Interpersonal Utility Comparison:

- the utility obtained by one person cannot be scientifically or objectly compared with the utility obtained from the same thing by another person because utility is subjective.

Consumer equilibrium:

⇒ Equi-marginal principle:

Unit	Apple		Orange
$\frac{MU}{P}$ ⇒ 1st	$\frac{30}{\$1}$	>	$\frac{20}{\$1}$
2nd	$\frac{26}{\$1}$	>	$\frac{23}{\$1}$
3rd	$\frac{24}{\$1}$	=	$\frac{24}{\$1}$
4th	$\frac{22}{\$1}$	<	$\frac{26}{\$1}$

increases for relative, substitute fruit. increases for not eating

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⊛ The equilibrium occurs when the consumer has spent all of his or her income and the marginal utilities per dollar spent on each good purchased are equal.

$$\frac{MU_A}{P_A} = \frac{MU_B}{P_B} = \frac{MU_C}{P_C} \ldots$$

⊛

$$\frac{100}{10} = \frac{50}{5} \xrightarrow{P\uparrow} \frac{100}{20} < \frac{50}{5}$$

$\Downarrow P\downarrow$ $\qquad$ $\Downarrow Q\downarrow$

$$\frac{100}{5} > \frac{50}{5} \qquad \frac{200}{20} = \frac{50}{5} \text{ (Satisfied)}$$

$\Downarrow Q\uparrow$

$$\frac{50}{5} = \frac{50}{5} \text{ (Satisfied)}$$

Quantity will increase as long as ~~sat~~ MU became 50

⊛ How to get law of demand from equi-marginal principle?

⇒ Price decrease, quantity increase for maintaining equi-marginal utility.

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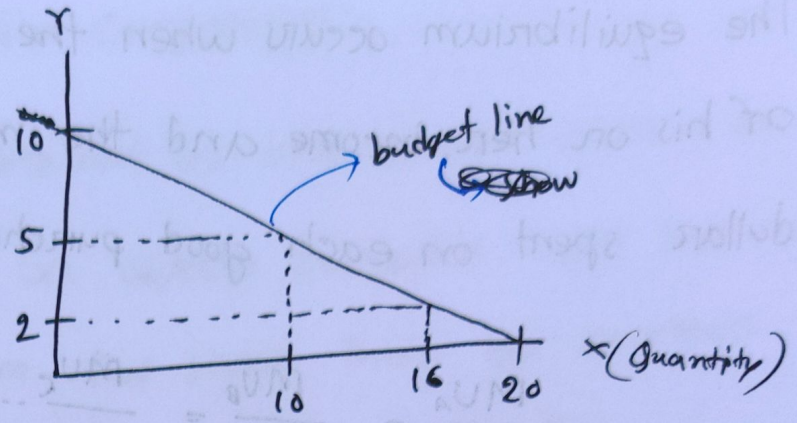
Budget Lines:

$M = \$100$

$P_x = \$5$

$P_y = \$10$



$$\text{Slope} = -\frac{1}{2} = \frac{\Delta Y}{\Delta X}$$

also can calculate by using price,

$$\text{Slope} = \frac{P_x}{P_y}$$

Budget equation:

shows different combination of two goods.

$$M = P_x Q_x + P_y \cdot Q_y$$

$$100 = 5 \cdot Q_x + 10 \cdot Q_y$$

$$\Rightarrow M = P_x Q_x + P_y Q_y$$

$$Q_y = \boxed{\frac{M}{P_y}} - \boxed{\frac{P_x}{P_y}} \cdot Q_x$$

Slope of the budget line

- Opponcunity cost of x in terms of Y
- relative price

Y-axis intercept.

- Real income in terms of Y

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- A fall in the price of the good on the x-axis increase the affordable quantity of that good and decrease the slope of the budget line.

- Can rotate due to single price change or make a different price ratio.

- Can shift in parallel: (relative price doesn't change)
  - income
  - both price change in same ratio.

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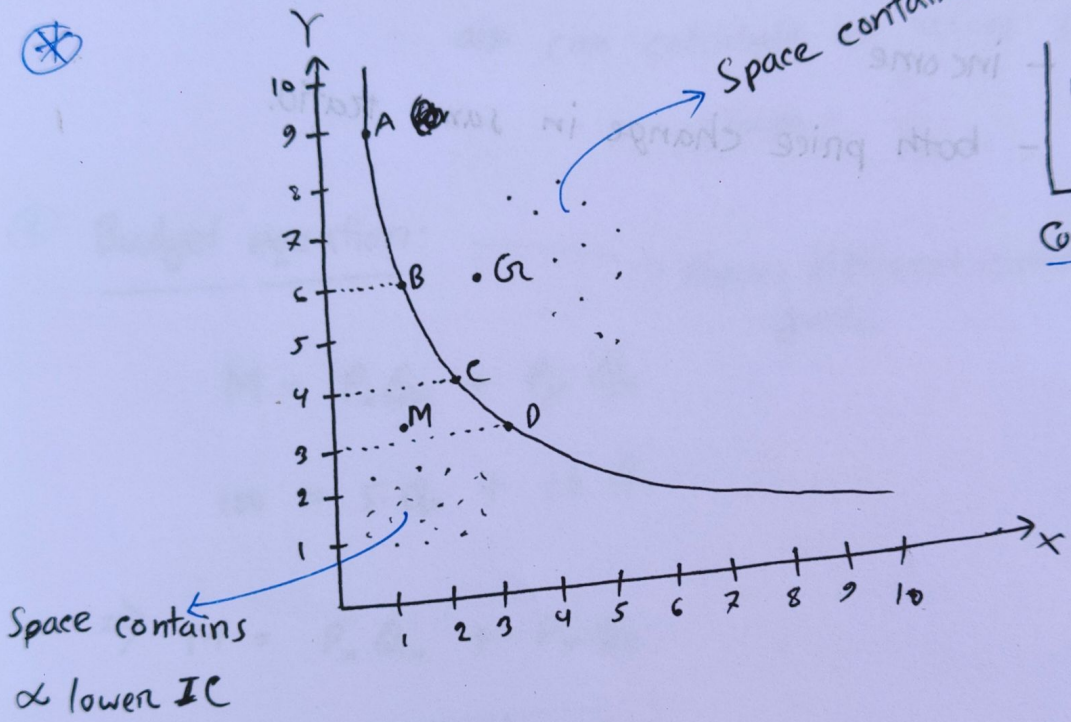
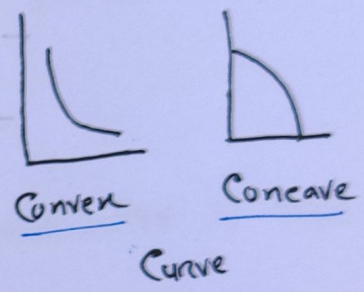
Indifference Curve Analysis (IC):

- An indifference curve is a line that shows combinations of goods among which a consumer is indifferent.





A(1,2)
B (2,6) > M (2,4)
C (3,4)
D (4,3)

G (3,6) > A=B=C=D

more preffenable
Position, Right Up

Less preffenable
position, left down

in terms of utility

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⇒ Higher IC gives higher level of satisfaction.

⇒ We always try to go to higher IC.

⊛ Deff^n: is a curve which shows different combination of two goods.

Which means the consumer same level of satisfaction.

⊛ Ordinal approach: Try to order the level of satisfaction by giving rank.

⊛ Why IC downward sloped?

⊛ Why IC is convex curve?

} Characteristic:

⇒

i. If I want to remain in the same IC and want to increase x, then I need to give up Y.

ii. The rate of sacrifice of Y to get one unit of x, this is called marginal rate of substitution (MRS)

⇒ MRS ⇒

$A \to B = 3$

$B \to C = 2$

$C \to D = 1$

⊛ Law of diminishing MRS:

⊛ Why MRS falls?

⇒ Law of diminishing marginal utility.

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⇒ As we consuming x in successive unit, we are getting less satisfaction from next x. As satisfaction is less than previous, then, we are willing to give up less y for this less satisfaction.

