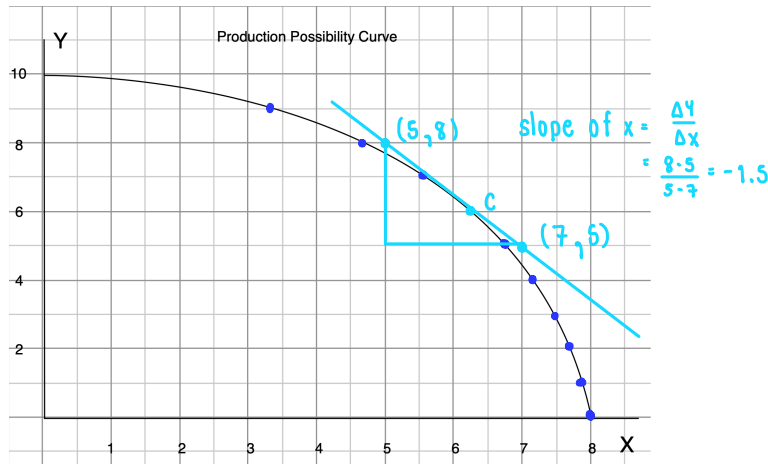


**HW Nonlinear PPC**



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 } 0.1 } 0.2 } 0.3 } 0.5 } 0.6 } 0.7 } 0.8 } 1.3 } 3.4
1	7.9	
2	7.8	
3	7.6	
4	7.3	
5	6.8	
6	6.2	
7	5.5	
8	4.7	
9	3.4	
10	0	

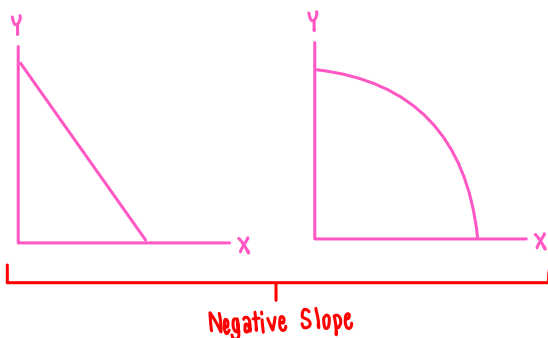
→ When y increases 1 unit at a time

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. →  $\Delta x = f'(y) \cdot \Delta y = (-0.67)(-0.2) = 0.134$  ∴ 0.134 more of x can be produced

Can a PPC have positive slope?

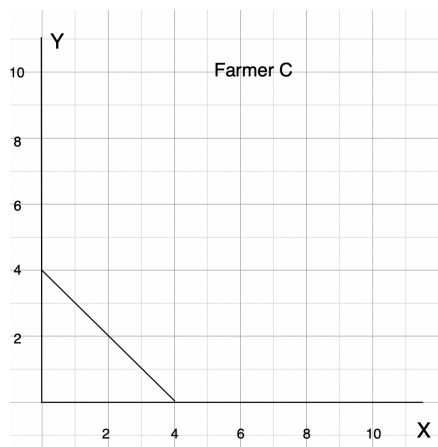


**incorrect** slope > 0 positive slope

# Midterm, HW  
ข้อนี้ผิดแน่นอน  
PPC ห้าม positive slope

At A, B have same input (economic resources),  
A has less output of x (some waste, not the best tech, etc.)  
B has more output, more output

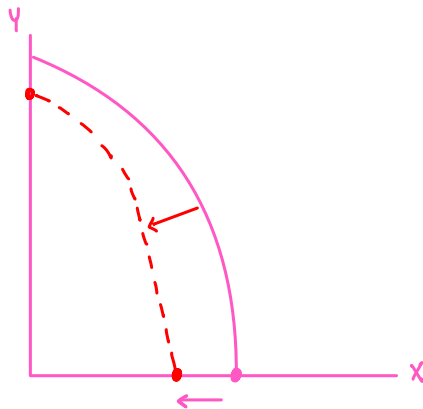
HW Farmer C has the PPC given below. Find the PPC of all three farmers A, B and C combined.



