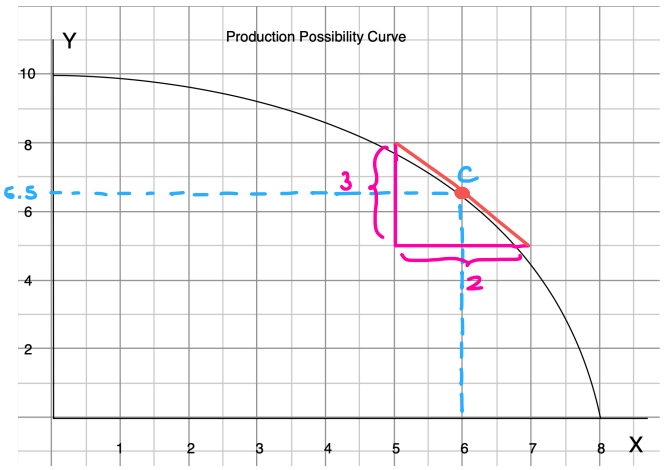
HW Nonlinear PPC



slope at C $= -\frac{3}{2} = -1.5$

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 less of x
2	7.7	0.2 less of x
3	7.4	0.3 less of x
4	7.1	0.3 less of x
5	6.7	0.4 less of x
6	6.3	0.4 less of x
7	5.6	0.7 less of x
8	4.7	0.9 less of x
9	3.4	1.3 less of x
10	0	3.4 less of x

b) Is the opportunity cost of y increasing? yes

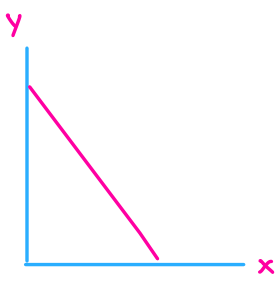
c) Compute the opportunity cost per unit of y when $x = 6$. C

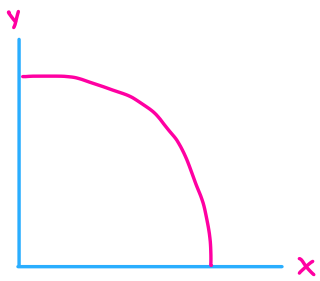
$\frac{1}{1.5} \approx 0.67$ opp cost of y

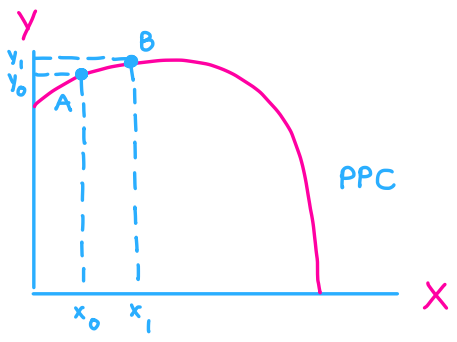
d) At $x = 6$, approximate how much more x can be produced if we have y less by 0.2 units.

$\Delta x \approx \frac{\Delta y}{\text{slope at c}} \approx 0.13$

Can a PPC have positive slope?







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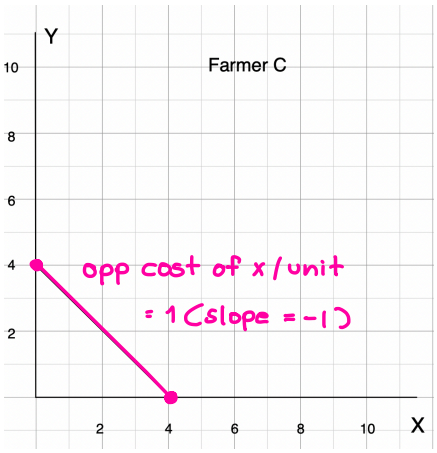
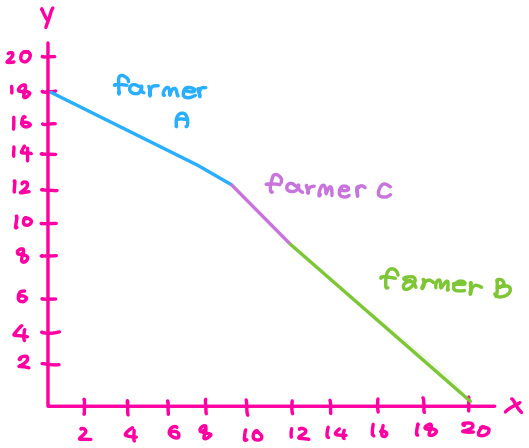
HW Farmer C has the PPC given below. Find the PPC of all three farmers A, B and C combined.