⊛ Slope of IC = $\frac{MU_x \downarrow}{MU_y \uparrow}$ ⇒ slope decreasing

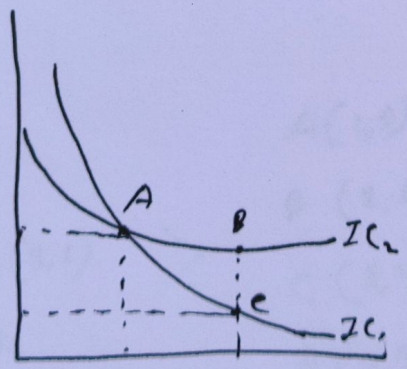
⊛ MRS = Slope

⊛ Why IC convex to the origin?

⇒ Describe 2 point. Using Curve

iii. Higher IC shows higher level of satisfaction.

iv. IC do not cross each other.



for, IC_1, A = C
for, IC_2, A = B

B = C but B > C

∴ B ≠ C ∴ can't cross each other.

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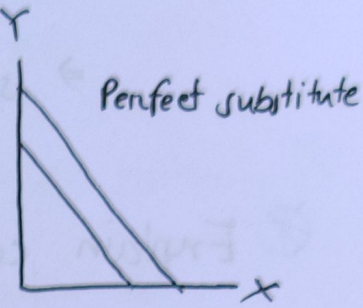
Different types of IC:

X ⟷ Y (Perfect Substitute, identical)

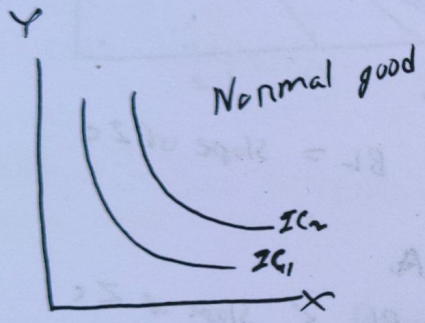


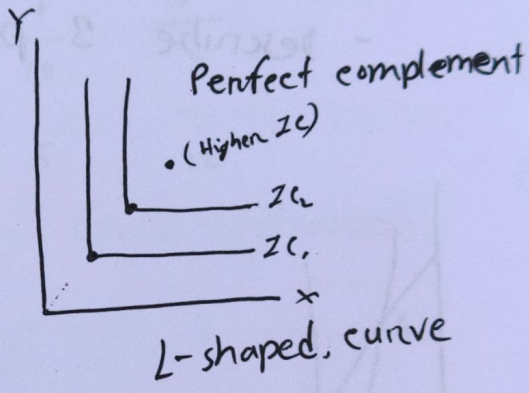
Then, MRS = 1 = -slope of IC

∴ MRS will be constant

X vs Y (Perfect complement) - Pair of shoes.

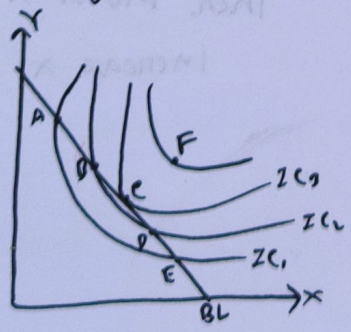
Then, MRS = 0





Consumer Equilibrium:

- on the budget line
- on the highest attainable indifference curve



C = consumer equilibrium

F (out of budget line)

C (higher IC with in BL)

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- budget line became tangent with the highest possible IC.

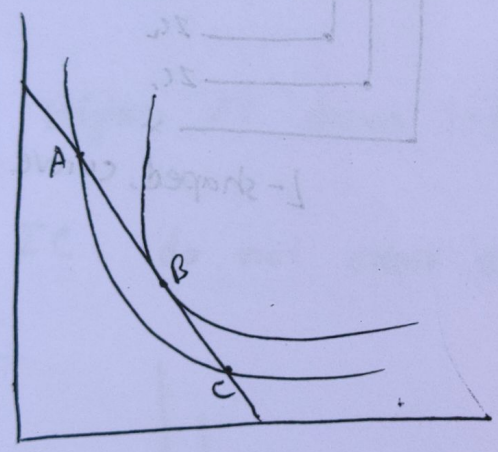
$\Rightarrow MRS = \frac{P_x}{P_y} = \frac{MU_x}{MU_y}$

$\Rightarrow$ slope of BL = slope of IC
↳ MRS

⊛ Explain consumer equilibrium/ utility maximization condition with the help of IC and BL.

⇒ - Draw BL, ICs
- Describe 3 points

⊛



At point B,
Slope of BL = slope of IC

At point A,
slope of BL < slope of IC
↓ what I have to give up
↓ what I willing to give up

At point C,
$MRS < \frac{P_x}{P_y}$

Then, Y is more valuable

Then, MU of X is high and we will increase X more

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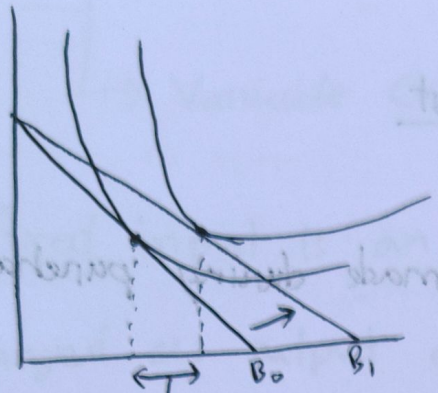
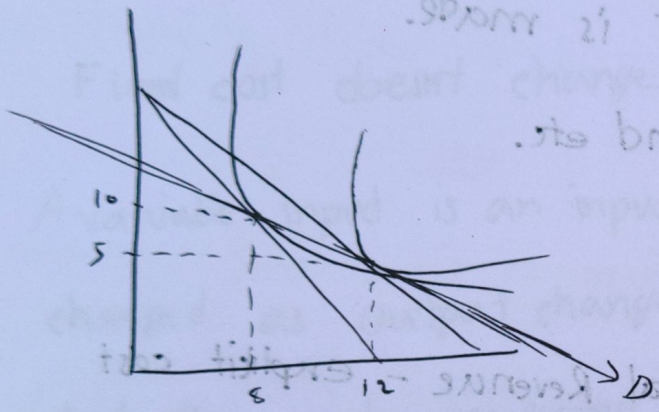


we will move to higher IC

Law of demand



P	Q
10	8
5	12

Break

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Chapter-21

Production and Cost

- Explicit Cost: Actual payment made during purchase.

- Implicit Cost:

  Value of resource used in production for which no actual payment is made.

  ~~e.g.~~ i.e.: land, pond etc.

- Types of Profit:

  - Accounting Profit: Total Revenue - explicit cost
  - Economic Profit: Total Revenue - explicit cost - implicit cost

- Economic Profit = 0

  then, Accounting Profit is still positive

- Zero economic profit is not bad, because accounting profit is still positive.

  - Farm production will be continued.

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* Cost → Fixed Cost
→ Variable Cost

* A fixed input is an input whose quantity cannot be changed as output changes in the short run.
And the costs associated with fixed ~~cost~~ inputs are fixed cost.
Fixed cost doesnt change as output changes.

* A variable input is an input whose quantity can be changed as output changes in the short run.
And the costs associated with variable inputs are variable costs.
Variable costs changes as output changes.

* Short Run Vs Long Run

As long as we cannot vary all our inputs, we are not capable to change all our inputs, then the farm is in short run.
When, ~~we are~~ a farm is capable to change all or its input then the farm is in long run.

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- In short run, there is no fixed inputs.

- Short run, long run time depends on the financial ability of the farm.

- The short run is a period in which some inputs are fixed.
  - The long run is a period in which all inputs can be varied.
  - The total cost is the sum of fixed and variable costs.

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- Average Fixed Cost (AFC) = Total fixed cost divided by quantity of output

- Average Variable Cost (AVC) = Total variable cost divided by quantity of output

- Average Total Cost (ATC) = Total cost divided by quantity of output.

