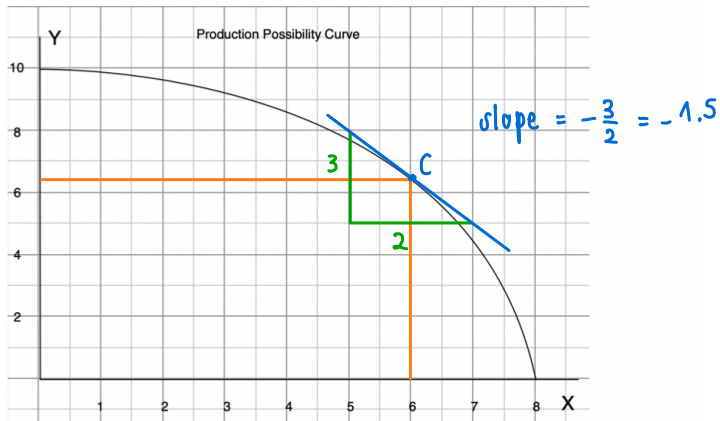


HW#4 Due Jan 27, 2022

HW Nonlinear PPC



- a) Find the opportunity cost of each additional unit of y in terms of units of x

y	x	Opp. Cost of y
0	8	0.1
1	7.9	0.2
2	7.7	0.3
3	7.4	0.3
4	7.1	0.4
5	6.7	0.4
6	6.3	0.7
7	5.6	0.9
8	4.7	1.3
9	3.4	3.4
10	0	

- b) Is the opportunity cost of y increasing? **yes.**
 c) Compute the opportunity cost per unit of y when $x = 6$.
 d) At $x = 6$, approximate how much more x can be produced if we have y less by 0.2 units.

$$c) \frac{1}{\text{slope}} = \frac{1}{-1.5} = -\frac{2}{3} = -0.67$$

\therefore opportunity cost of $y = -0.67$ ✖

$$d) \Delta = -0.2$$

$$\Delta x = \frac{\Delta y}{\text{slope}}$$

$$= \frac{-0.2}{-1.5}$$

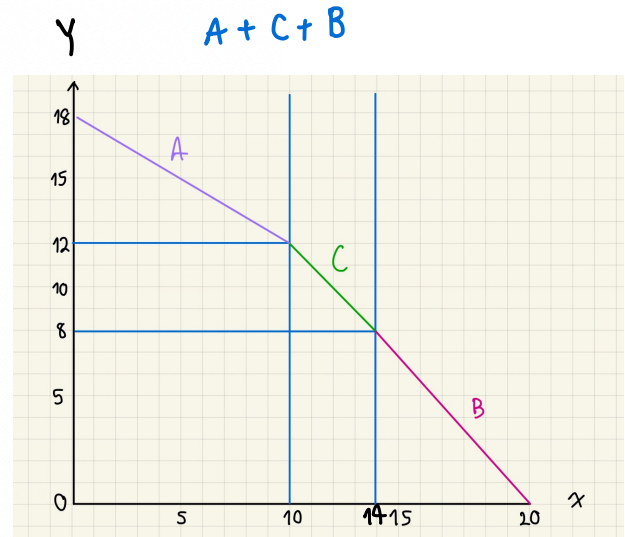
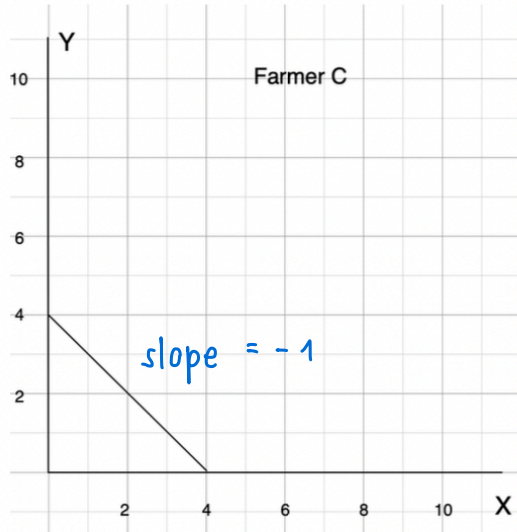
$$= 0.13 \text{ ✖}$$

