

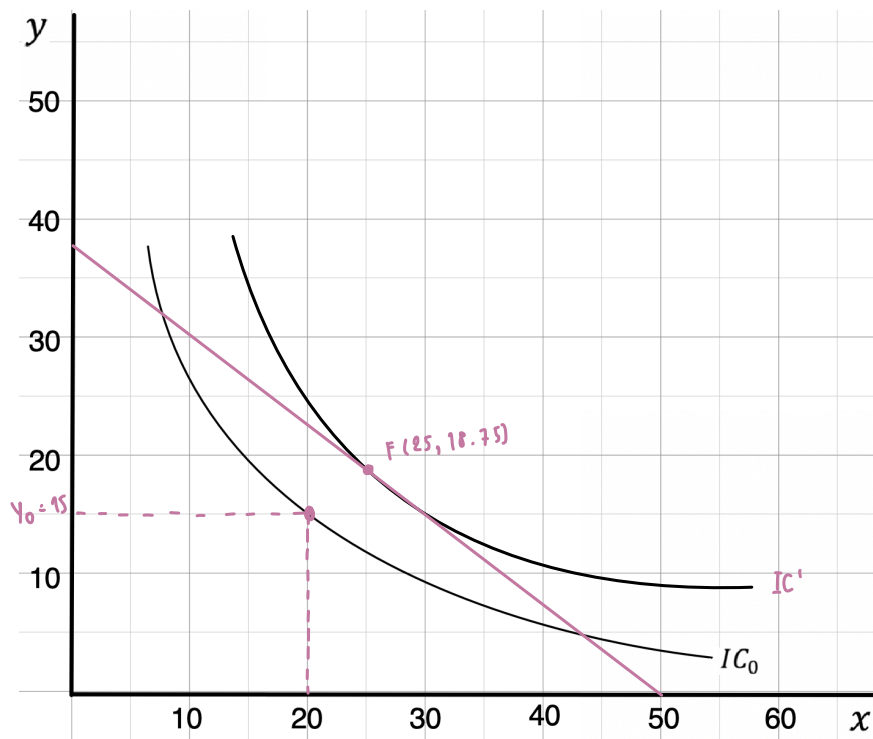
#1

12. Five consumers have the following marginal utility of apples and pears:

	Marginal Utility of Apples	Marginal Utility of Pears
Claire	6	12
Phil	6	6
Haley	6	3
Alex	3	6
Luke	3	12

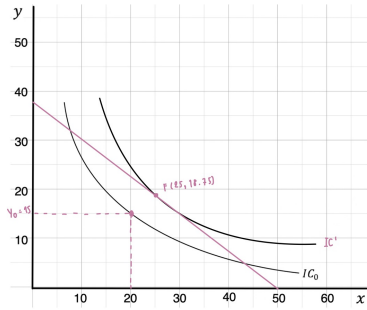
The price of an apple is \$1, and the price of a pear is \$2. Which, if any, of these consumers are optimizing their choices of fruit? For those who are not, how should they change their spending?

#2 Given the price of $x = 3$, price of $y = 4$, and budget = 120.



- Draw the budget line and find the equilibrium with the given indifference curve IC in the diagram below.
- If the income increases from 120 to 150, where will be the new equilibrium so that the change in the consumption of x be such that the Income Elasticity of x is equal to 1.
- With the change of equilibrium you found in (B), what will be the Income Elasticity of y ?

#2 Given the price of $x = 3$, price of $y = 4$, and budget = 120.



A. Budget line $P_x x + P_y y = B$

$$3x + 4y = 120$$

when $x=0$, $y=30$

$y=0$, $x=40$

\therefore The equilibrium is at E (20, 15)

B If Income increase from 120 to 150,

Budget line : $3x + 4y = 150$

when $x = 0$, $y = 37.5$

$y = 0$, $x = 50$

$$n_I = \frac{\% \Delta Q_x}{\% \Delta I} = \frac{\frac{x_1 - 20}{20} \times 100\%}{\frac{150 - 120}{120} \times 100\%}$$

$$1 = \frac{x_1 - 20}{0.25(20)}$$

$$x_1 = 25$$

$$\therefore y_1 = \frac{150 - 3(25)}{4} = 18.75$$

New equilibrium (25, 18.75)

C Income elasticity of y at (25, 18.75)

$$\begin{aligned} n_I &= \frac{\% \Delta Q_y}{\% \Delta I} \\ &= \frac{18.75 - 15}{15} \times 100 \\ &= \frac{150 - 120}{120} \times 100 \\ &= \frac{0.25}{0.25} = 1 \end{aligned}$$

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• Optimum condition

$$-\frac{MU_x}{MU_y} = -\frac{P_x}{P_y} = \frac{1}{2} = MRS$$

$$C : \frac{6}{12} = \frac{1}{2} = \text{optimum}$$

$$P : \frac{6}{6} = 1 = \text{not optimum}$$

$$H : \frac{6}{3} = 2 = \text{not optimum}$$

$$A : \frac{3}{6} = \frac{1}{2} = \text{optimum}$$

$$L : \frac{3}{12} = \frac{1}{4} = \text{not optimum}$$

Change in their spending

P : consume more apple until $MU_x = 3$

H : consume fewer pears until $MU_y = 12$

A : consume more pears until $MU_y = 6$