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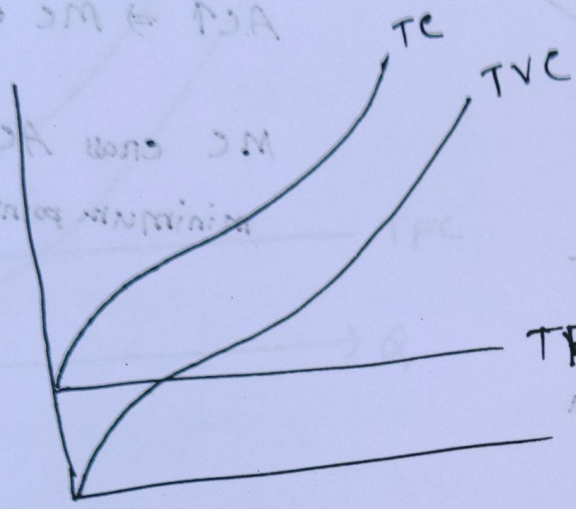
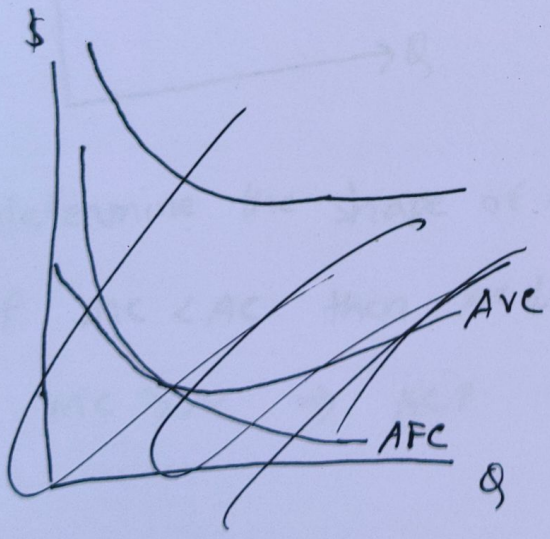
- The marginal cost is the change in total cost or total variable cost that results from a change in output.

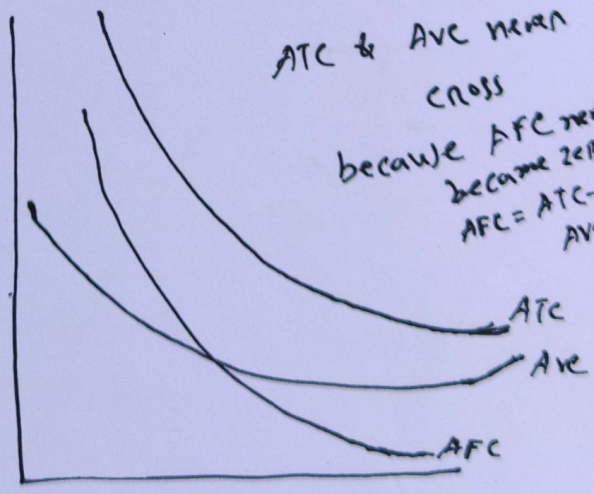
$$TC = TFC + TVC$$



- AFC ⇒ continuously fall but never become zero.
- AVC ⇒ fall then rise again.



$$AC = ATC = AVC + AFC$$



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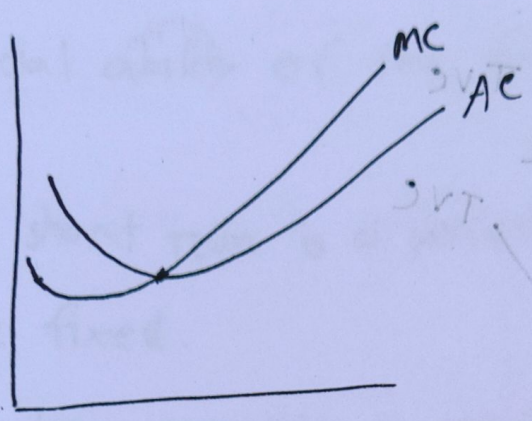
Marginal cost : $= \frac{\Delta TC}{\Delta Q}$



$AC \downarrow \Rightarrow$ MC a down of AC

$AC \uparrow \Rightarrow$ MC above of AC

MC cross AC at minimum point of AC

if $MC > AC$, $AC \uparrow$

$MC < AC$, $AC \downarrow$

MC will plot at mid point

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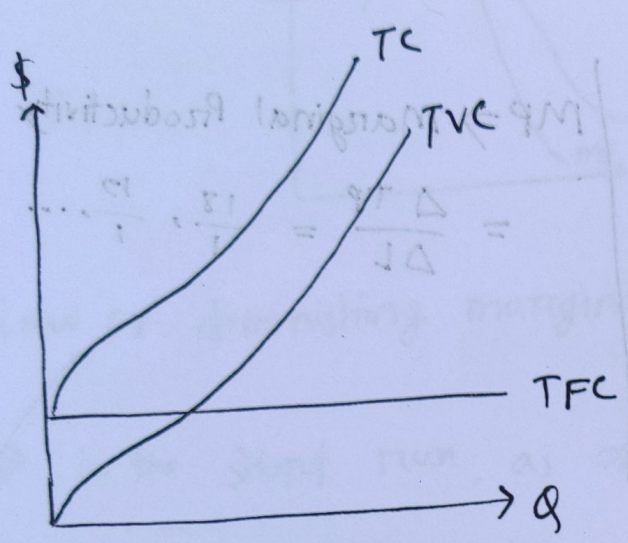
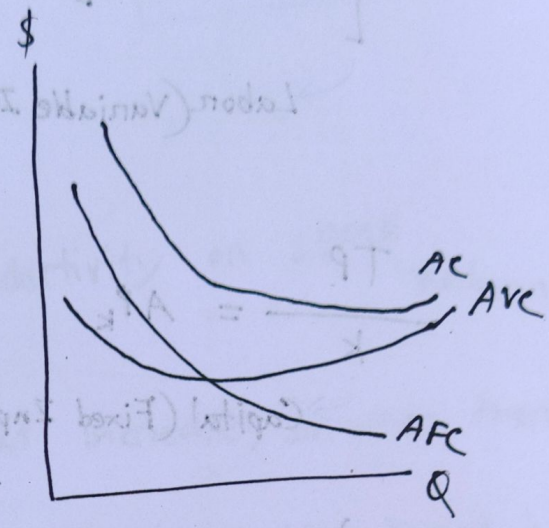
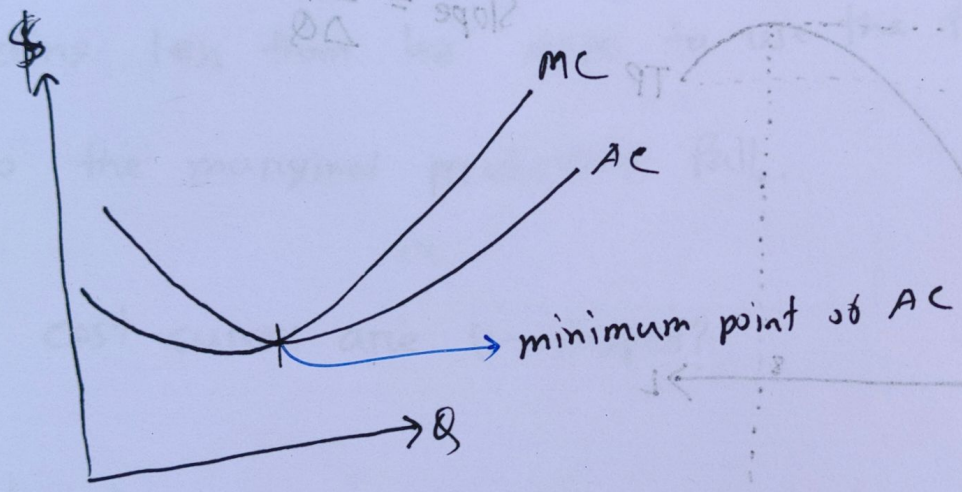
Production and cost







* MC determine the shape of AC
  - if MC < AC then AC↓
  - MC > AC ⇒ AC↑

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The Law of Diminishing Marginal Returns:

$$\Rightarrow \frac{TP(Q)}{L} = AP_L$$

Total Product

Average Productivity

Labor (Variable Input)

