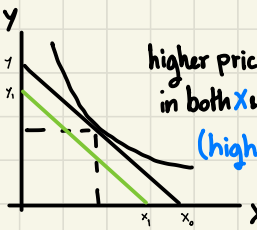
H.W. due 27 OCT 2020

#1 If the price Px and Py increase 10% at the same time, with income Remaining unchanged, show that this is equivalent to a reduction in income.

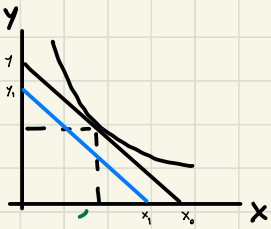
(I): P_x and P_y increased 10%.



higher price: less $\Delta x = x_1 - x_0 < 0$: less income
in both X & Y less $\Delta y = y_1 - x_0 < 0$
(higher P, less Q) (less income, less Q)

Since the price/unit of both production has increased. The maximum amount of X and Y that the consumer are able to consume is now reduced equally 10% from the old amount if income remains the same, due to the Laws of Demand.

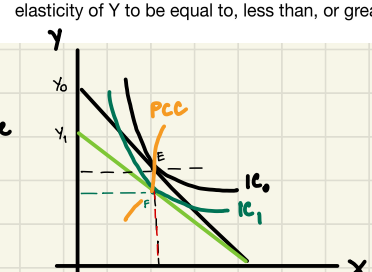
(II) Income Reduction



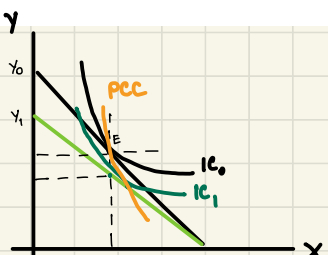
Compare to the reduction in income, if the consumer receive income less than before 10% and the price/unit of X & Y remain the same, the maximum bundle, which corourer is able to buy, is reduced by 10% due to the limited money.

#2 Demonstrate how PCC with varying price Py, (Px and Income are fixed) can give us the price elasticity of Y to be equal to, less than, or greater than 1 in absolute value

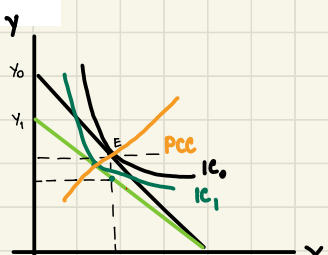
(I) P_y increase



$|\eta_y|$ will be equal to 1
D_y is unit elastic

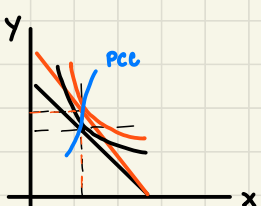


$|\eta_y|$ will be < 1
D_y is inelastic

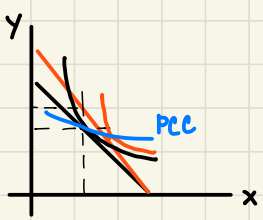


$|\eta_y|$ will be > 1
D_y is elastic

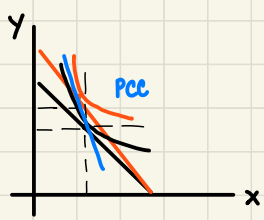
(II) P_y decrease



$|\eta_y|$ will be equal to 1
D_y is unit elastic



$|\eta_y|$ will be < 1
D_y is inelastic



$|\eta_y|$ will be > 1
D_y is elastic

7. A college student has two options for meals: eating at the dining hall for $6 per meal, or eating a Cup O' Soup for $1.50 per meal. Her weekly food budget is $60.

   a. Draw the budget constraint showing the trade-off between dining-hall meals and Cups O' Soup. Assuming that she spends equal amounts on both goods, draw an indifference curve showing the optimum choice. Label the optimum as point A.

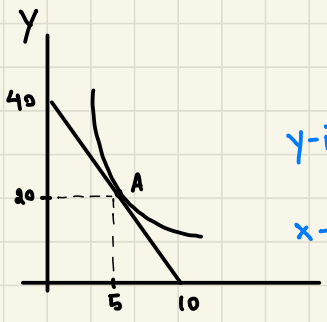
   b. Suppose the price of a Cup O' Soup now rises to $2. Using your diagram from part (a), show the consequences of this change in price. Assume that our student now spends only 30 percent of her income on dining-hall meals. Label the new optimum as point B.

   c. What happened to the quantity of Cups O' Soup consumed as a result of this price change? What does this result say about the income and substitution effects? Explain.

   d. Use points A and B to draw a demand curve for Cup O' Soup. What is this type of good called?