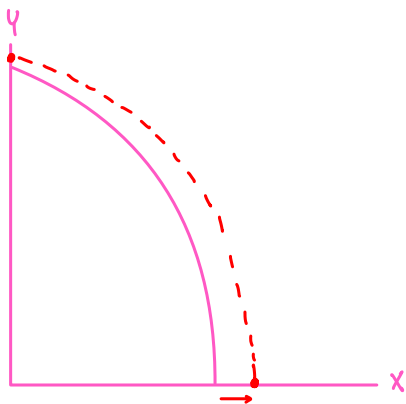
opp cost of x/unit = 1 (slope = -1)

Change in PPC - fixed resources, fix tech., most efficient

1. COVID-19

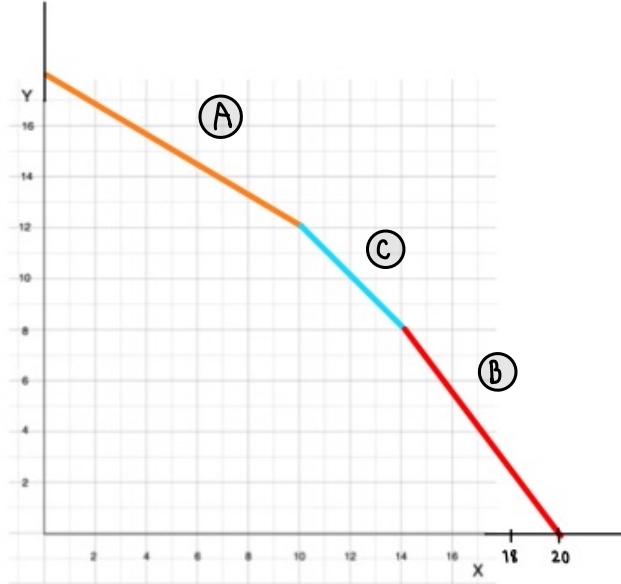
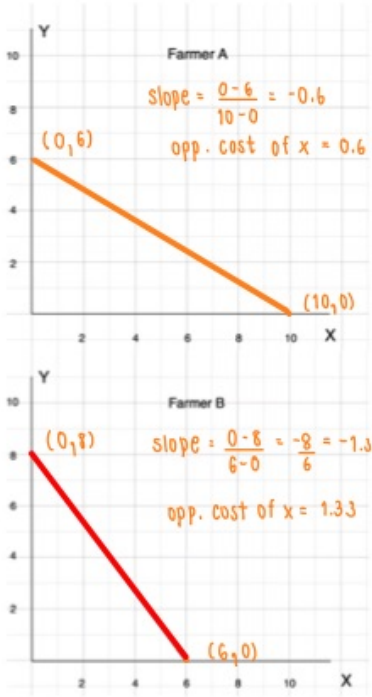


2. Improvement of Technology of producing both x and y.



• Most PPC are Increasing Cost

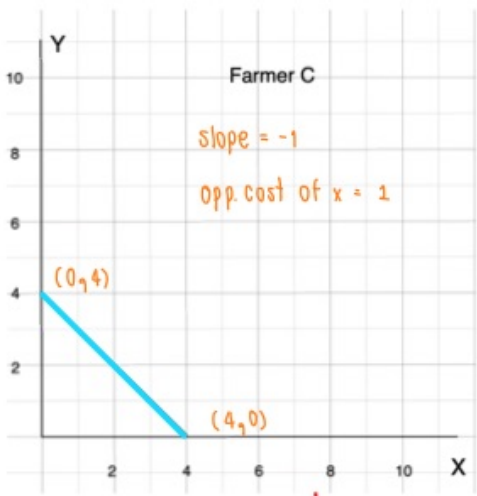
**Example** There are two farmers A and B who produce X = rice and Y = fish, each having a constant PPC as given.