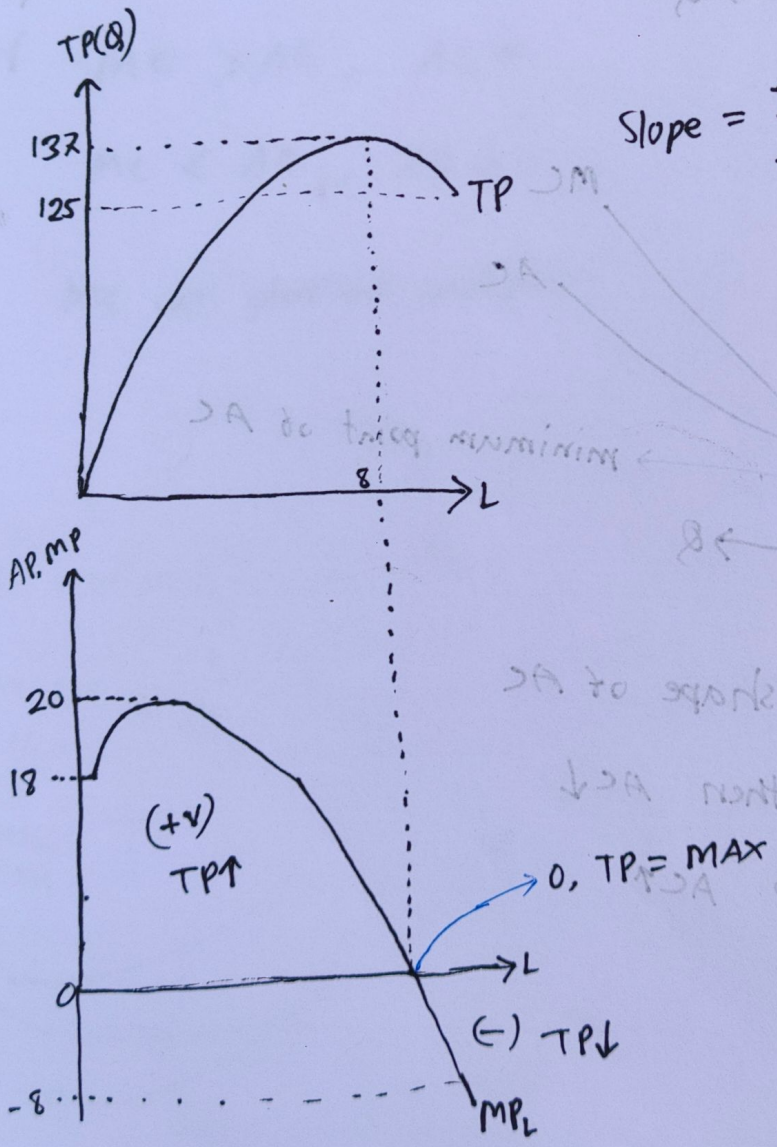
$$\frac{TP}{K} = AP_K$$

Capital (Fixed Input)

MP ⇒ Marginal Productivity

$$= \frac{\Delta TP}{\Delta L} = \frac{18}{1}, \frac{12}{1}, \ldots$$

$$\text{Slope} = \frac{\Delta TP}{\Delta Q} = MP$$



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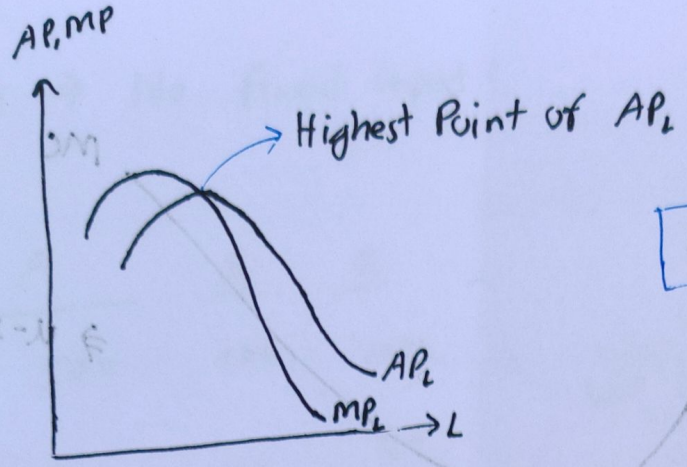

MP vs AP

* Law of diminishing marginal productivity or LDMR → Return

⇒ in the short run, as one input increase, so when there increase in the variable input, the variable input is getting less than less scope to use the fixed input, so the marginal productivity fall..

* Why cost curves are U- shaped?

⇒ due to law of diminishing marginal return,

$MP \downarrow$ and $MC \uparrow$

$$MC = \frac{\Delta TC}{\Delta Q} = \frac{W}{MP_L}$$

W → Capital W, in terms of money

$$MP_L = \frac{\Delta Q}{\Delta L}$$

$\Delta L \rightarrow 1$

$MP_L \uparrow = MC \downarrow$

$MP_L \downarrow = MC \uparrow$

$MP_{L\,min} = MC_{max}$

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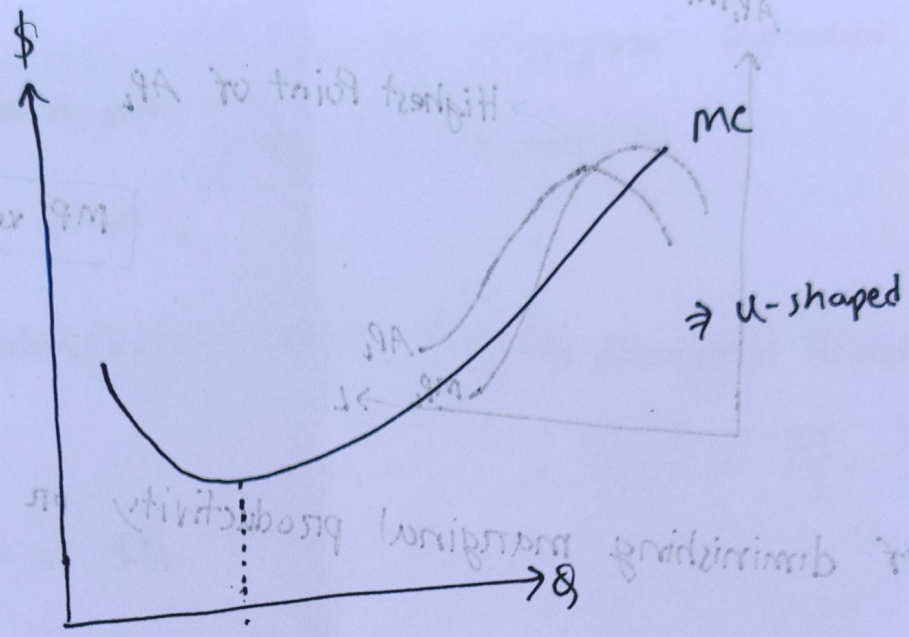

