#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.

#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

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.

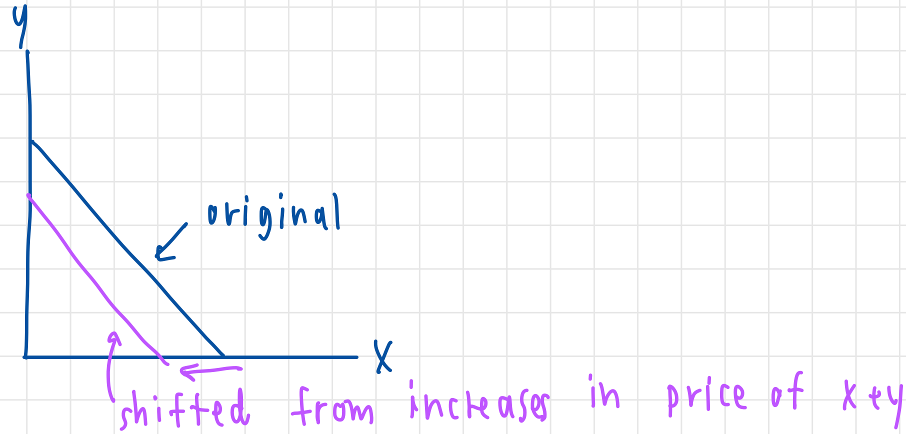
   a. Draw the budget constraint showing the trade-off between dining-hall meals and Cups O' Soup. Assuming that she spends equal amounts on both goods, draw an indifference curve showing the optimum choice. Label the optimum as point A.

   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.

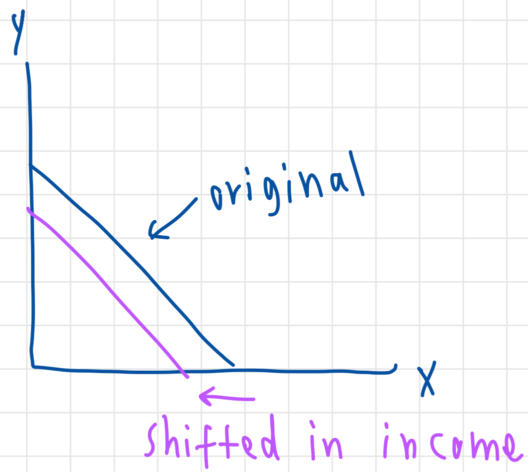
   c. What happened to the quantity of Cups O' Soup consumed as a result of this price change? What does this result say about the income and substitution effects? Explain.

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

1



• when px and py increase 10%, we will able to buy x+y less with same income.

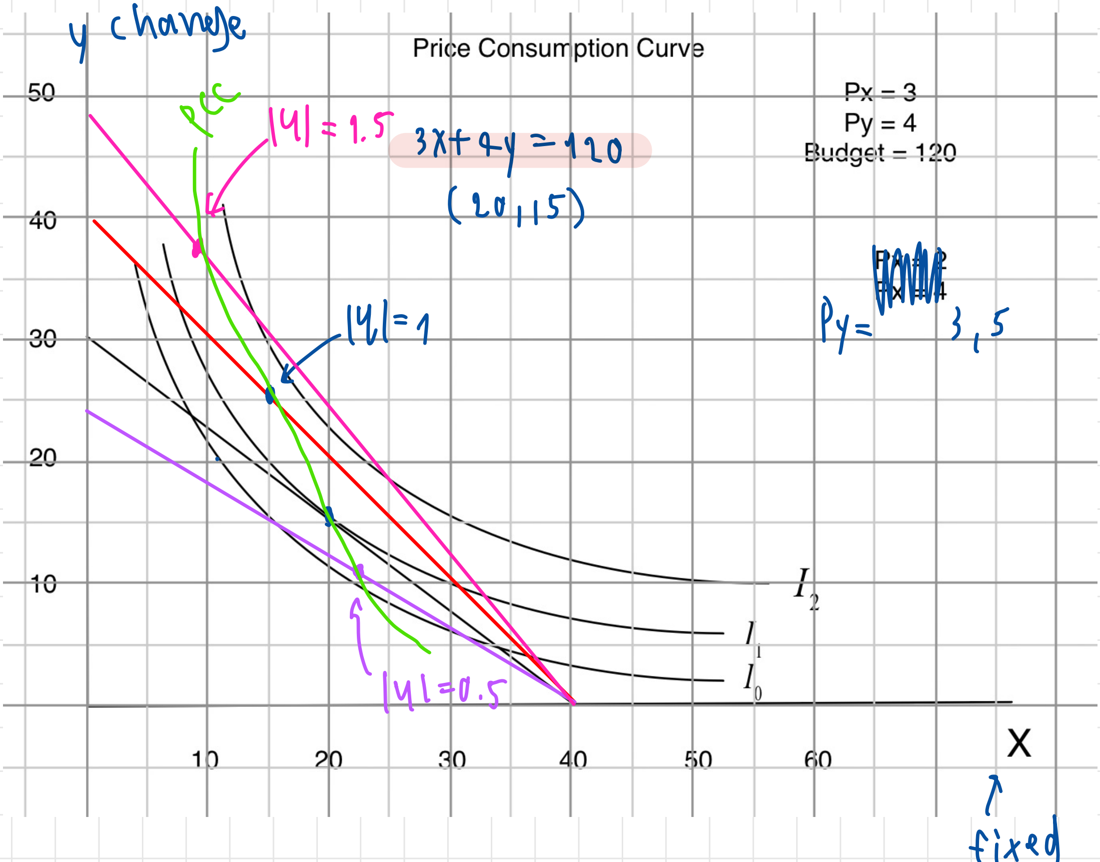


• When the income is decreased, we can buy less x+y.

