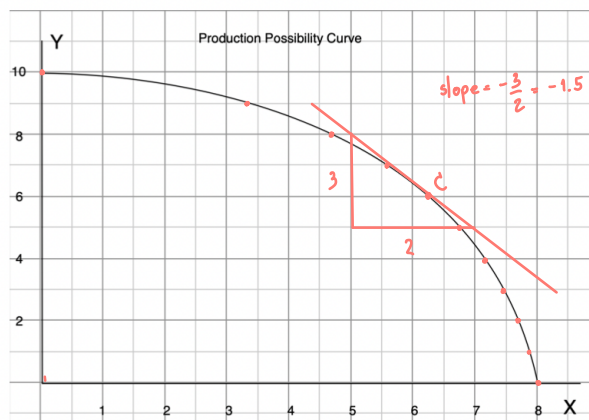


HW#4 Due Jan 27, 2022

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	
1	7.9	= 0.1
2	7.7	= 0.2
3	7.4	= 0.3
4	7.1	= 0.3
5	6.7	= 0.4
6	6.2	= 0.5
7	5.6	= 0.6
8	4.6	= 1
9	3.4	= 1.2
10	0	= 2.4

when y increases
1 unit at a time

x	y	Opp. cost of x
0	10	
1	9.9	= 0.1
2	9.6	= 0.3
3	9.2	= 0.4
4	8.5	= 0.7
5	7.7	= 0.8
6	6.5	= 1.2
7	4.5	= 2
8	0	= 4.5

- b) Is the opportunity cost of y increasing? Yes, it is.
 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.

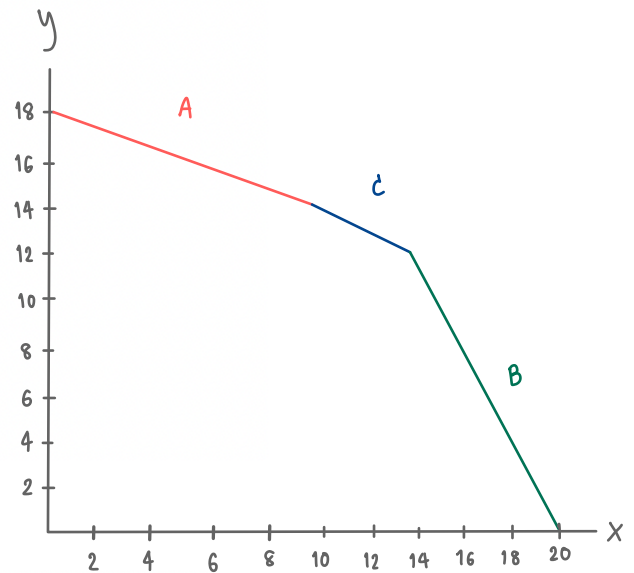
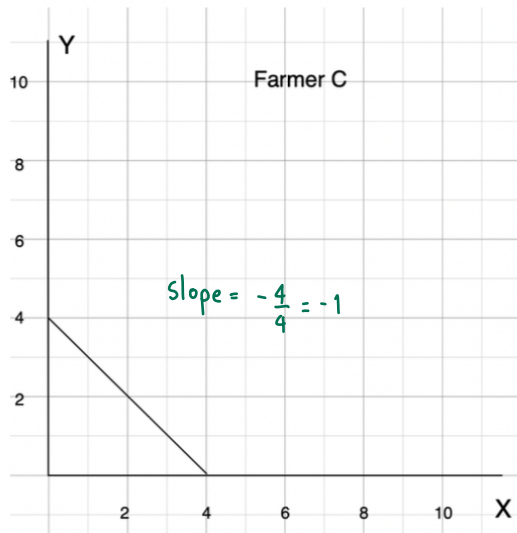
c) The opportunity cost per unit of y when $x = 6$

At C , slope = -1.5
 $\Delta y \approx (\text{slope at } C) \Delta x$
 $1 = (-1.5) \Delta x$
 $0.6 = \Delta x$

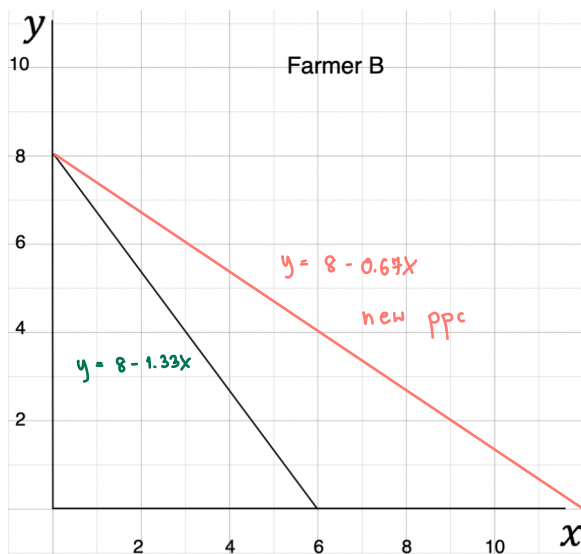
d) $\Delta y = (\text{slope at } C) \Delta x$
 $0.2 = (-1.5) \Delta x$
 $\Delta x = 0.13$

$\therefore$ if y decreases by 0.2 units, we will have 0.13 units more of x . (approximately)

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?



Ans No, it doesn't. the opp. cost of x decrease.
Yes, it does. the opp. cost of y increase.

$$y = 8 - 1.33x$$

$$y = 8 - 0.67x$$

$$x = 6.02 - 0.75y$$

$$x = 11.94 - 1.49y$$

X	y	opp. cost
0	8	= 1.33
1	6.67	= 1.33
2	5.34	= 1.33
3	4.01	= 1.33
4	2.68	= 1.33

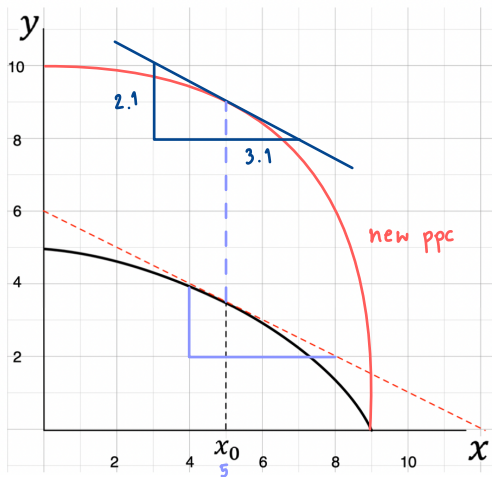
X	y	opp. cost
0	8	= 0.67
1	7.33	= 0.67
2	6.66	= 0.67
3	5.99	= 0.67
4	5.32	= 0.67

X	y	opp. cost
0	6	= 0.75
1	5.25	= 0.75
2	4.5	= 0.75
3	3.75	= 0.75
4	3	= 0.75

X	y	opp. cost
0	12	= 1.49
1	10.51	= 1.49
2	9.02	= 1.49
3	7.53	= 1.49
4	6.04	= 1.49

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	opp cost
5	3.5	
6	2.9	0.6

c) $\frac{2.1}{3.1} = 0.68$

opp cost ≈ 0.68