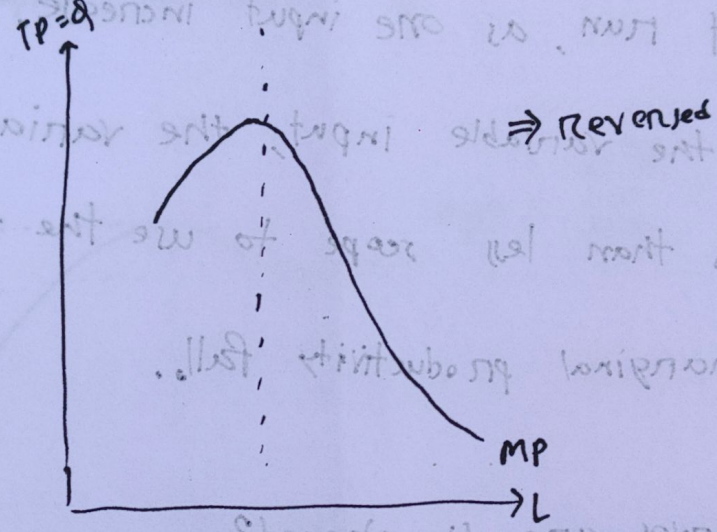

$MP\uparrow = MC\downarrow$

$MP\downarrow = MC\uparrow$

MP_L vs MC

inverse relation

(*) MC always goes thrue the low point of AC, AVC

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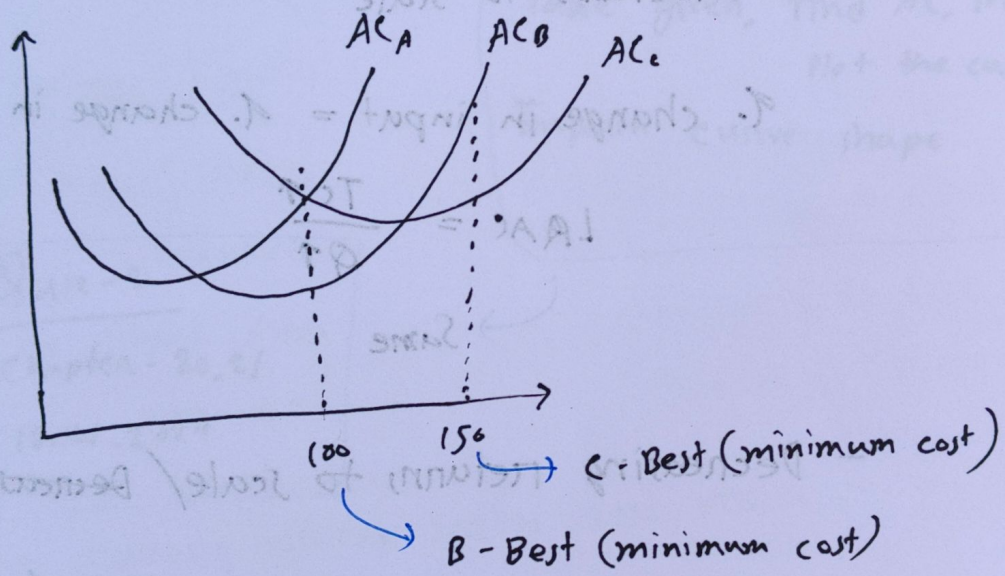
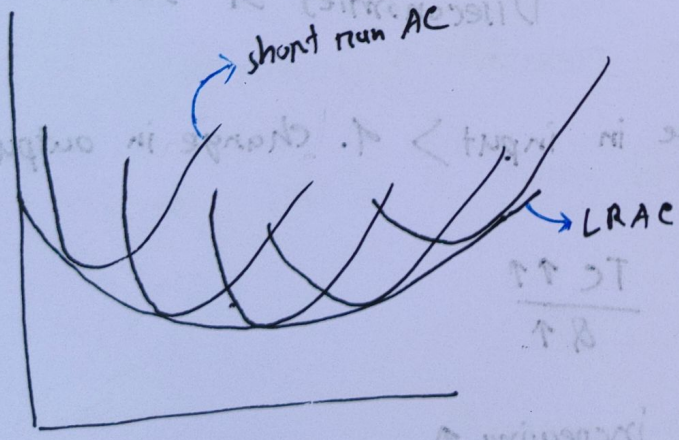
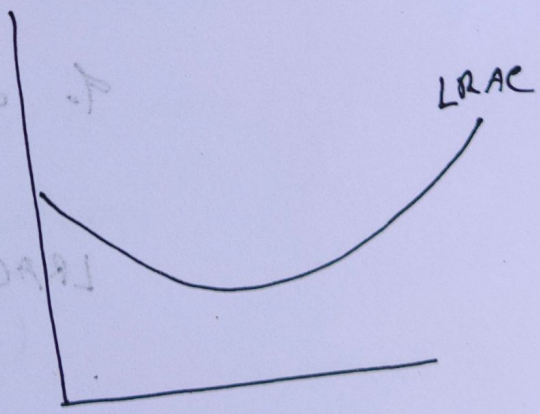
* Long run ⇒ No fixed input

	A	B	C
L	500	800	1000
K	50	40	30
L	1	2	2

We will choose minimum AC







LRAC ⇒ Relation between SRAC & LRAC

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Reason of this shape?

- increasing returns to scale/Economies of scale

% change in input < % change in output

$$LRAC = \frac{TC\uparrow}{Q\uparrow\uparrow}$$

↓ decrease

- constant returns to scale

% change in input = % change in output

$$LRAC = \frac{TC\uparrow}{Q\uparrow}$$

Same

- Decreasing returns to scale/ ~~Decreasing of~~ Diseconomies of scale

% change in input > % change in output

$$LRAC = \frac{TC\uparrow\uparrow}{Q\uparrow}$$

increasing ↑

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* Why these scale?

* Shift in cost curve ⇒ up or down

i. TAX

ii. Input Price

iii. Technology

Draw Curve (Table given)

AC, MC } Relation
AP, MP

Reaso of these curve shape

Law of DMR

Table given, find AC, MC and Plot the curve

Explain curve shape

Quiz-2

Chapter - 20, 21

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Chapter-22

Perfect Competition

* Market ⇒
  - → Competetive (Perfect competetion)
  - → Non competetive
    - → Monopoly
    - → Oligopoly

* Perfect Competition:
  - many buyers & many sellers
    - → large enough, buyers or sellers can't control whole market.
    - each buyer or sellers buy or sale very few amount.
  - Sellers are selling identical product, homogeneous.
  - everyone have relative information.
  - easy entry and exist in farm. (Any one can setup farm)

* Farms are price taken. ? why?

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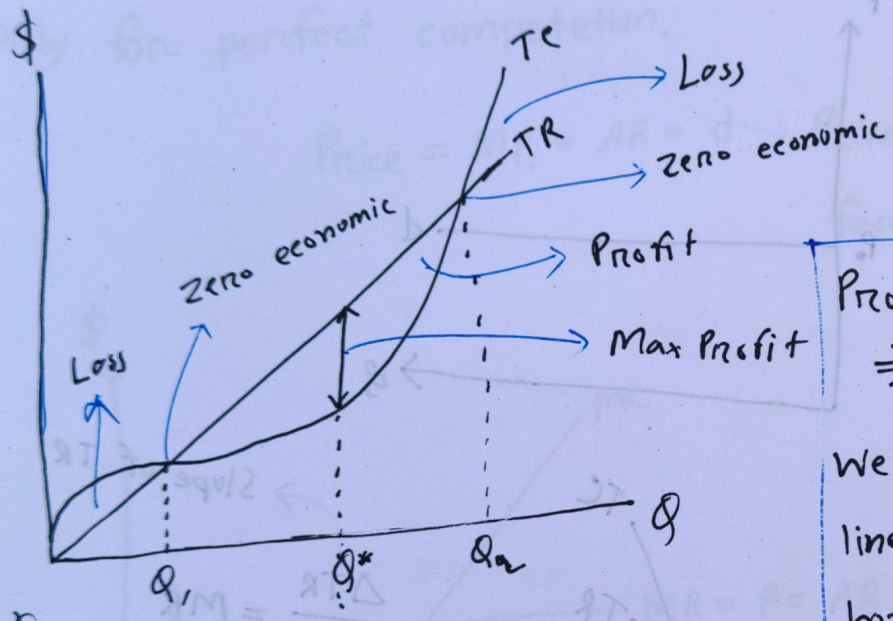
⇒ Because farm can't decide the market price.

