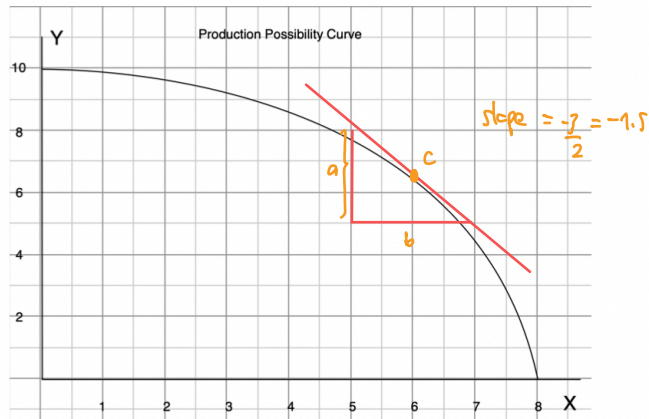


HW#4 Due Jan 27, 2022

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 less of x
1	7.9	0.15
2	7.75	0.25
3	7.5	0.3
4	7.2	0.45
5	6.75	0.5
6	6.25	0.7
7	5.55	0.95
8	4.6	1.2
9	3.4	3.4
10	0	

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

- 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) slope at c $\left(\frac{\Delta Y}{\Delta x}\right) = \frac{-0.2}{6} = \frac{-1}{3} = -1.5$ cost of Y in term of x

$\therefore \frac{1}{\text{slope}} = \frac{\Delta x}{\Delta Y} = \frac{-1}{1.5} = -0.66$ cost of x in term of Y

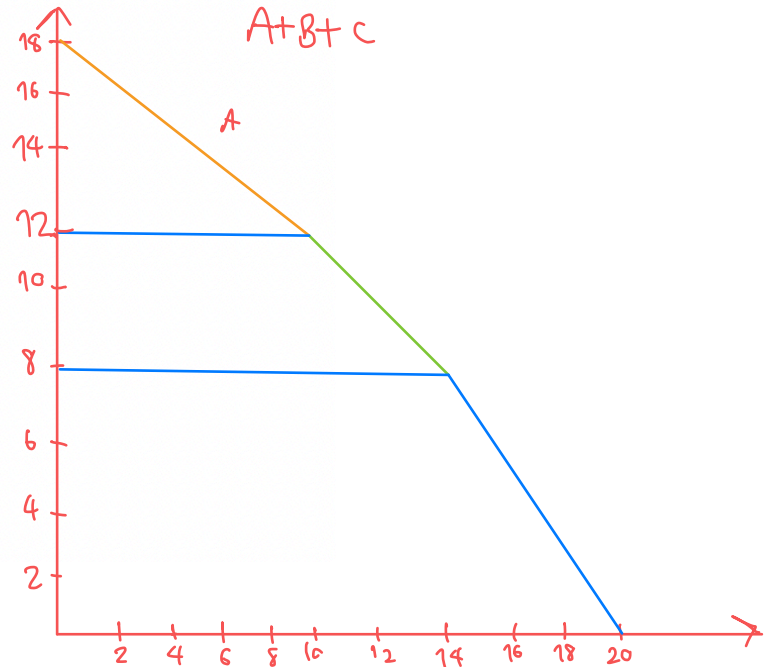
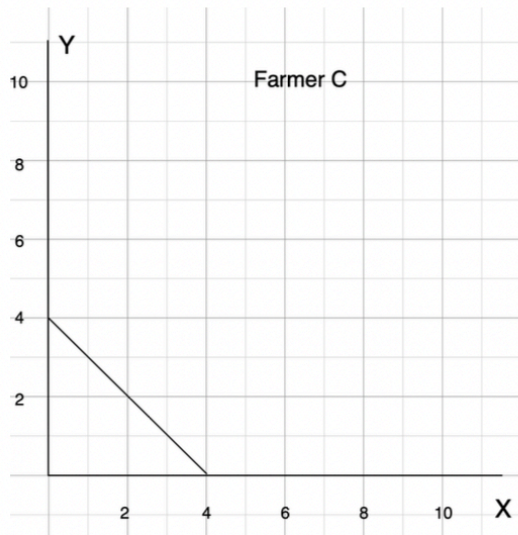
$\therefore x=6$, 0.66 unit of x must be in exchange one unit of Y

d) $\frac{\Delta x}{\Delta y} = -0.66 \Rightarrow \Delta x = -0.66 \Delta y \Rightarrow \Delta x = -0.66(-0.2) = 0.132$

