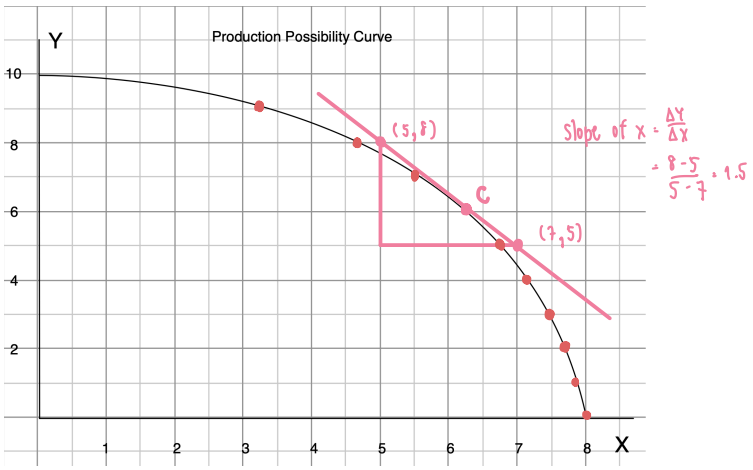
HW Nonlinear PPC



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	7.8	0.1
3	7.6	0.2
4	7.3	0.3
5	6.8	0.5
6	6.2	0.6
7	5.5	0.7
8	4.7	0.8
9	3.4	1.3
10	0	3.4

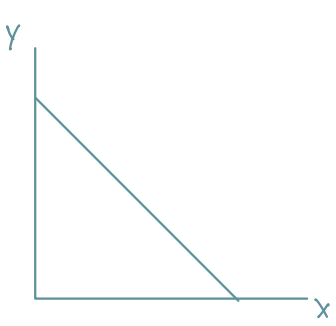
→ when y increases 1 unit at a time

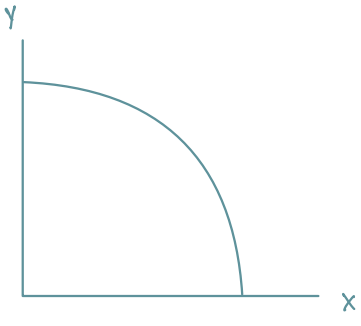
b) Is the opportunity cost of y increasing? Yes, it increases as y increases

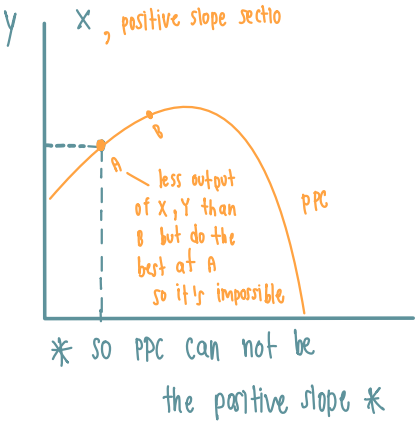
c) Compute the opportunity cost per unit of y when $x = 6$. → opp. cost of Y = $\frac{1}{\text{slope}} = \frac{1}{1.5} = 0.67$

d) At $x = 6$, approximate how much more x can be produced if we have y less by 0.2 units. → $\Delta X = f'(Y) \cdot \Delta Y$
$= (0.67)(-0.2)$
$= 0.134$

Can a PPC have positive slope?





