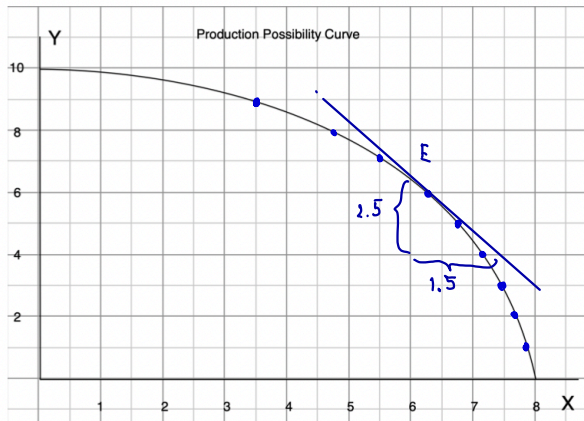


HW#4 Due Jan 27, 2022

HW Nonlinear PPC



$$\text{slope at point E} = \frac{2.5}{1.5}$$

- 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 | |
| 1 | 7.9 | 0.1 |
| 2 | 7.7 | 0.2 |
| 3 | 7.5 | 0.2 |
| 4 | 7.3 | 0.2 |
| 5 | 6.6 | 0.5 |
| 6 | 6.3 | 0.5 |
| 7 | 5.5 | 0.9 |
| 8 | 4.7 | 0.8 |
| 9 | 3.5 | 1.2 |
| 10 | 0 | 3.5 |

- 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

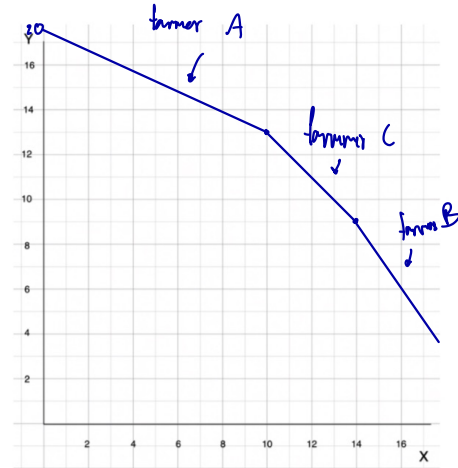
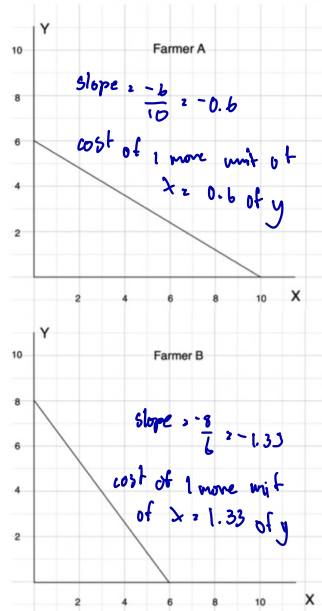
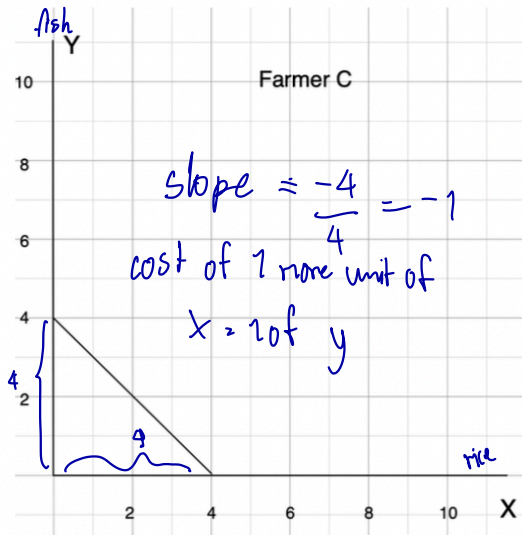
c) A+E slope is $-1.67 \therefore \frac{1}{\text{slope}} = \frac{1}{-1.67} = -0.6$

d) that means if we have 0.2 unit less of $y = \Delta y = -0.2$
 we will have $\approx \frac{-0.2}{-0.6} = 0.33$ unit more of x

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

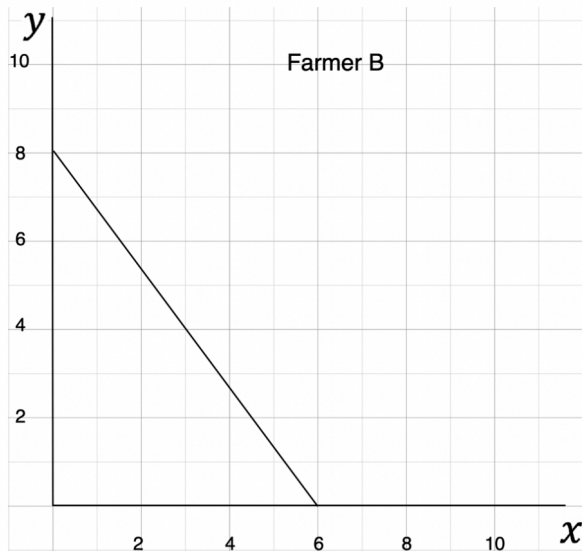
$$\therefore \Delta x = \frac{\Delta y}{\text{slope}}$$

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



| x | y |
|----|------|
| 0 | 20 |
| 1 | 13.4 |
| n | n |
| 15 | 7.67 |
| 16 | 6.34 |

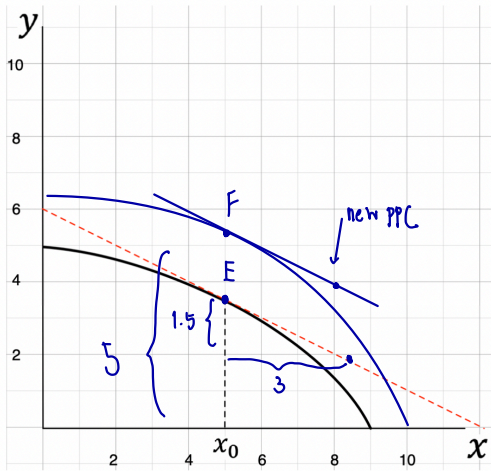
HW. If a new fertilizer is found to double the output of rice (x) for any level of production of fish (y), how will PPC of farmer B change? Does the opportunity cost of x increase? Does the opportunity cost of y increase?



No, opportunity cost of x and y stay the same

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 at point E

$$\text{slope} = \frac{-1.5}{3} = -0.5$$

c) at point F

$$\text{slope} = \frac{-5}{3} = -1.67$$

} ≠