

Substitution and Income Effects.

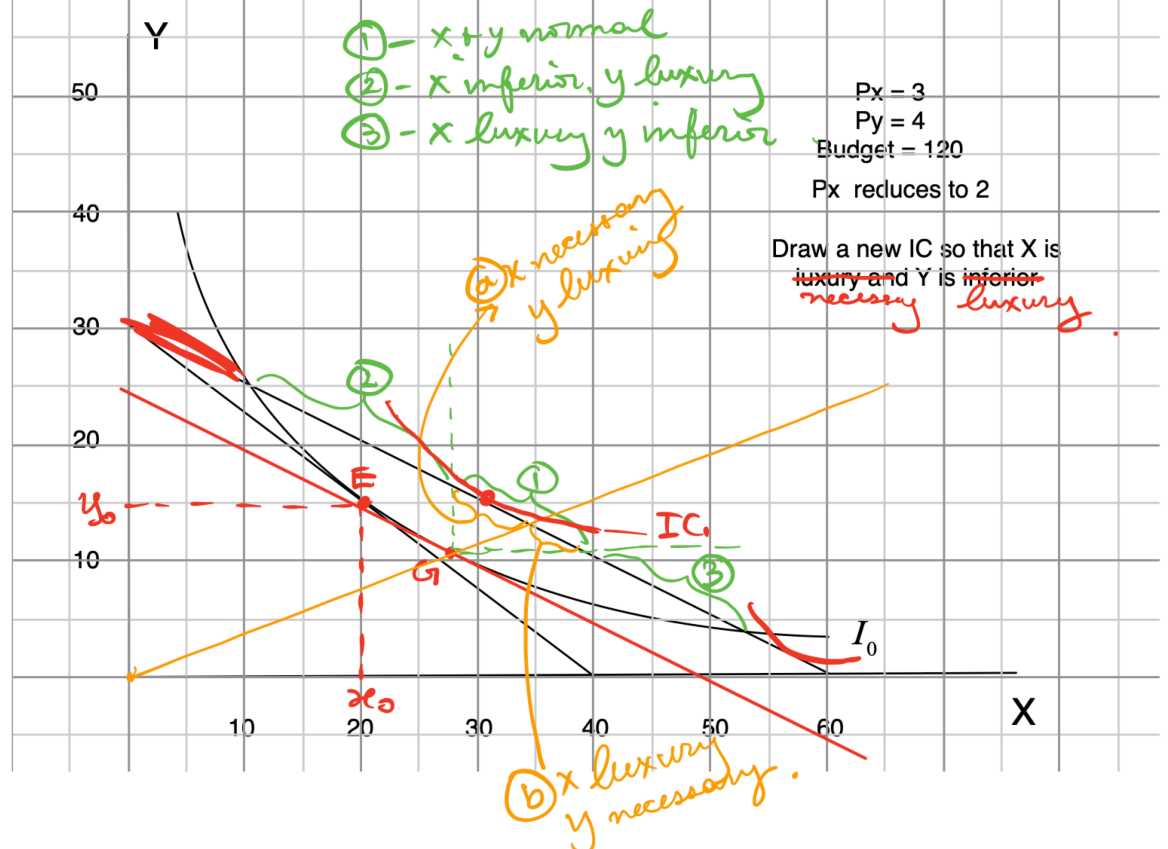
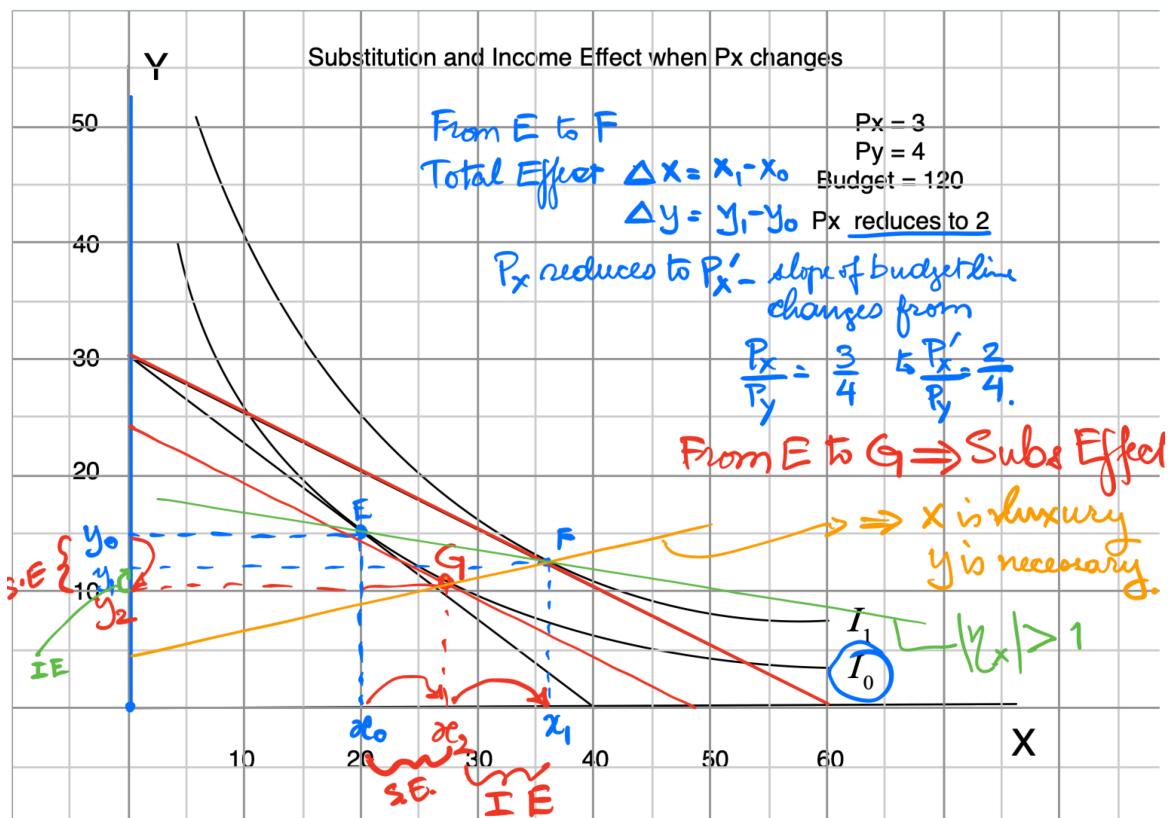
Given fixed income I and P_Y , if P_X is lower the consumer always gain more satisfaction - by adjusting the consumption of both $X + Y$.