Market price decided by the demand and supply curve (Equilibrium price)

⊛ Profit (π) = TR − TC

= (P×Q) − (TFC + TVC)

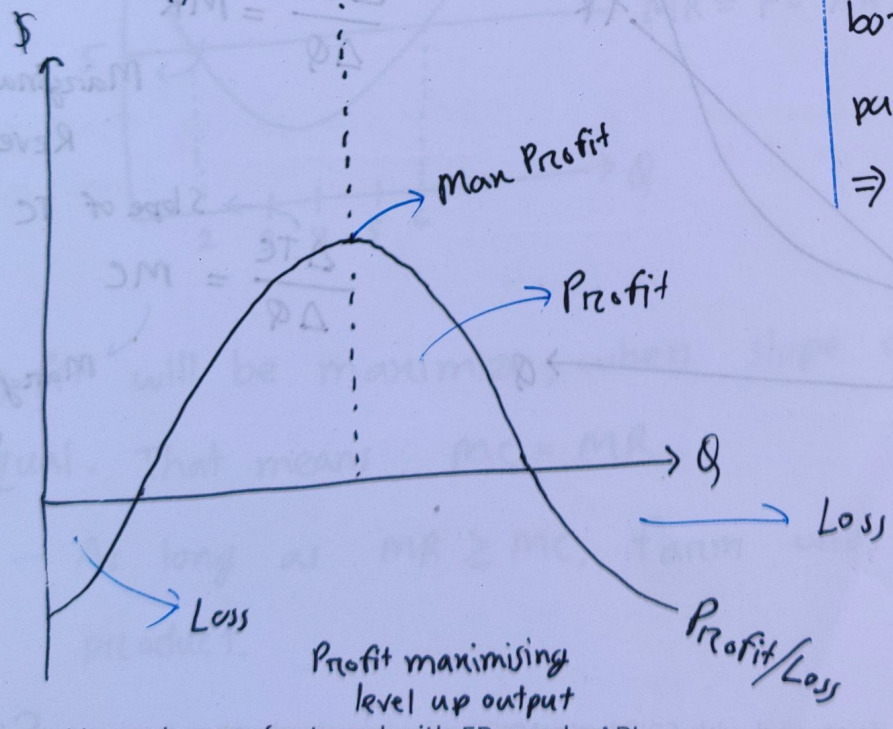


Profit, max = TR > TC

⇒ Gap ▸ maximum

We need to draw tangent line and find out where both tangent are in parallel.

⇒ when slope equal



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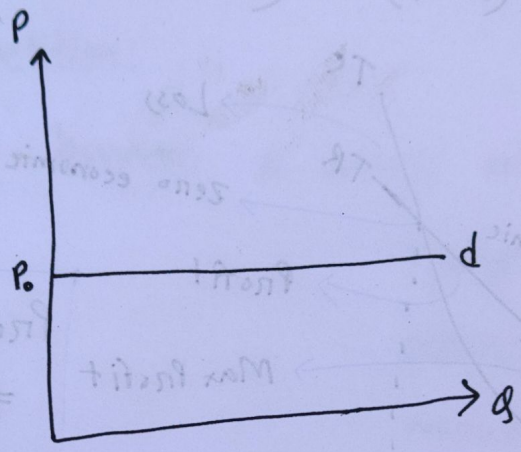
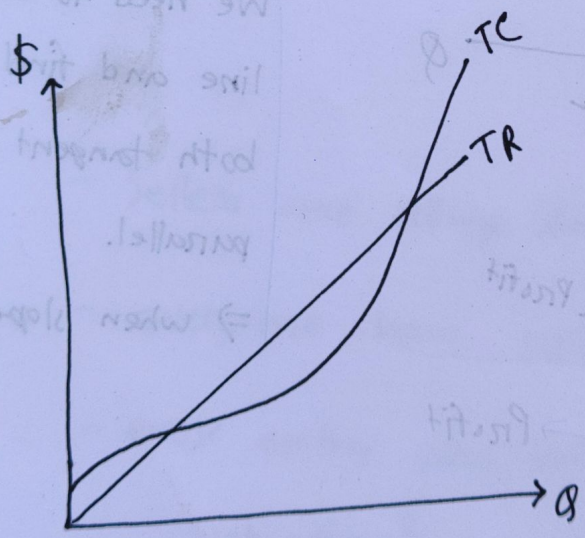
* Farms are price taken not price maker.
  - They can't increase price
  - They can't decrease price alone

* Demand curve faced by a single firm:



*



Slope of TR

$$\frac{\Delta TR}{\Delta Q} = MR$$

Marginal Revenue

Slope of TC

$$\frac{\Delta TC}{\Delta Q} = MC$$

Marginal Cost

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Marginal Analysis:

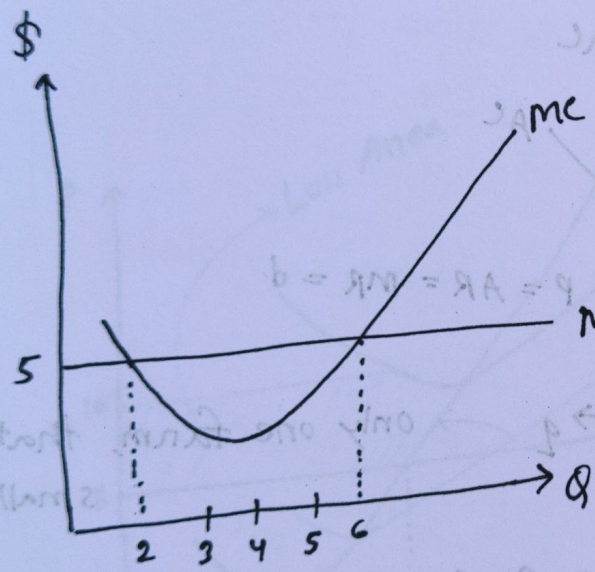
Q	TR
0	0
10	100
20	200
30	300

$MR = \frac{100}{10} = 10$ → Price

$= \frac{100}{10} = 10$

- Only for perfect competetion,

Price = MR = AR = d → Price of demand curve faced by farm



- Profit will be maximize, when slope of TR & TC are equal. That means, MC = MR
  - As long as MR ≥ MC, farm will produce the product.

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(i) $MR = MC \Rightarrow$ neccessary condition

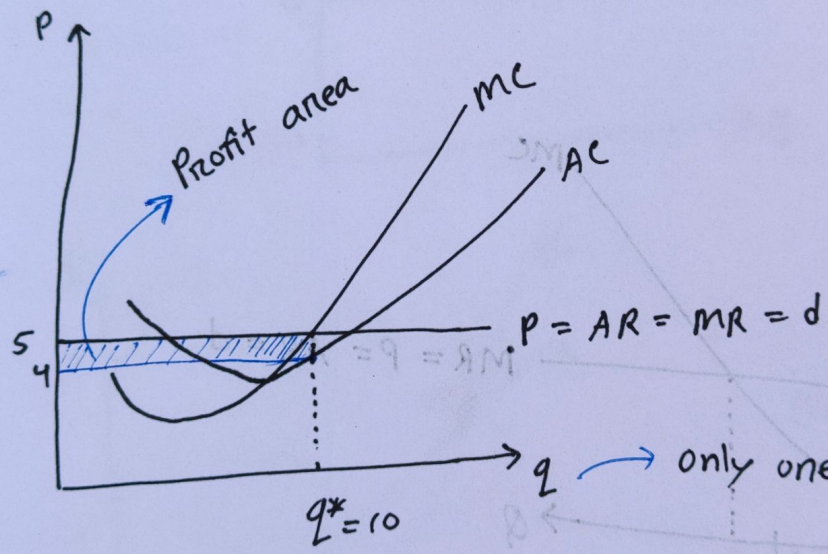
(ii) MC should cut MR from bellow $\Rightarrow$ sufficient condition

$MC' > MR'$ → Derrivative

$$\frac{\partial MC}{\partial Q} > \frac{\partial MR}{\partial Q}$$

⊛ Short Run Situations

(i)



→ only one farm, that's why small letter.