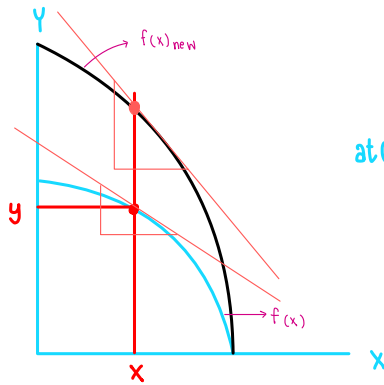
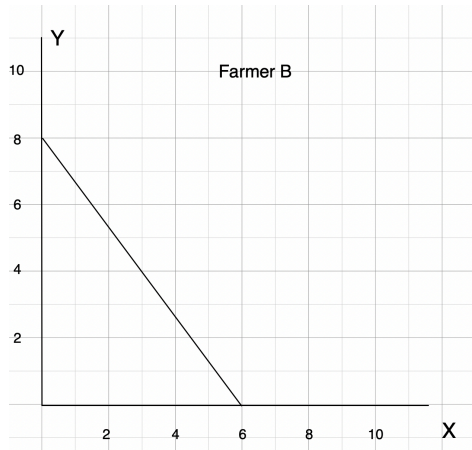
X	Y
0	18
1	17.4
2	16.8
3	16.2
4	15.6
5	15
6	14.4
7	13.8
8	13.2
9	12.6
10	12
11	11
12	10
13	9
14	8
15	6.67
16	5.34
17	4.01
18	2.68
19	1.35
20	0

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.



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?

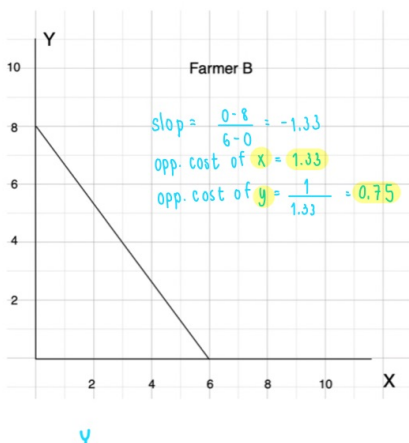


What if technology improve production of y to be double at every output of x

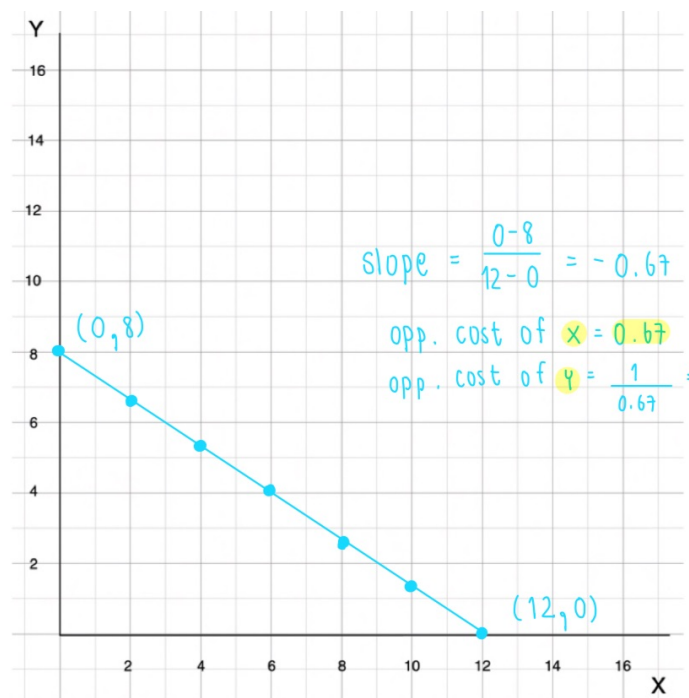
at  $(x_0, y_0)$  { - How opp. cost of x changes?  
- " " " " " " ?

∴ Opp. cost of x increases  
Opp. cost of y decreases #

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



∴ opportunity cost of y increases  
" " " " " " x decreases