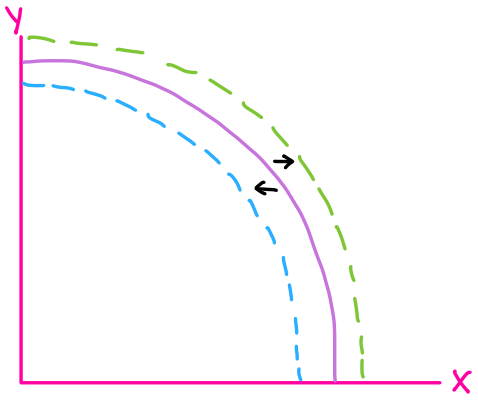


X	Y	
0	19	A
1	17.4	
⋮		
10	12	
11	11	C
⋮		
14	8	
15	6.67	B
⋮		
20	0.02	



Change in PPC

1. COVID-19



2. Improvement of Technology of producing both x and y.

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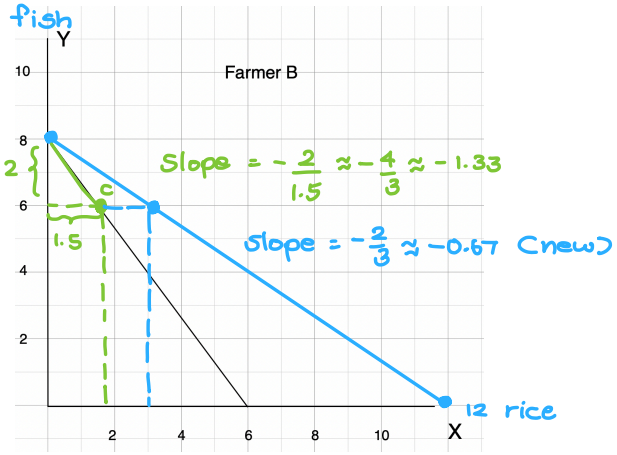
HW. If a new fertilizer is found to double the output of rice (x) for any level of production of fish (y), how will PPC of farmer B change? Does the opportunity cost of x increase? Does the opportunity cost of y increase?



At point C $(1.5, 6)$, $\Delta x = 2$

$\Delta y \approx$ slope at C $\cdot \Delta x$

$\approx (-1.33)(2)$

≈ -2.66

$\frac{1}{-1.33} = -0.75$ – opp cost of y

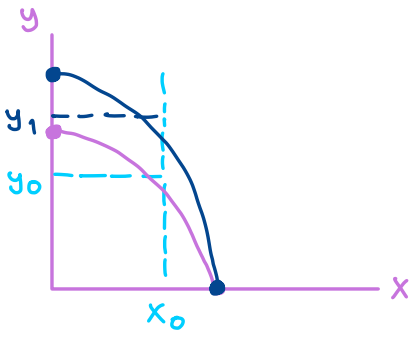
$\frac{1}{-0.67} = -1.49$ – new opp cost of y

∴ The opp cost of x decrease, but the opp cost of y increases.

1 more unit of $y \Rightarrow$ 0.67 unit less of x

1 more unit of $x \Rightarrow$ 1.49 unit less of y

problem



At X_0, y increases from y_0 to y_1 since the improvement of technology.

the opp cost of x increase, but the opp cost of y decreases.

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