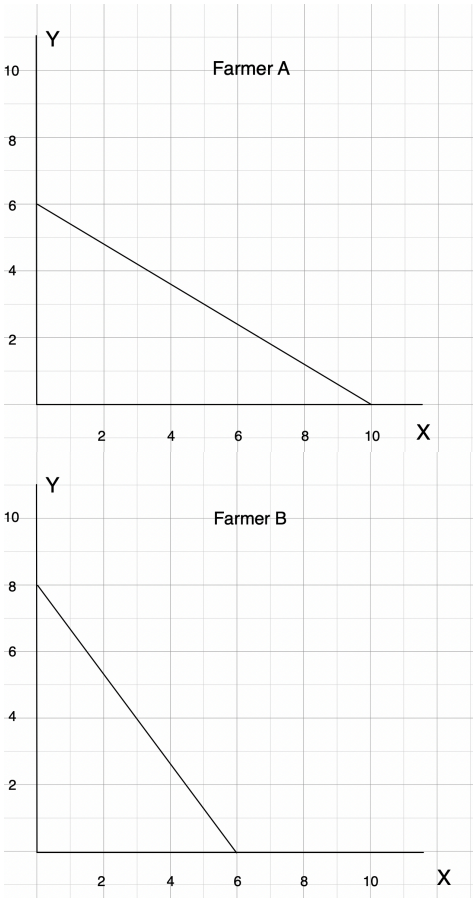


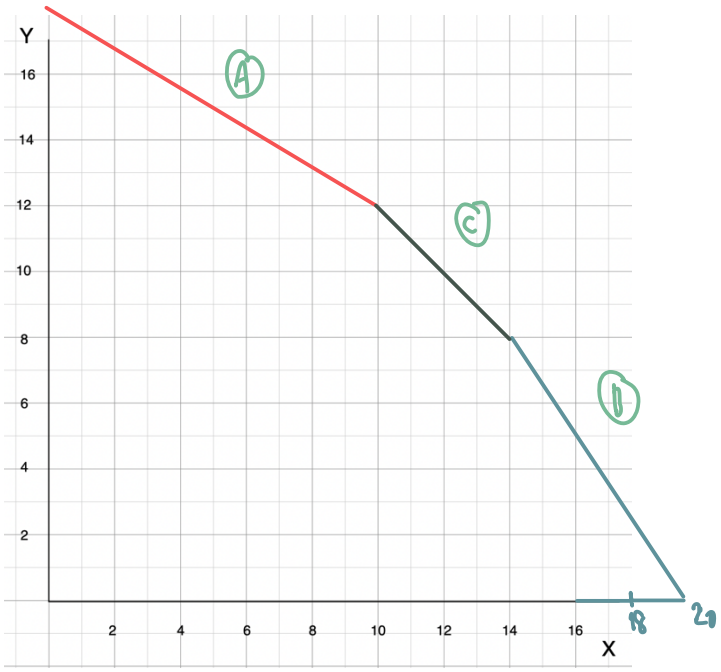
X	Y
0	18
1	17.4
2	16.8
3	16.2
4	15.6
5	15
6	14.4
7	11.8
8	13.6
9	12.6
10	12
11	11
12	10
13	9
14	8
15	6.67
16	5.34
17	4.01
18	2.68
19	1.35
20	0

Nonlinear PPC: ***Decreasing Cost PPC***

- Most PPC are Increasing Cost

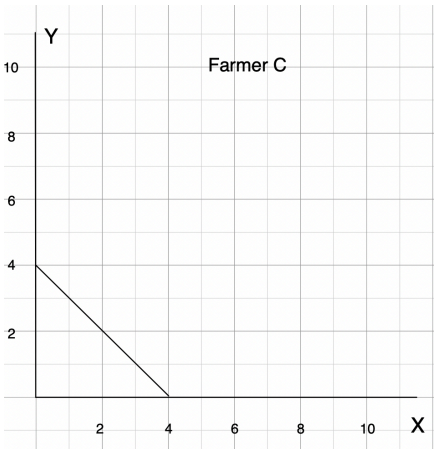
Example There are two farmers A and B who produce X = rice and Y= fish, each having a constant PPC as given.





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

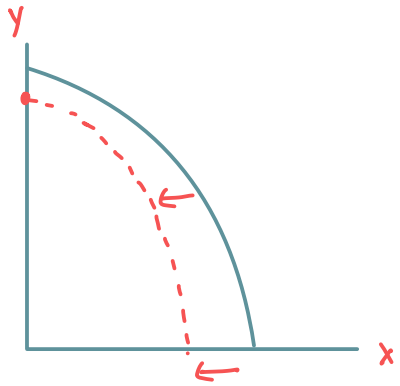
HW Farmer C has the PPC given below. Find the PPC of all three farmers A, B and C combined.



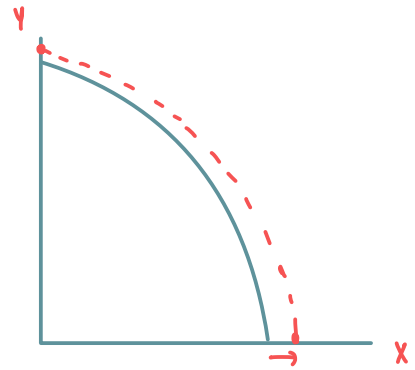
Answer

Change in PPC

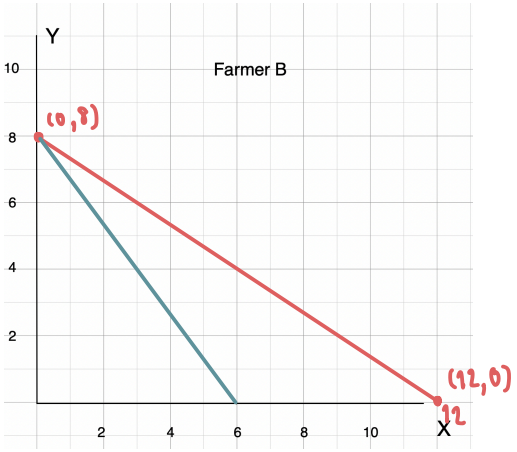
1. COVID-19



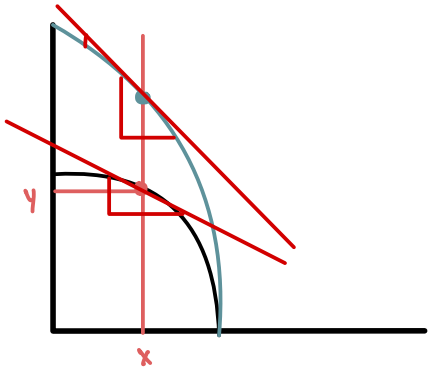
2. Improvement of Technology of producing both x and y.



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?



X	Y
0 → 0	8
1 → 2	6.67
2 → 4	5.34
3 → 6	4.01
4 → 8	2.68
5 → 10	1.35
6 → 12	0



what if teachnology improve production of y to be double at every output of X

at (X_0, Y_0) { - How opp cost of x change ?
n ——— " y ——→ ?

∴ opportunity cost of X increases.
opportunity cost of Y decreases.