∴ increase in price of x+y is the same as decrease in income. #

2

y change



① $3x + 3y = 120 \rightarrow (40, 40)$

$$\frac{P_2 - P_1}{(P_2 + P_1)/2} = \frac{3-4}{(3+4)/2} = \frac{-1}{3.5} = -\frac{2}{7}$$

if $|\eta| = 1$

so, $$\frac{Q_2 - Q_1}{(Q_2 + Q_1)/2} = \frac{Q_2 - 20}{(Q_2 + 20)/2} = -\frac{2}{7}$$

$$Q_2 = 15$$

② $3x + 5y = 120 \rightarrow (40, 24)$

$$\frac{P_3 - P_1}{(P_3 + P_1)/2} = \frac{5-4}{(5+4)/2} = \frac{1}{4.5} = \frac{2}{9}$$

if $|\eta| = 0.5$

$$\therefore 0.5 = \frac{\%\,\Delta Q}{2/9} \rightarrow \%\,\Delta Q = \frac{1}{9}$$

So, $$\frac{Q_3 - Q_1}{(Q_3 + Q_1)/2} = \frac{Q_3 - 20}{(Q_3 + 20)/2} = \frac{1}{9}$$

$$Q_3 \approx 22.35$$

③ $3x + 2.5y = 120 \rightarrow (40, 48)$

$$\frac{P_4 - P_1}{(P_4 + P_1)/2} = \frac{2.5-4}{(2.5+4)/2} = \frac{-1.5}{3.25} = -\frac{6}{13}$$

if $|\eta| = 1.5$

$$\therefore 1.5 = \frac{\%\,\Delta Q}{-6/13} \rightarrow \%\,\Delta Q = -\frac{9}{13}$$

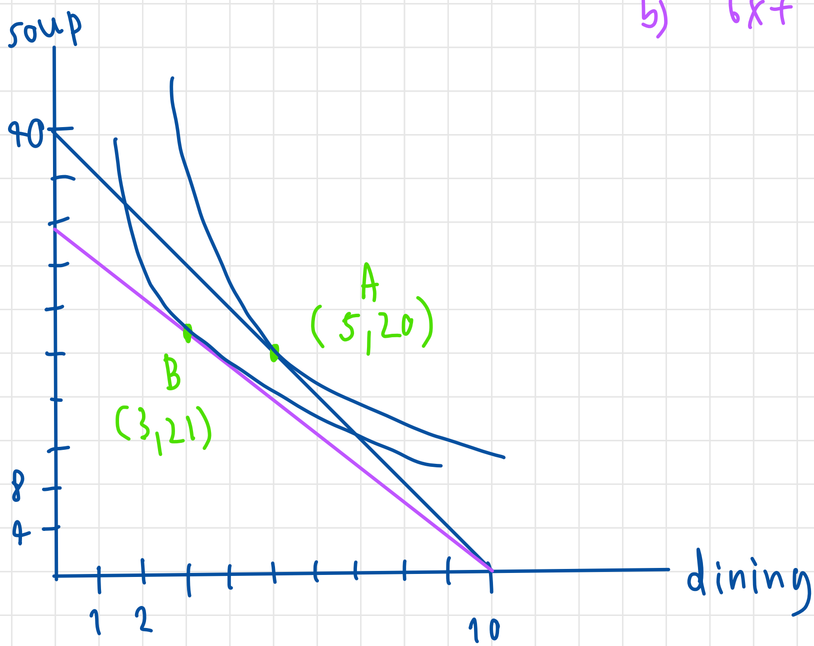
So, $$\frac{Q_4 - Q_1}{(Q_4 + Q_1)/2} = \frac{Q_4 - 20}{(Q_4 + 20)/2} = -\frac{9}{13}$$

$$Q_4 \approx 9.71$$

7

$6x + 1.5y = 60$

b) $6x + 2y = 60$



b) spend 30% of \$60 on dining-hall meal

= spend \$18 = 3 unit

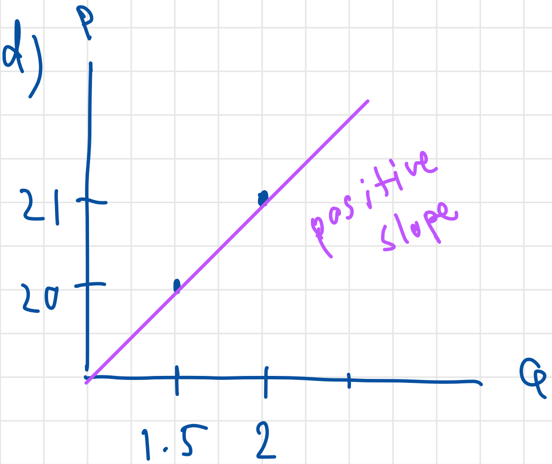
c) He consumes more of soup and less dining-hall meal.

The income doesn't change so it is not related

It is the substitution effect because price of soup is higher. It is obviously seen that soup is 'Giffen good' because with higher price, he consumes more, which contrast from a Law of demand.

After an increase price of soup, he has to reduce 3 soup for 1 dining-meal which is less that at first (4).

d)



'Giffen good'