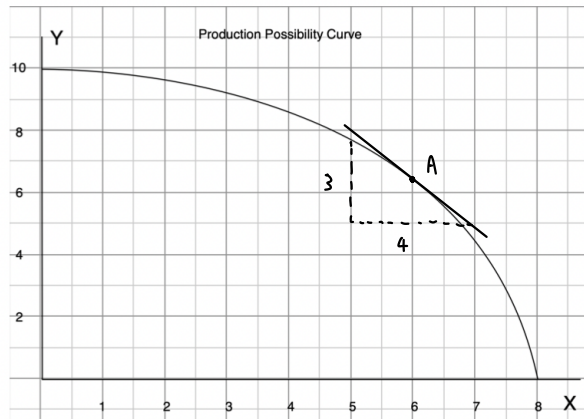


HW#4 Due Jan 27, 2022

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	7.9	$8 - 7.9 = 0.1$
2	7.7	0.2
3	7.45	0.25
4	7.15	0.3
5	6.75	0.45
6	6.25	0.5
7	5.6	0.65
8	4.65	0.95
9	3.4	1.25
10	0	3.4

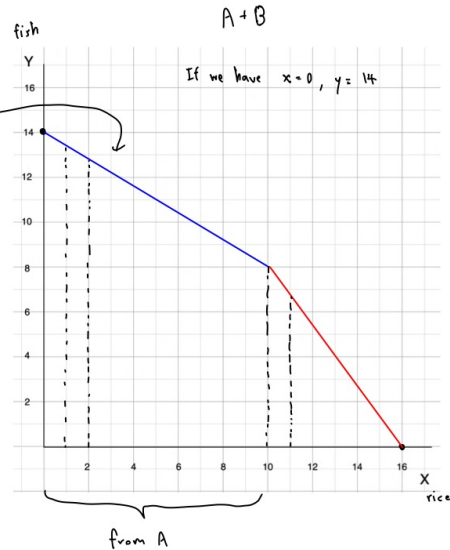
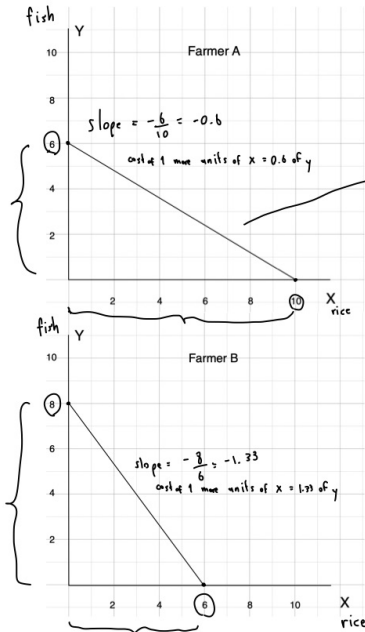
- b) Is the opportunity cost of y increasing?
 c) Compute the opportunity cost per unit of y when $x = 6$.
 d) At $x = 6$, approximate how much more x can be produced if we have y less by 0.2 units.

b) Yes, as y increases from 0-10, the opp. cost of y in terms of x also increases.

c) At point A, $m = -0.75$ which means if we have 1 unit ^{Δx} more of y , we will have ≈ -0.75 less of x
 $\text{slope} \cdot (\Delta x)$

