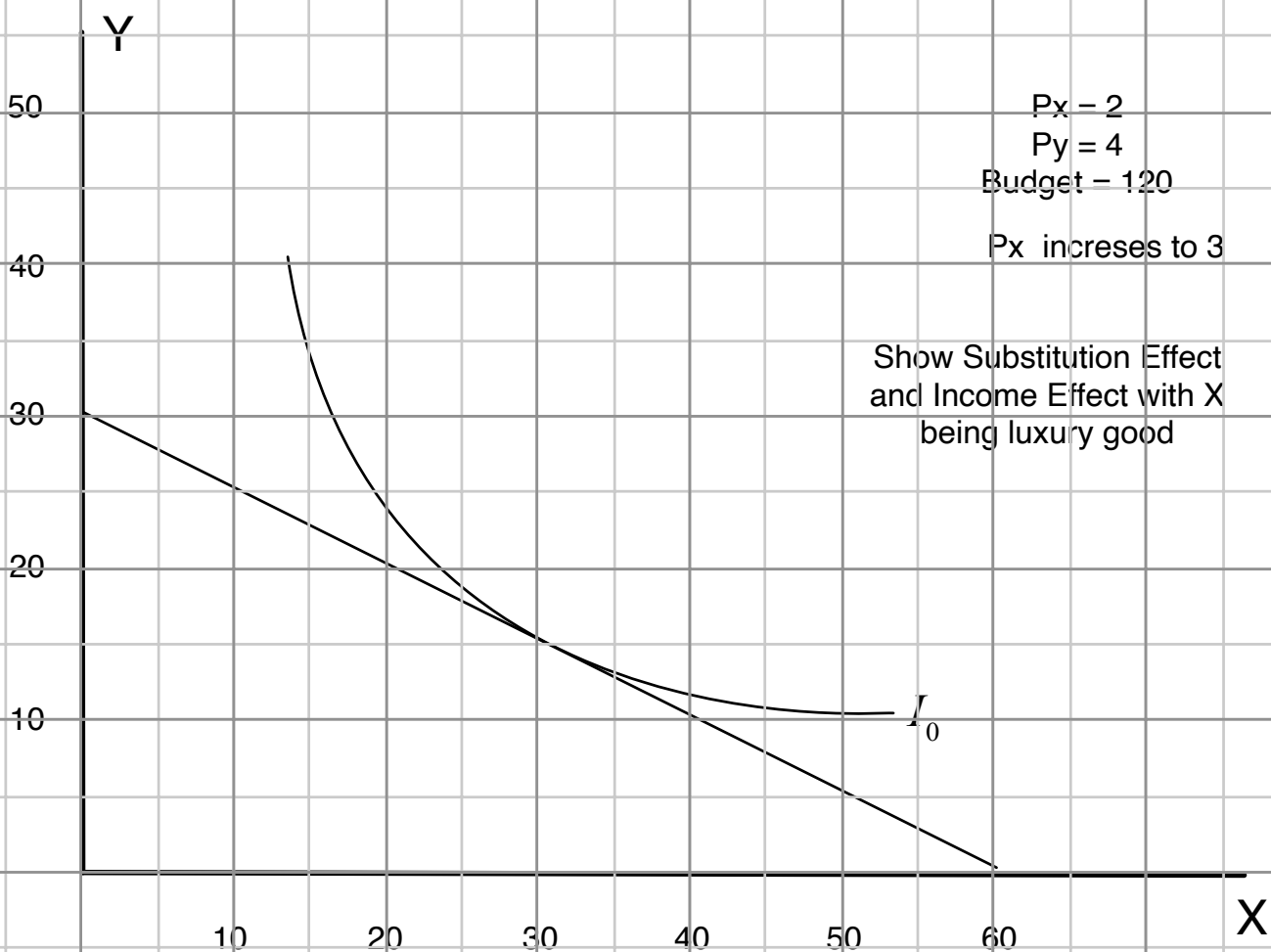
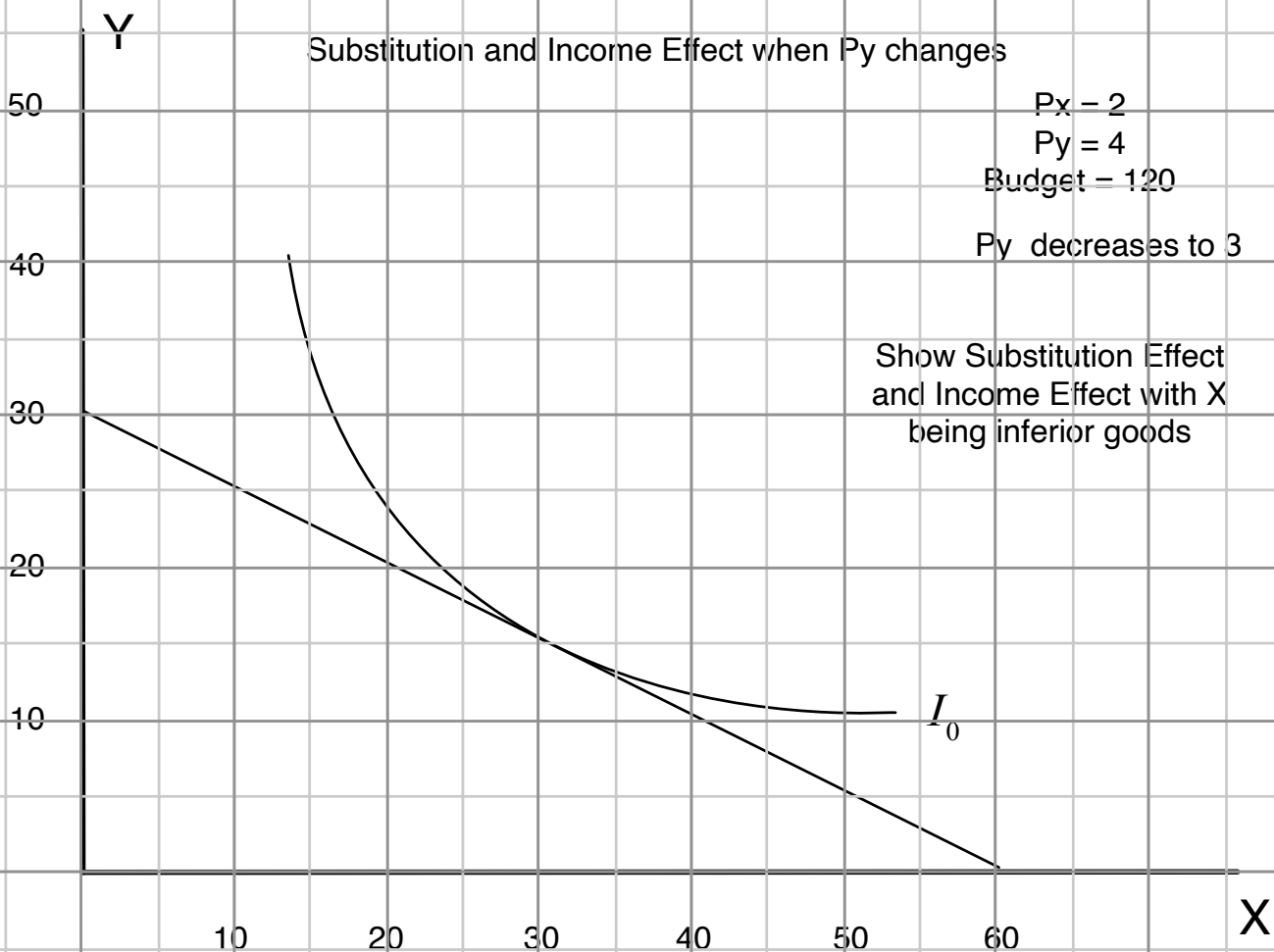
