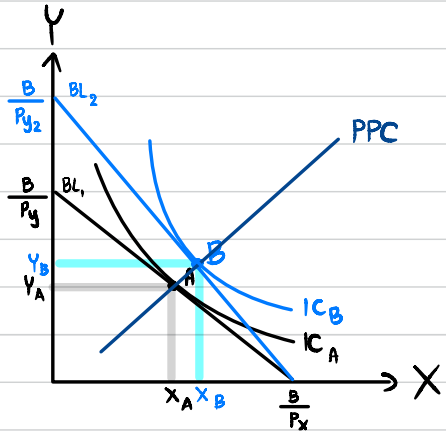
#1 Demonstrate how PCC with varying price Py, (Px and Income are fixed) can give us the price elasticity of Y to be equal to, less than, or greater than 1 in absolute value



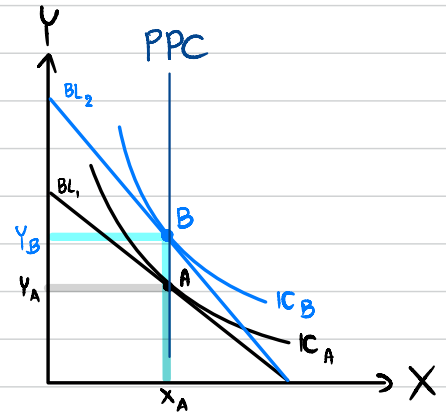

★ Original equilibrium point at A (optimise utility) where customer consume $Y = Y_A$ & $X = X_A$ and represented indifferent curve as $IC_A$

★ Assuming $\eta_I^y < 1$

★ $P_y \downarrow$ → purchasing power of Y ↑
→ purchasing power of X remain the same
so budget line rotate from $BL_1$ to $BL_2$

★ $P_y \downarrow$ by 1% so quantity of Y will < 1 %, so $Q_X \uparrow$ which can be represented on point B $(X_B, Y_B)$ and having same max utility along $IC_B$

★ PPC is positive slope when $\eta_I^y < 1$



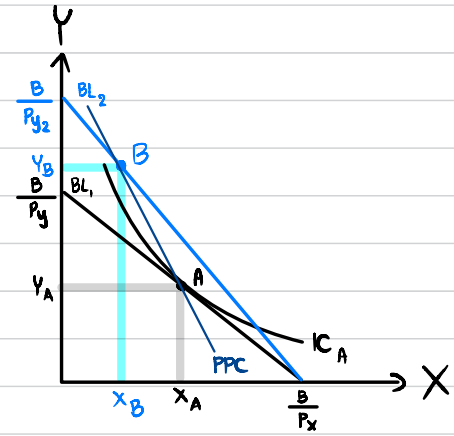

★ Original equilibrium point at A (optimise utility) where customer consume $Y = Y_A$ & $X = X_A$ and represented indifferent curve as $IC_A$

★ Assuming $\eta_I^y = 1$

★ $P_y \downarrow$ → purchasing power of Y ↑
→ purchasing power of X remain the same
so budget line rotate from $BL_1$ to $BL_2$

★ $P_y \downarrow$ by 1% so $Q_y$ will = 1 %, so $Q_X$ unchange which can be represented on point B $(X_A, Y_B)$ and having same max utility along $IC_B$

★ PPC is vertical line when $\eta_I^y = 1$




★ Original equilibrium point at A (optimise utility) where customer consume $Y = Y_A$ & $X = X_A$ and represented indifferent curve as $IC_A$

★ Assuming $\eta_I^y > 1$

★ $P_y \downarrow$ → purchasing power of Y ↑
→ purchasing power of X remain the same
so budget line rotate from $BL_1$ to $BL_2$

★ $P_y \downarrow$ by 1% so quantity of Y will > 1 %, so $Q_X \downarrow$ which can be represented on point B $(X_B, Y_B)$ and having same max utility along $IC_B$

★ PPC is negative slope when $\eta_I^y > 1$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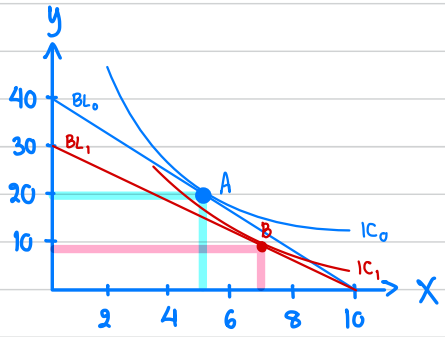
7. A college student has two options for meals: eating at the dining hall for $6 per meal, or eating a Cup O' Soup for $1.50 per meal. Her weekly food budget is $60.

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.




☆ meals & soup : substitute good
↳ $60 = 6X + 1.5y$ $p_x x + p_y y = B$

☆ intercept (max units):
- meals (assume as x) 60 $ : $\frac{60}{6}$ = 10 units
- soup (assume as y) 60 $ : $\frac{60}{1.5}$ = 40 units

☆ spend equal amount on both goods (max utility)
- meals (assume as x) 30 $ : $\frac{30}{6}$ = 5 units
- soup (assume as y) 30 $ : $\frac{30}{1.5}$ = 20 units

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.