d) $x = -0.2(-0.75)$
 $= 0.15$

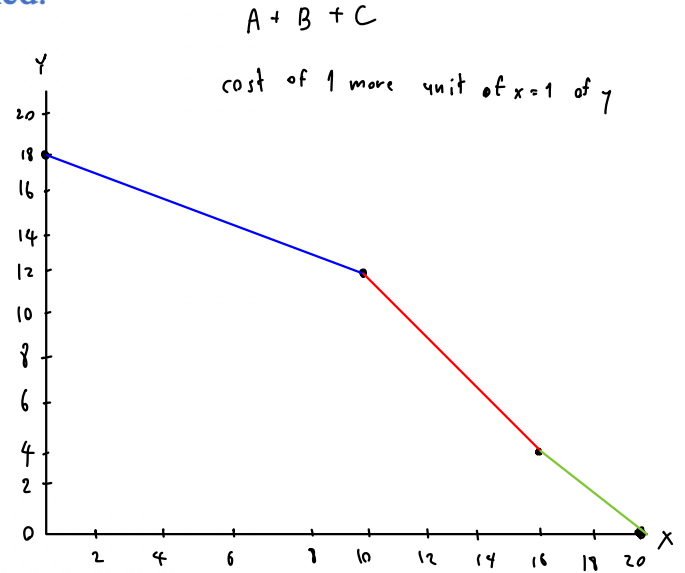
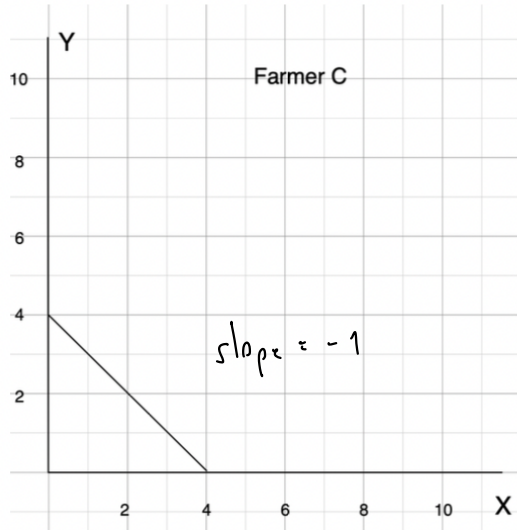
$\therefore$ we will get approximately 0.15 unit more of x .



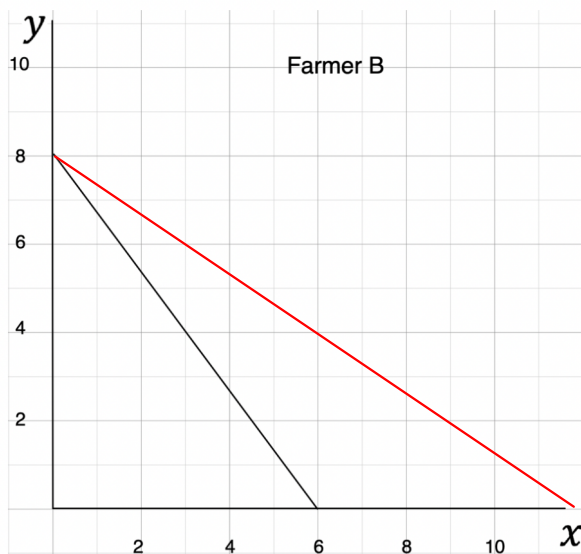
X	Y
0	14
1	13.4
2	12.8
3	12.2
4	11.6
5	11
6	10.4
7	9.8
8	9.2
9	8.6
10	8
11	6.67
12	5.33
13	4
14	2.67
15	1.33
16	0

We can find the PPC of the combined resources of both farms.

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?



$$y = \frac{4}{3}x + 8$$

Old = Opp. cost 1.33 units of fish for 1 rice
cost 0.75 units of rice for 1 fish.

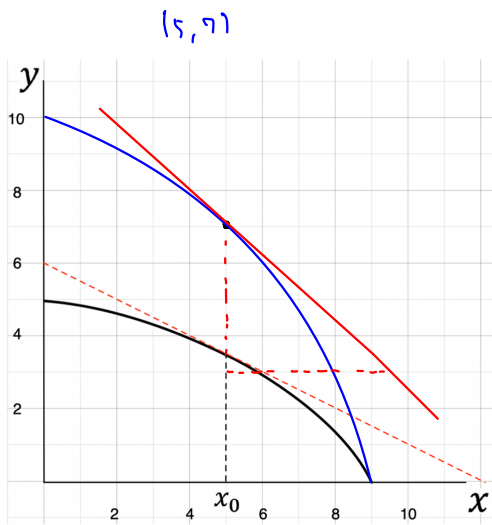
New = Opp. Cost 0.67 units of fish for 1 rice.

Opp. cost 1.5 units of rice for 1 fish

$\therefore$ The opp. cost that increases is the opp. cost of fish.

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?



$$a) - \frac{3.5}{5} = -0.7 \text{ opp. cost of } x=0.7 \text{ in terms of } y.$$

$$c) - \frac{7}{9.5} = -0.73 \text{ opp. cost of } x=0.73 \text{ in terms of } y.$$