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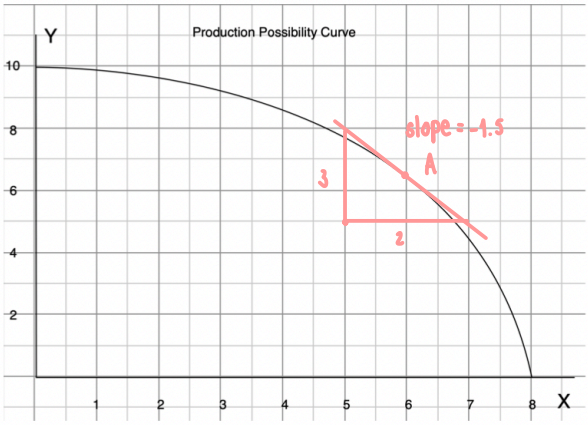
HW#4 Due Jan 27, 2022

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	6.2	0.5
7	5.6	0.6
8	4.7	0.9
9	3.3	1.4
10	0	3.3

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

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

At point A slope = -1.5

$\Delta Y = \text{slope} \cdot \Delta X$

$1 = -1.5 \cdot \Delta X$

$\Delta X = -0.67$

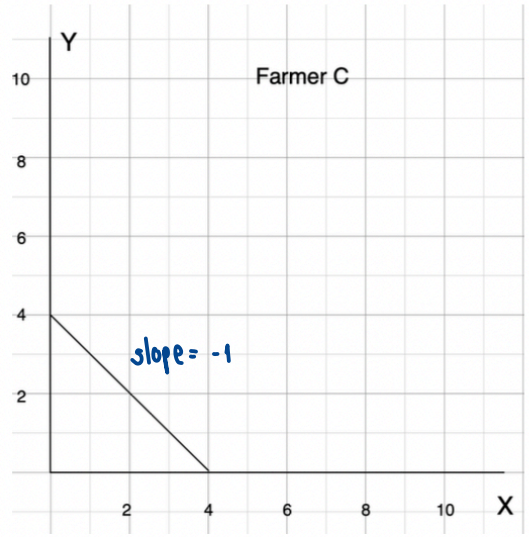
d) $\Delta Y = \text{slope}\ \Delta X$

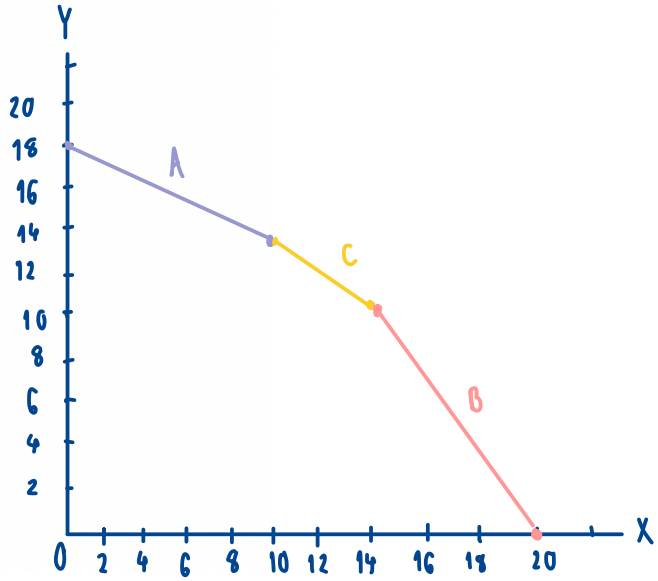
$0.2 = -1.5 \cdot \Delta X$

$\Delta X = -0.13$

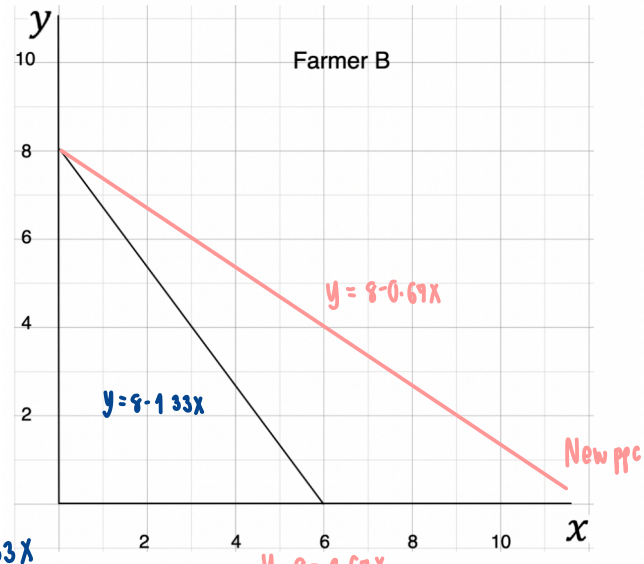
So, if we have 0.2 units less y we'll have 0.13 units more X

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?



- The opportunity cost of x decrease.
- The opportunity cost of y increase.

$y = 8 - 1.33x$

x	y	opp. cost
0	8	1.33
1	6.67	1.33
2	5.34	1.33
3	4.01	1.33
⋮	⋮	

$y = 8 - 0.69x$

x	y	opp. cost
0	8	0.69
1	7.33	0.69
2	6.66	0.69
3	5.99	0.69
⋮	⋮	

$x = 6.02 - 0.75y$

y	x	opp. cost
0	6	0.75
1	5.25	0.75
2	4.5	0.75
3	3.75	0.75
⋮	⋮	

$x = 11.94 - 1.49y$

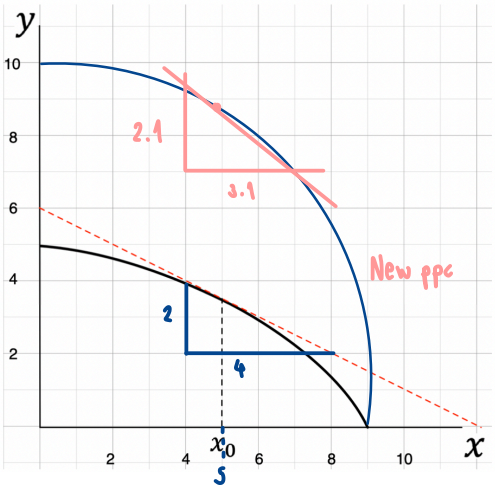
y	x	opp. cost
0	12	1.5
1	10.51	1.5
2	9.02	1.5
3	7.53	1.5
⋮	⋮	

HW. Given the PPC below,

a) What is the opportunity cost of x at $x_0 = 5$?

b) 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.

c) What is the opportunity cost of x at $x_0 = 5$ for the new PPC?



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

Opp. cost = 0.68