Discussion 6

Important Topics

- Utility Maximization

- Substitution and Income Effects

- Demand Curve Derivation

- Engel Curve (and its derivation)

Warm Up Problem

Exercise 1 *(Consumer Theory Without Graphs)* Bucky is a utility maximizer. Bucky has $80 to spend on Badger basketball tickets and economics textbooks. Given that the price of basketball tickets is $10 and economics textbooks is $10 in addition to the data in the table:

Quantity	TU tickets	MU tickets	MU/$	TU econ texts	MU econ texts	MU/$
1	25	25	2.5	40	40	4.0
2	45	20	2.0	70	30	3.0
3	60	15	1.5	95	25	2.5
4	70	10	1.0	115	20	2.0
5	75	5	0.5	130	15	1.5
6	77	2	0.2	140	10	1.0
7	76	-1	-0.1	145	5	0.5

(Maybe you're surprised to learn that Bucky LOVES economics)

(a) How many tickets and textbooks should Bucky purchase?
Bucky should buy 3 tickets and 5 textbooks

(b) What is Bucky's total utility from the purchase?
TU is 190

(c) What is Bucky's saturation point for basketball tickets?
Bucky is saturated at 6 tickets. We do not know his saturation point for econ textbooks

Main Problems

Exercise 2 Suppose 2Chainz has preferences between two chains (x) and (y), as represented in the graph below.
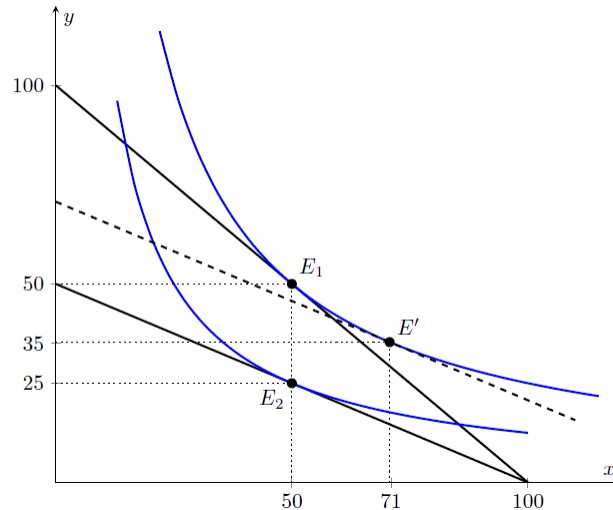
Point E_1 is 2Chainz's initial consumption bundle. Then, the price of chain 'y' increases, causing 2Chainz to consume at point E_2. Point E' is the intermediate point between these two consumption bundles that is used to decompose the price (total) effect into income and substitution effects(it is therefore sometimes called a decomposition basket).

(a) Will the substitution effect for chain 'x' be positive or negative? What about the income effect? Which effect is dominant? Explain.
Substitution is the movement along the original indifference curve from E_1 to E'. This is a positive effect. The income effect is the movement from E' to E_2. This is a negative effect. The combined effects means 2Chainz consumes the same number of 'x' chains, so neither is dominant.

(b) Will the substitution effect for chain 'y' be positive or negative? What about the income effect? Which effect is dominant? Explain.
Using the same logic as in (a), except now for chain 'y', we see that both effects are negative. The substitution effect is larger than the income effect.

(c) Compute the magnitude of these effects by completing the table below.

|	Substitution effect	Income effect	Price (total) effect
Pointwise	E_1 to E'	E' to E_2	E_1 to E_2
Chain 'x'	$71 - 50 = 21$	$50 - 72 = -21$	0
Chain 'y'	$35 - 50 = -15$	$25 - 35 = -10$	-25

(d) Assuming a linear demand curve for chain 'y', what will this demand curve look like?

The demand curve for y will be downward sloping.

(e) For 2Chainz is chain 'x' a normal or inferior good? What about chain 'y'? Justify your answer.
Both goods are normal because the income effects are negative when income is reduced (shift of budget constraint towards the origin).

Exercise 3 Professor Hansen has recently taken a liking to early 2000s hip hop music. She has preferences for Xzibit albums (x), and Young Jeezy albums (y), which are represented in the graph below. Use it to answer the following questions.
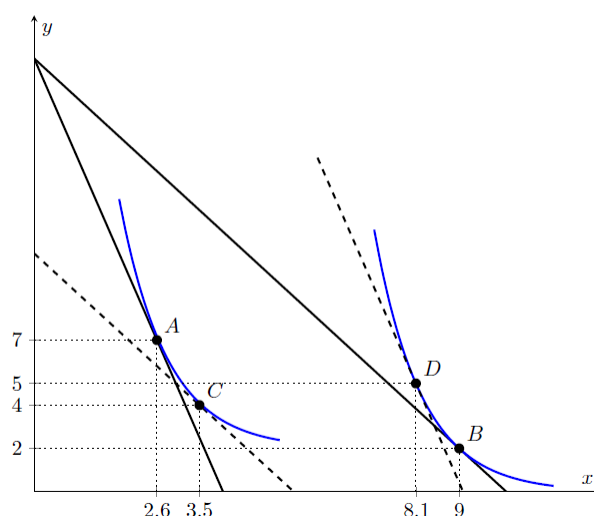
(a) Are Xzibit albums (x) a normal or inferior good for Prof. Hansen? What about Young Jeezy albums (y)? Explain.
For this we want to look at the *parallel shifts* of the budget constraint - i.e. what happens between points A and D, or points C and B. Going from A to D, would be the income effect as a result of a price decrease, and going from B to C would be the income effect resulting from a price increase. Whichever case we choose to look at the income effect for Young Jeezy albums (y) is negative, and the income effect for Xzibit albums (x) is positive.

(b) Suppose Prof. Hansen is initially consuming at point A. Then the price of Xzibit albums (x) decreases, causing her to consume at point B. To determine income and substitution effects, which intermediate point should be used to yield the correct result? C or D? Are both ok? (Hint: old utility, new prices.)
The substitution effect will be from A to C. The income effect will be from C to B. Both points are NOT ok. We start by moving along the original utility, and then do the parallel shift.

(c) Suppose Prof. Hansen is initially consuming at point B. Then the price of Xzibit albums (x) increases, causing her to consume at point A. To determine income

and substitution effects in this case, which intermediate point should be used to yield the correct result? C or D? Are both ok? (Hint: old utility, new prices.)

The substitution effect will be from point B to D. The income effect will be from point D to A. Again both points are not ok, we need to follow this particular order.