This adjustment can be broken down into 2 parts.

1) Substitution Effect - due to the change in "relative price".

2) Income Effect - due to the change in "Real Income"
- consumer feels richer (or poor) when P_X decreases (increases)

To separate Substitution Effect from Income Effect we have to keep "Real Income" constant $\Leftrightarrow$ Same Satisfaction and see how the consumer substitute X for Y .



From E to F

Total Effect $\Delta X = X_1 - X_0$

$$\Delta Y = Y_1 - Y_0$$

P_x reduces to P'_x - slope of budget line changes from

$$\frac{P_x}{P_y} = \frac{3}{4} \text{ to } \frac{P'_x}{P_y} = \frac{2}{4}$$

From E to G $\Rightarrow$ Subs Effect.

- G can be determined by drawing an imaginary budget line that has the same slope as the new budget line $\frac{P'_x}{P_y} = \frac{2}{4}$ to be tangent to the original IC_0 at G.

Substitution Effect for $X = X_2 - X_0$

for $Y = Y_0 - Y_0$

Income Effect - From G to F

the change in $X = X_1 - X_2$

change in $Y = Y_1 - Y_2$

Income Effect is obtained by moving the imaginary budget line to the new budget line that will be tangent to the new IC_1 at F.

$$\begin{aligned}\text{Total Effect on } X &= S.E \text{ on } X + I.E \text{ on } X \\ &= (\cancel{X_2 - X_0}) + (\cancel{X_1 - X_2}) = X_1 - X_0\end{aligned}$$

$$\begin{aligned}\text{Total Effect on } Y &= S.E \text{ on } Y + I.E \text{ on } Y \\ &= (Y_2 - Y_0) + (Y_1 - Y_2) = Y_1 - Y_0\end{aligned}$$

From the I.E. (G to F) X & Y are normal.

When P_x reduces, the consumer can end up buying less of X . - This is Giffen good.
- violates Law of Demand.

X	P_x
20	3
15	2