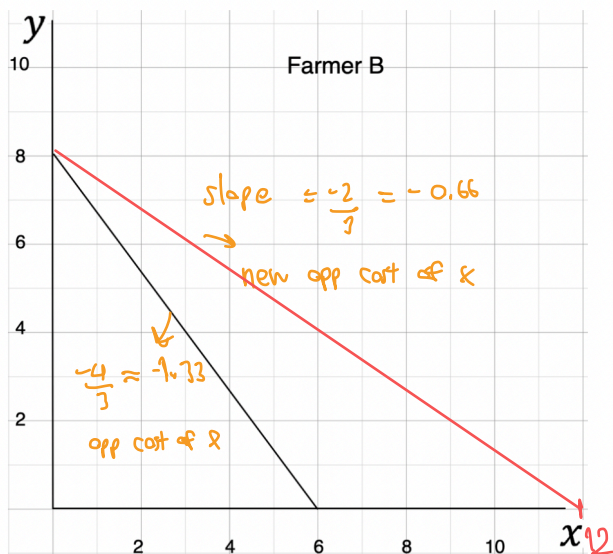
$\therefore x=6$, if we have Y less by 0.2 units, we would be able to produce 0.132 unit of x

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

$$-\frac{4}{4} = -1$$



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?



opp. cost of x is decrease
from -1.33 to -0.66

opp. cost of Y is increase

$\text{old} = y = 8 - \frac{4x}{3}$ $y - 8 = -\frac{4x}{3}$ $-\frac{3}{4}y + 6 = x$	$\text{new} = y = 8 - \frac{2x}{3}$ $y - 8 = -\frac{2x}{3}$ $-\frac{3}{2}y - 8 = x$
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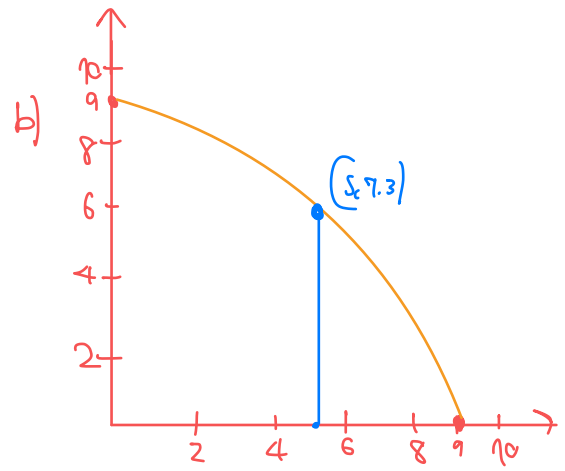
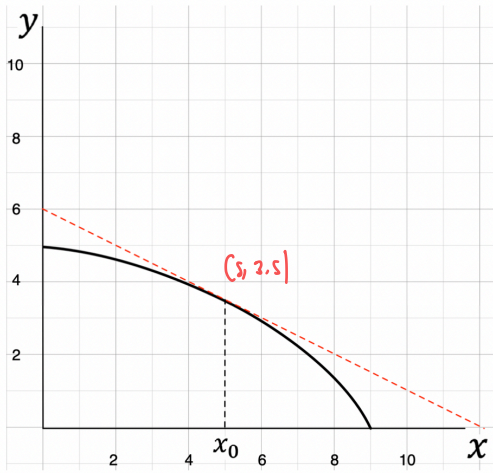
HW. Given the PPC below,

- 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
4	4
5	3.5
6	3

} 0.5
} 0.5



c)

x	y
4	8.1
5	7.3
6	6.4

} 0.8
} 0.9