→ $P_y$↑ $Q_y$↓

☆ max amout can buy with new price of soup → $\frac{60}{2}$ = 30 units

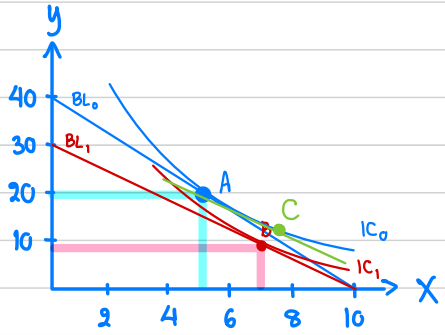
☆ spends only 30 % of her income on meals → $\frac{30}{100} \times 60 = 18$ $ } $\frac{18}{2}$ = 9 units

☆ note : in order to maximise utility, she must spends all budget :

$B = (P_x)(X) + (P_y)(Y)$
$60 = (6)(X) + (2)(9)$
$\frac{60-18}{6} = X$
$7 = X$

∴ new optimum : X = 7 & y = 9

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.




substitution effects (A → C)
$P_y$↑ → $Q_y$↓ → $Q_x$↑ to remain utility
∴ $\Delta X > 0$
$\Delta y < 0$

income effects (C → B)
$P_y$↑ → real income $(\frac{B}{P_y})$ ↓ → $Q_y$↓ & $Q_x$↓
∴ $\Delta X < 0$
$\Delta y < 0$

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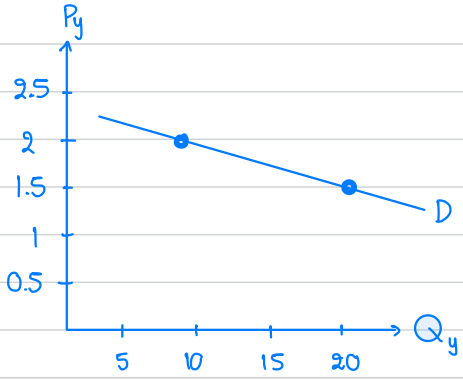
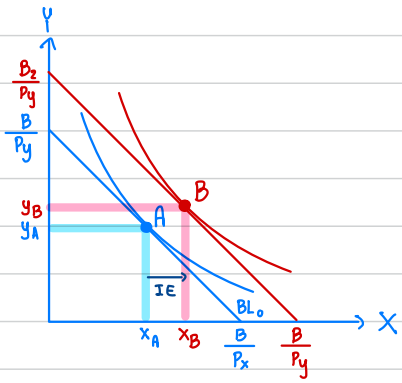
d. Use points A and B to draw a demand curve for Cup O' Soup. What is this type of good called?




∴ Cup O' Soup is normal good

as when price increase, quantity increase

11. Economist George Stigler once wrote that, according to consumer theory, "if consumers do not buy less of a commodity when their incomes rise, they will surely buy less when the price of the commodity rises." Explain this statement using the concepts of income and substitution effects.




★ Income Effect

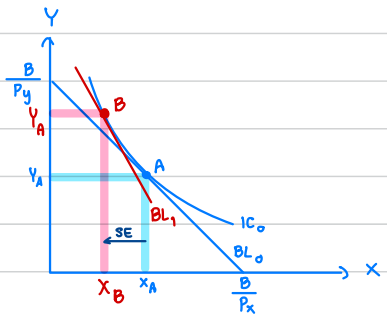
when consumers have more income, it means that they have more purchasing power

★ If income ↑ · budget ↑ · slope of budget balance stay the same but it will parallel shift outward as customers have ↑ purchasing power from $BL_0$ to $BL_1$ in order to maximise their utility.

∴ $I\uparrow \rightarrow \left(\frac{B}{P_x}\right)$ & $\left(\frac{B}{P_y}\right)\uparrow \rightarrow Q_x\uparrow$ & $Q_y\uparrow$

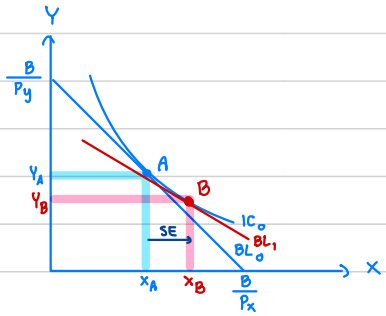
★ Substitution Effect

When the price of x or y increases, customer will buy less of product. However, they will buy more of other goods in order to remain the same utility. In this case, there will be "Imaginary budget line" occur as substitution bundle doesn't exist as it's located above the real budget line




$P_x$ increases

$P_x\uparrow \rightarrow x\downarrow \rightarrow$ sub by $Y\uparrow : \bar{U}$




$P_y$ increases

$P_y\uparrow \rightarrow Q_y\downarrow \rightarrow$ sub by $Q_x$ ; $\bar{U}$

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∴ When price of x or Y increases, customer will buy less of that product. Instead, they will buy other products to remain their exist utility.