At q^*, $\boxed{P > AC}$ → Profit

$TR = AR \times Q = 5 \times 10 = 50$

$TC = AC \times Q = 4 \times 10 = 40$

Profit $\Rightarrow$ $TR - TC = 50 - 40 = 10$

Per Unit $\Rightarrow$ $\frac{10}{10} = 1$

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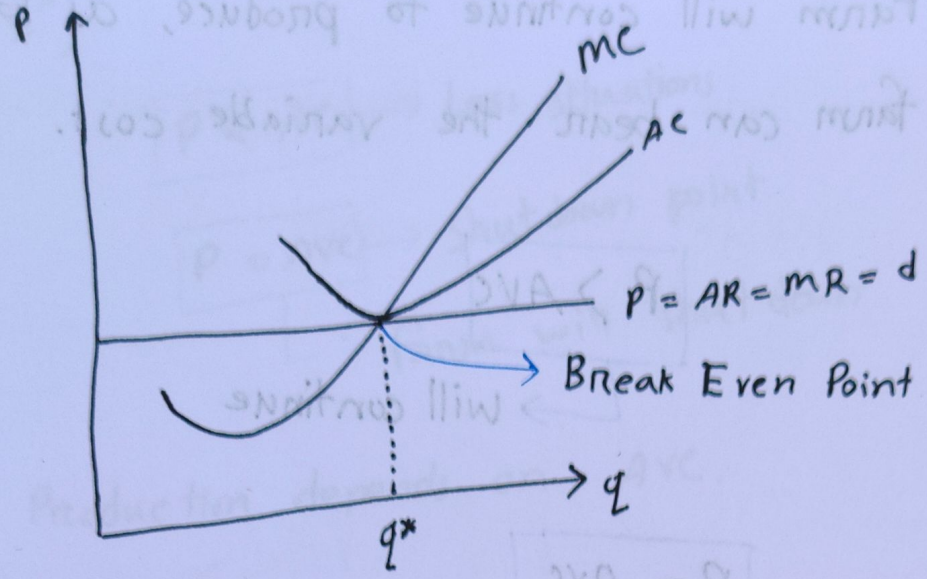
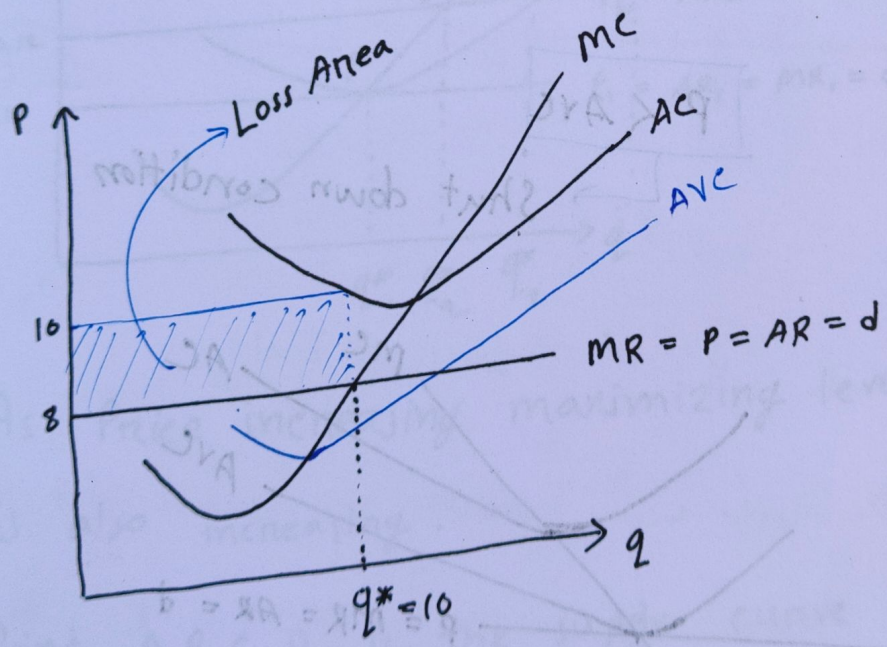
(ii)



At q^*, $\boxed{P = AC}$ → Zero Economic Profit

(iii)



At q^*, $\boxed{P < AC}$ → Loss

TR = 80

TC = 100

Loss = 80 − 100 = −20 = 20

Per Unit = $\frac{20}{10} = 2$

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⇒ Farm will continue to produce, as long as farm can bear the variable cost.

$\boxed{P > AVC}$

→ will continue

$\boxed{P = AVC}$

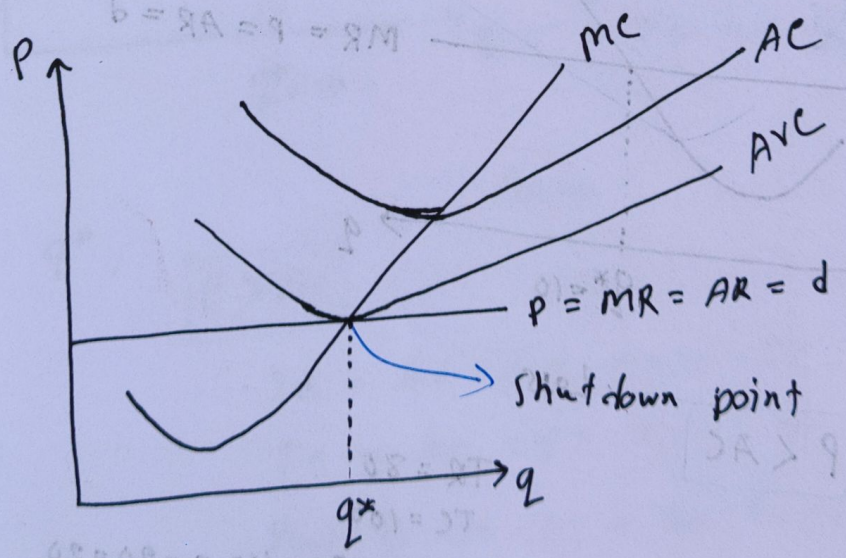
→ indifferent between producing or not producing

→ Shut down point

$\boxed{P < AVC}$

→ Shut down condition

(iv)



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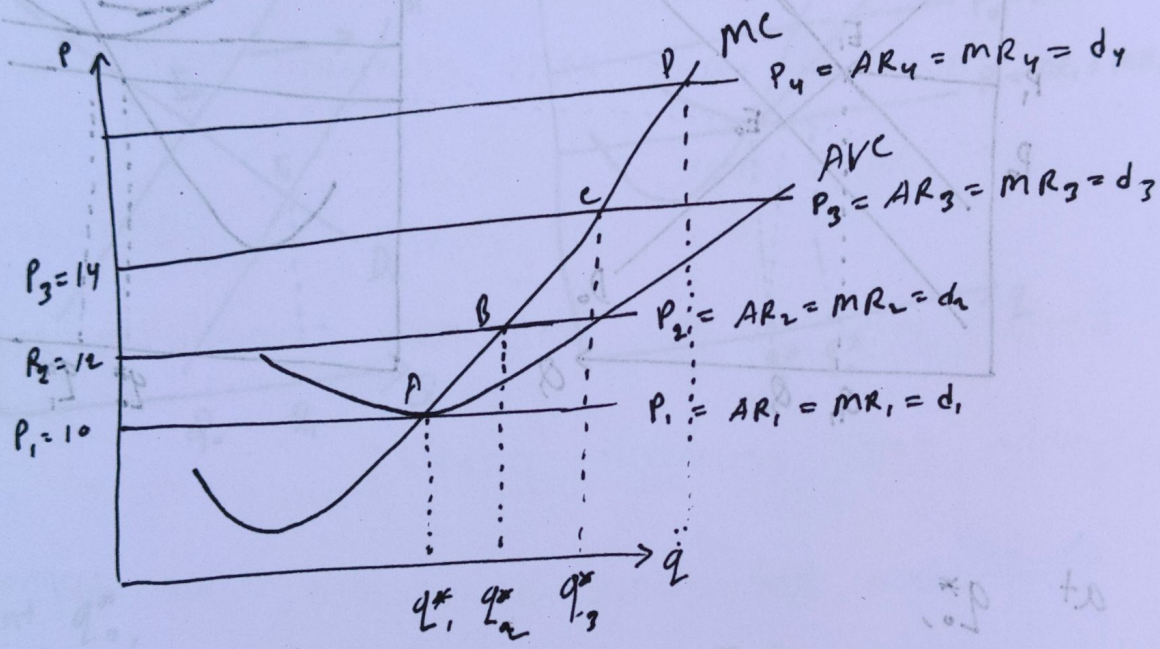
at q^*,

$\boxed{P < AC}$ → Loss situations

$\boxed{P = AVC}$ → shut down point

→ farm will shut down

⊗ Farm Production depends on AVC.



⇒ As Price increasing maximizing level of output is also increasing.

⇒ Point A, B, C, D is the supply curve

⇒ Part of MC, above AVC is the supply curve of the farm.