Opportunity Cost of Farmer A = -0.6

C = -1

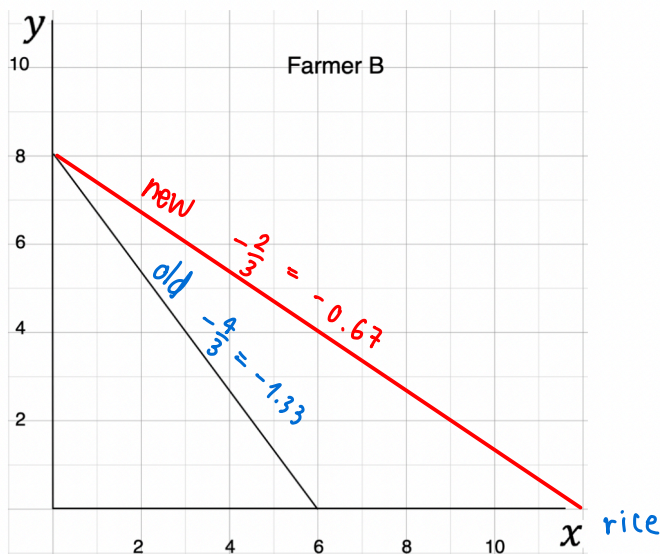
B = $-\frac{4}{3}$, $-\frac{2}{3}$

HW Farmer C has the PPC given below. Find the PPC of all three farmers A, B and C combined.



HW. If a new fertilizer is found to double the output of rice (x) for any level of production of fish (y), how will PPC of farmer B change? Does the opportunity cost of x increase? Does the opportunity cost of y increase?

Fish



No, the opportunity cost of x will decrease from -1.33 to -0.67

old equation $y = -\frac{4}{3}x + 8$
1 more unit of y, 0.67 less of x

new equation $y = -\frac{2}{3}x + 8$
1 more unit of x, 1.33 less of y

Yes, Opportunity Cost of Y will increase

Old curve

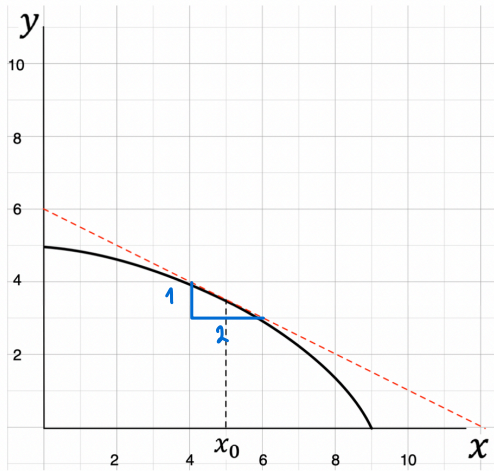
1 more unit of y, $\frac{3}{4}$ less of x

New curve

1 more unit of x, $\frac{2}{3}$ less of y

HW. Given the PPC below,

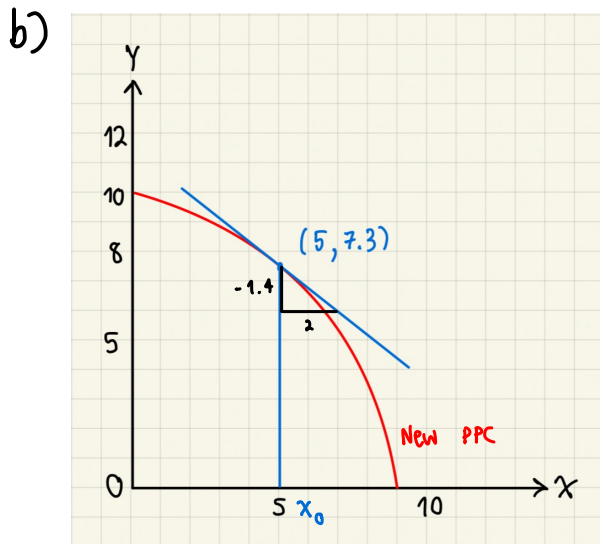
- What is the opportunity cost of x at $x_0 = 5$?
- Suppose the technology of producing y improves so that the economy can double the output of y for any output level of x . Draw the new PPC.
- What is the opportunity cost of x at $x_0 = 5$ for the new PPC?



a.)

x	y
4	4
$x_0 \rightarrow 5$	3.5
6	3

$\left. \begin{array}{l} \\ \end{array} \right\} -0.5$
 $\left. \begin{array}{l} \\ \end{array} \right\} -0.5$



c.) opportunity of new x

x	y
4	8.1
5	7.3
6	6.4

$\left. \begin{array}{l} \\ \end{array} \right\} -0.8$
 $\left. \begin{array}{l} \\ \end{array} \right\} -0.9$