middle airport (the second closest to campus) has an airfare of \$325, and you would pay \$275 to fly from the farthest airport. Assume you want to take a taxi to the airport. The roundtrip cost to the close airport is \$20 and the (round)trip will take 15 minutes. The taxi fare to the second airport is \$30 and the (round)trip will take 30 minutes. The taxi fare to the farthest airport is \$60 and the (round)trip will take one hour. Assume your opportunity cost of time is \$50 per hour. Assume no other differences among flying from the three airports.

a.

What is the optimal airport for you? Provide detailed support for your answer (i.e., convince me that the airport you've chosen is superior to the two you haven't).

b.

Suppose the farthest airport closes down so now you have only two choices, the closest airport or the middle airport (assume this change does not change airfare or taxi prices). Calculate how high your opportunity cost would need to be for you to prefer the closest airport (i.e., at what opportunity cost does the close airport become optimal for you?).

c.

Now suppose instead that Uber enters your area and, as a result, the price of airport transportation falls by 50%. Given this change, what is the optimal airport for you? (assume all three airports are available). Again, provide detailed support for your answer.

2. (Chapter 3, Problem 7)

Suppose the total benefit and total cost to society of various levels of pollution reduction are as follows:

(1) Pollution reduction	(2) Total benefit	(3) Total cost	(4) Total net benefit	(5) Marginal benefit	(6) Marginal cost
0	0	0		--	--
1	20	9			
2	38	20			
3	54	33			
4	68	48			
5	80	65			
6	90	84			

a.

Complete column (4)

b.

Using optimization in levels, support the argument that if the U.S. EPA wants to maximize total net benefit, then it should require 3 units of pollution reduction.

c.

Complete columns (5) and (6), starting with the change from 0 to 1 unit of pollution reduction.

d.

Using the Principle of Optimization at the Margin, support the argument that if the U.S. EPA wants to maximize total net benefit, then it should require 3 units of pollution reduction.

3.

Milk is an input into producing cream cheese and flour is an input into producing bagels. Bagels and cream cheese are complements.

a.

We observe that both the equilibrium price of cream cheese and the equilibrium quantity of bagels have risen. Which of the following could be responsible for this pattern: a fall in the price of flour or a fall in the price of milk? Support your answer graphically.

b.

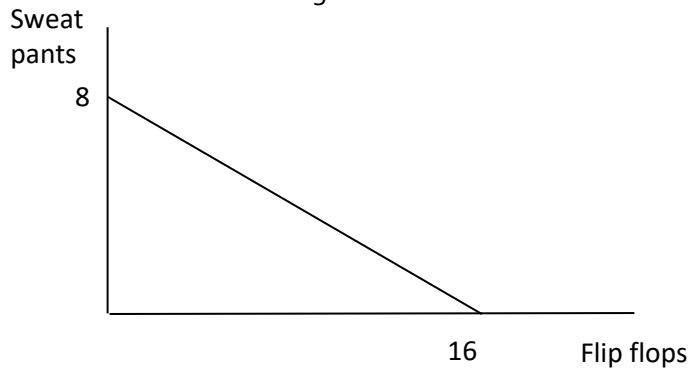
Suppose instead that the equilibrium price of cream cheese has risen and the equilibrium quantity of bagels has fallen. Which of the following could be responsible for this pattern: a rise in the price of flour or a rise in the price of milk? Support your answer graphically.

4.

The following table summarizes Marshall's preferences for two goods, sweat pants and flip flops (pairs). A pair of flip flops costs \$10.

Quantity	Sweat pants			Flip flops		
	Total benefits	Marginal benefits	Marginal benefits per dollar spent	Total benefits	Marginal benefits	Marginal benefits per dollar spent
0	0	--	--	0	--	--
1	40			35		
2	73			68		
3	103			90		
4	126			105		
5	146			115		
6	161			125		

Marshall's budget constraint is illustrated in the following graph:



a. Fill in the missing values in the table above. Round answers to nearest hundredth.

b.

Find Marshall's optimal consumption bundle of sweat pants and flip flops given his budget constraint and preferences. Support your answer.

c.

Suppose Marshall's budget decreases to \$100. Find Marshall's optimal consumption bundle of sweat pants and flip flops given his new budget constraint.

d.

Calculate Marshall's income elasticity of demand for sweat pants. Based on your calculation, are sweat pants a normal or inferior good for Marshall? Support your answer.