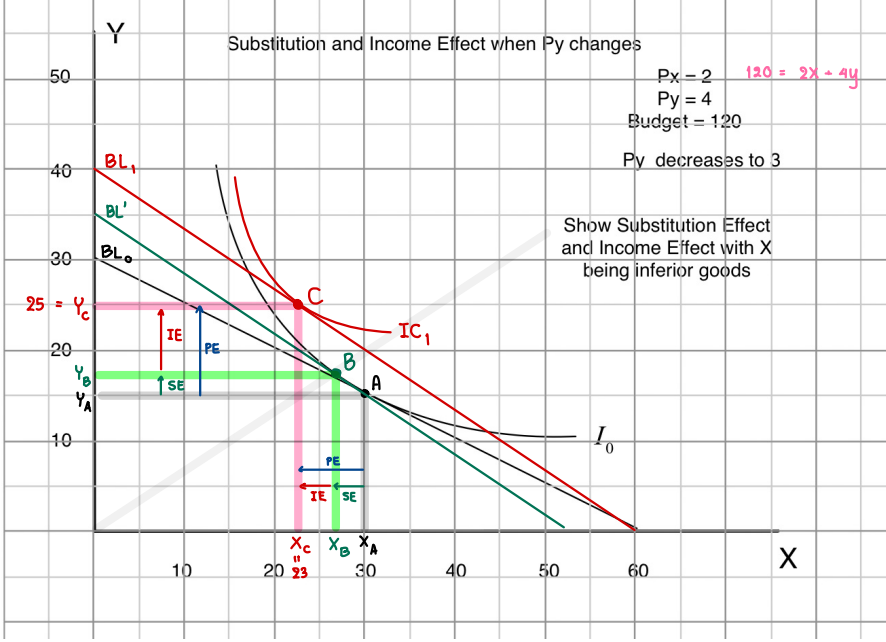