Assuming Y represent the quantity consumed of Cup O' Soup.
X represent the quantity consumed of Dining Hall.

a.)



$6X + 1.5Y = 60$

Find X and Y-intercept

y-intercept $6X + 1.5(0) = 60$

$X = 10$

x-intercept $6(0) + 1.5Y = 60$

$Y = 40$

Optimum choice: (A)

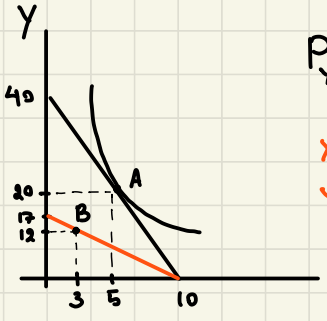
$6X = \frac{60}{2}$

$X = 5$

$1.5Y = \frac{60}{2}$

$Y = 20$

b.)



$P_y = 1.5 \longrightarrow P_y = 3.5$

$6X + 3.5Y = 60$

x-intercept $Y = \frac{60}{3.5} \approx 17.14$

y-intercept $X = 10$

Optimum B;

- spend 30% on Dining Hall

$P_X X = \frac{30}{100}(60) = 18$

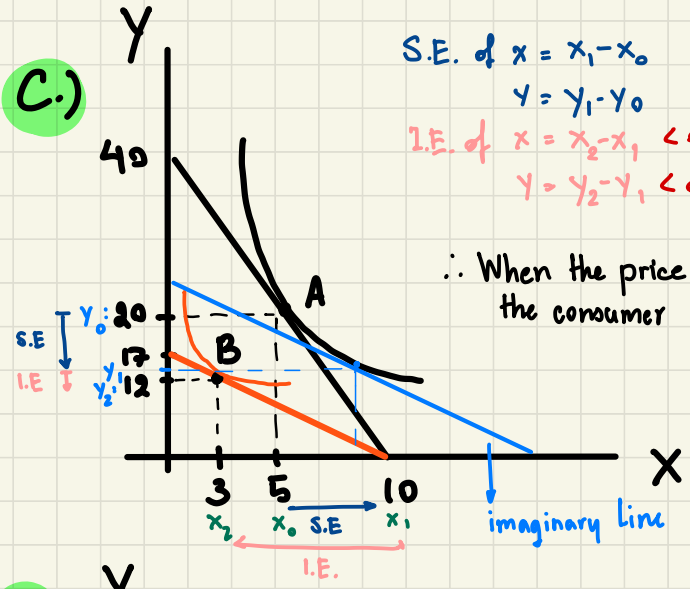
$6X = 18$

$X = 3$

$6(3) + 3.5Y = 60$

$Y = 12$

C.)



S.E. of $x = x_1 - x_0$

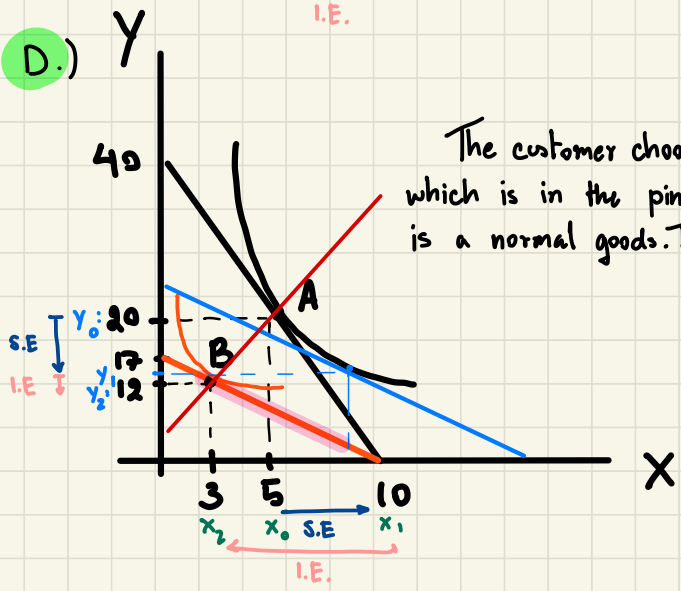
$y = y_1 - y_0$

I.E. of $x = x_2 - x_1 < 0$

$y = y_2 - y_1 < 0$

∴ When the price of Cup O'soup increase the consumer consumes less X and Y.

D.)



The customer choose to consume at point B which is in the pink area. Anywhere in pink area is a normal goods. Thus it is called "Normal good"