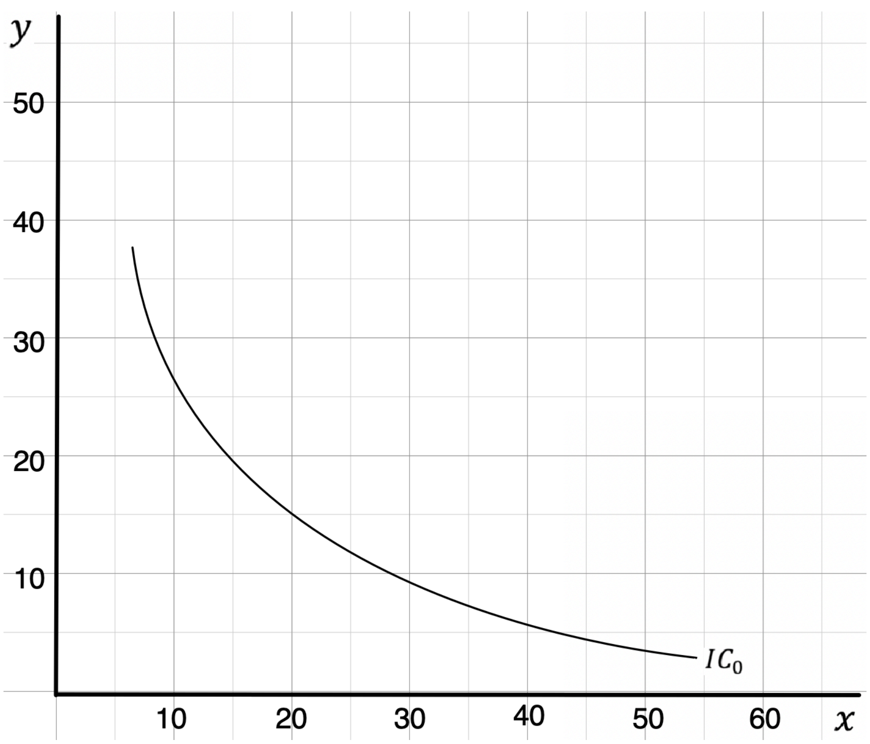
#1

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.



A) Draw the budget line and find the equilibrium with the given indifference curve IC in the diagram below.
B) 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.
C) With the change of equilibrium you found in (B), what will be the Income Elasticity of y?

① Let x = apple $P_x = 1$
y = pear $P_y = 2$ } slope of budget line = $\frac{-P_x}{P_y} = \frac{-1}{2}$

Equilibrium = slope of IC = slope of budget line $\Rightarrow$ $-\frac{MU_x}{MU_y} = \frac{-P_x}{P_y}$
('in consumer's mind) (in the market)

Find slope of IC

- Clare $-\frac{6}{12} = -\frac{1}{2}$ $\Rightarrow$ at equilibrium
- Phil $-\frac{6}{6} = -1$
- Haley $-\frac{6}{3} = -2$
- Alex $-\frac{3}{6} = -\frac{1}{2}$ $\Rightarrow$ at equilibrium
- Luke $-\frac{3}{12} = -\frac{1}{4}$

How they need to change their spending
no change.
decrease x 3 units or increase y 6 units
" x 1.5 units " y 9 units
no change
increase x 1 units or decrease y 2 units

②
A.) Find y-intercept, X-intercept

$\frac{B}{P_y} = \frac{120}{4} = 30$

$\frac{B}{P_x} = \frac{120}{3} = 40$

Equilibrium is at E (20, 10) From the slope of IC = slope of budget line

B.) Budget changes from 120 to 150

$\frac{150}{4} = 37.5$

$\frac{150}{3} = 50$

$\eta_I^x = 1 = \frac{\%\Delta Q_x}{\%\Delta I_x}$ $\quad$ $\%\Delta I_x = \frac{150-120}{120} \times 100$
$= 25$

$1 = \frac{\%\Delta Q_x}{25\%}$

$\%\Delta Q_x = \frac{new - old}{old} \times 100$

$25\% = \frac{X-20}{20} \times 100$

$x = 25$

C.) $\eta_I^Y = \frac{\%\Delta Q_y}{\%\Delta I_y}$

$= \frac{\frac{18-15}{15} \times 100}{\frac{150-120}{120} \times 100}$

$\eta_I^Y = \frac{20\%}{25\%}$

$= 0.8$ #