HW#9 Due April 22, 2021



note:

As X is inferior so Y must be normal good as when income increase, customer will consume less X so Y must be normal good in order to keep the optimum utility.

★ Originally, this consumer consume at point A where is having an optimum utility and spending all of budget effectively, which consuming

$x = 30$ units and $y = 15$ units

→ max Q_x that can consume : $\frac{120}{2} = 60$ units

→ max Q_y that can consume : $\frac{120}{4} = 30$ units

★ Substitution Effect (A to B)

As price of Y decrease, consumer will consume more Y (from Y_A to Y_B); normal good and have to sub by decreasing amount of X from X_A to X_B in order to keep the same utility; change from point A to B which create imaginary budget line as BL'

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

★ Income Effect (B to C)

As P_y decreases to 3, therefore this consumer has more ability to buy product Y; having more real income [$\frac{P}{P_y} \uparrow$] so consumer will consume $Q_x \downarrow$; inferior good

$Q_y \uparrow$; normal good (law of D)

→ max Q_y is $\frac{120}{3} = 40$ units

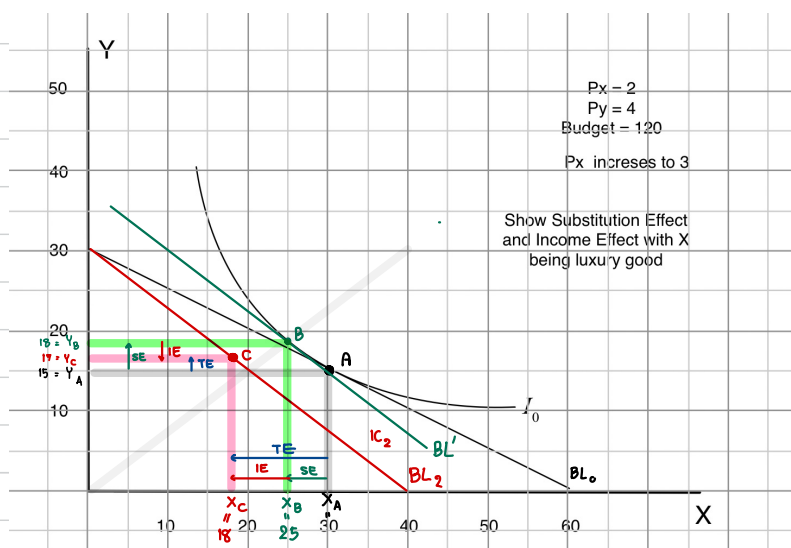
→ max Q_x remain the same as price does not change so the budget line rotate from BL_0 to BL_1

∴ IE : $P_y \downarrow \rightarrow$ real income $\uparrow \rightarrow Q_x \downarrow$ & $Q_y \uparrow$

★ Total Effect (A to C)

note: TE = S.E. + I.E. → both S.E. & I.E. move the same direction for good Y

total effect of $P_y \downarrow \rightarrow Q_y \uparrow$; ordinary demand



note:

As X is luxury good

it means that if $P_x \uparrow \rightarrow Q_x \downarrow$ ($P_x \uparrow 1\% \rightarrow Q_x \downarrow > 1\%$)

$P_x \downarrow \rightarrow Q_x \uparrow$ ($P_x \downarrow 1\% \rightarrow Q_x \downarrow < 1\%$)

★ Originally, this consumer consume at point A where is having an optimum utility and spending all of budget effectively, which consuming

$x = 30$ units and $y = 15$ units

$\rightarrow$ max Q_x that can consume : $\frac{120}{2} = 60$ units

$\rightarrow$ max Q_y that can consume : $\frac{120}{4} = 30$ units

★ Substitution Effect (A to B)

As price of X increase, consumer will consume less of X a lot (from X_A to X_B); luxury good and have to sub by increasing amount of Y from Y_A to Y_B in order to keep the same utility; change from point A to B which create imaginary budget line as BL'

$\therefore$ SE : $P_x \uparrow \rightarrow Q_x \downarrow$ sub by $Q_y \uparrow$; $\bar{u}$

note. $P_x \uparrow$ by 1%, Q_x will $\downarrow > 1\%$

★ Income Effect (B to C)

As P_x increase to 3, therefore this consumer has less ability to buy product X; having lower real income

$[\frac{P}{P_x} \downarrow]$ so consumer will consume $Q_x \downarrow$; luxury good

$\rightarrow$ max Q_y remain the same as price does not change

$\rightarrow$ max Q_x decrease from 60 to $\frac{120}{3} = 40$ units

so the budget line rotate from BL_0 to BL_1

and create new utility at IC_2

$\therefore$ IE : $P_x \uparrow \rightarrow$ real income $\downarrow \rightarrow Q_x \downarrow$

★ Total Effect (A to C)

note: TE = S.E. + I.E.

total effect of $P_x \uparrow$

S.E $\rightarrow Q_x \downarrow$: < 0

$Q_y \uparrow$: > 0

I.E $\rightarrow Q_x \downarrow$: < 0

both S.E. & I.E. move the same direction for good X

$\therefore$ when $P_x \uparrow \rightarrow Q_x \downarrow$; ordinary demand