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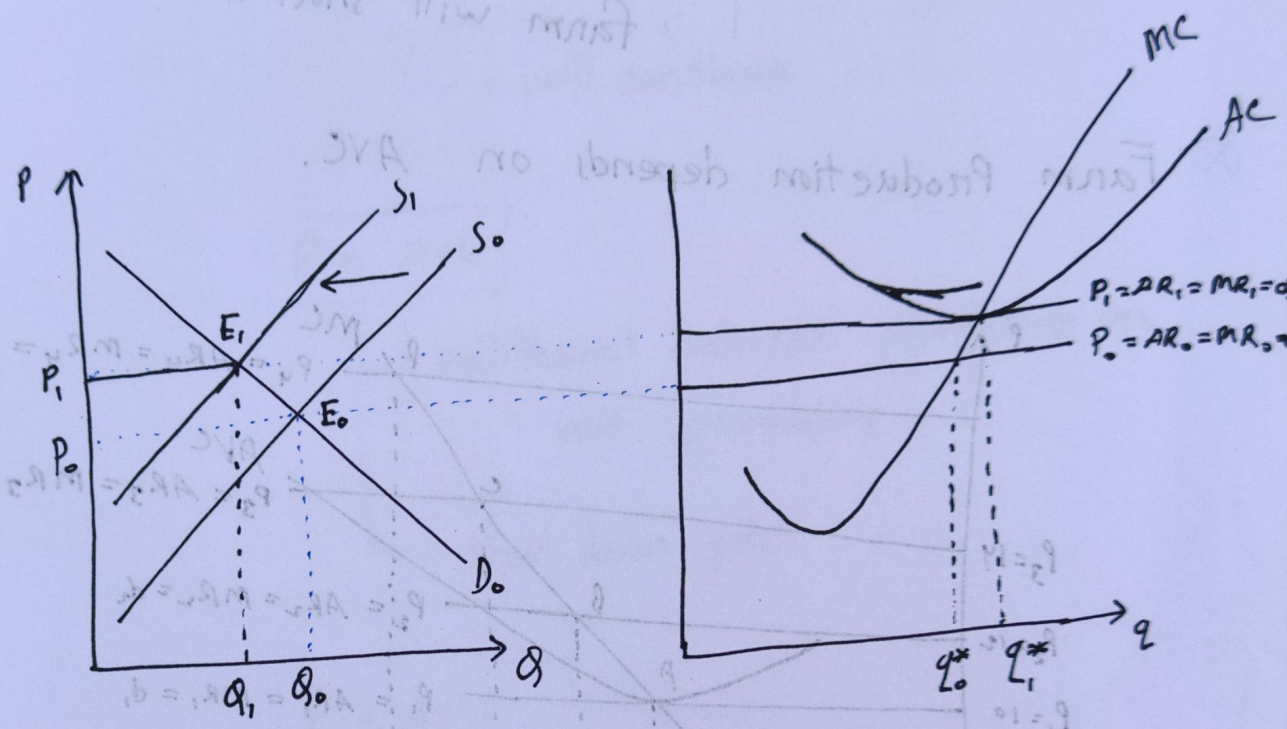
⇒ For long run,

$P > AC$ ⇒ Positive Economic Profit ⇒ entry

$P < AC$ ⇒ Loss ⇒ exit



at q_0^*,

$P_0 < AC$ ⇒ Loss ⇒ Exit

⇒ Supply will decrease and curve shift to left.

⇒ Price will increase, $P\uparrow$ to P_1

at q_1^*, $P_1 = AC$ ⇒ Zero Economic Profit.

Total $Q\downarrow$ but, individual $q\uparrow$, due to seller exit.

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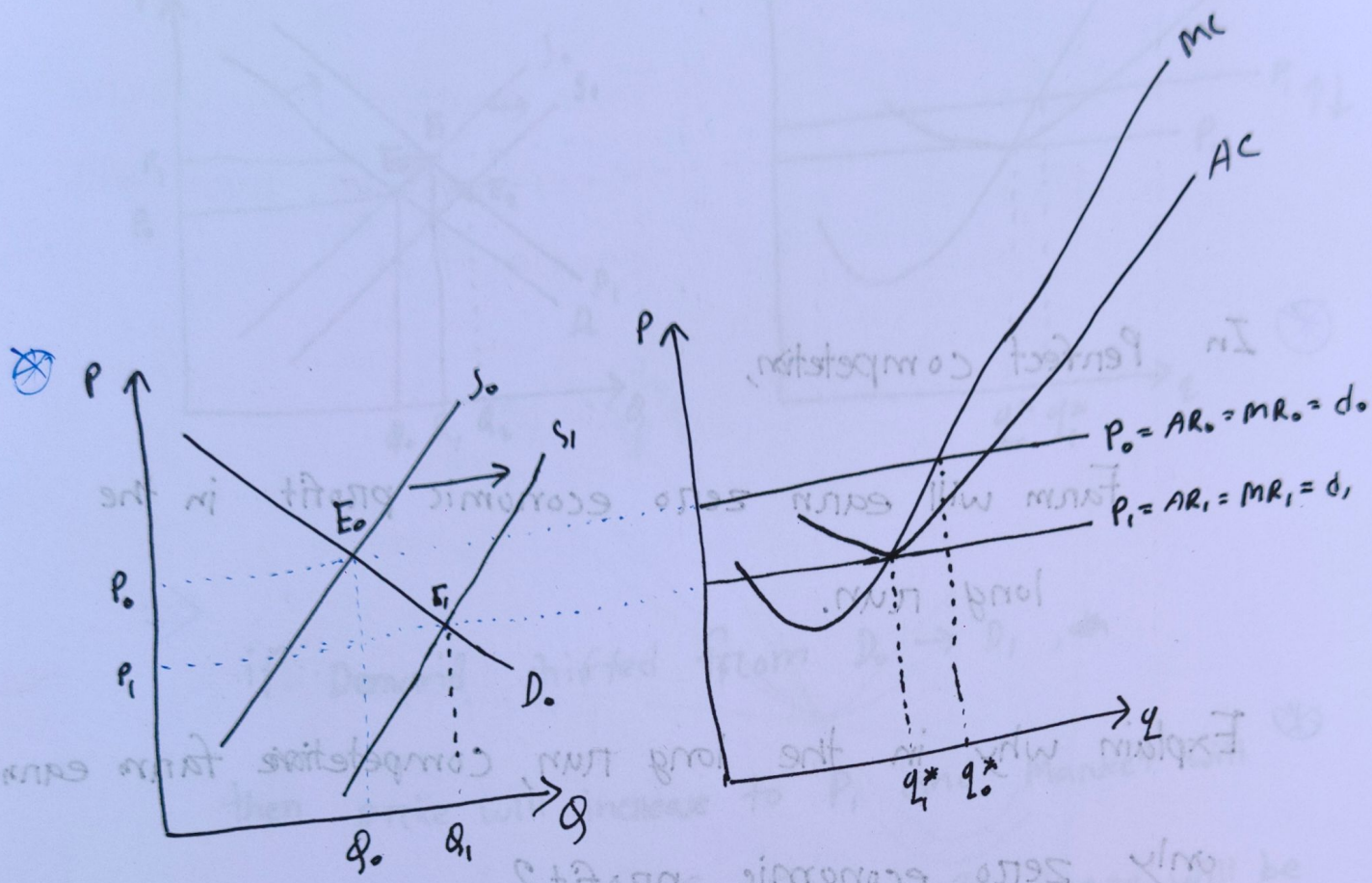
Theory:



At point q_0^*,

$P > AC \Rightarrow$ Economic Profit $\Rightarrow$ Entry

$\Rightarrow$ Supply ↑, because seller increase

$\Rightarrow$ Price ↓ to P_1

At point, q_1^*,

$P_1 = AC =$ Zero Economic Profit $= MC$

total Q ↑, but q ↓

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Theory:

- In Perfect competetion,

  Farm will earn zero economic profit in the long run.

- Explain why in the long run, competetive farm earn only zero economic profit?

  ⇒ Explain two curve in details using appropriate sentence.

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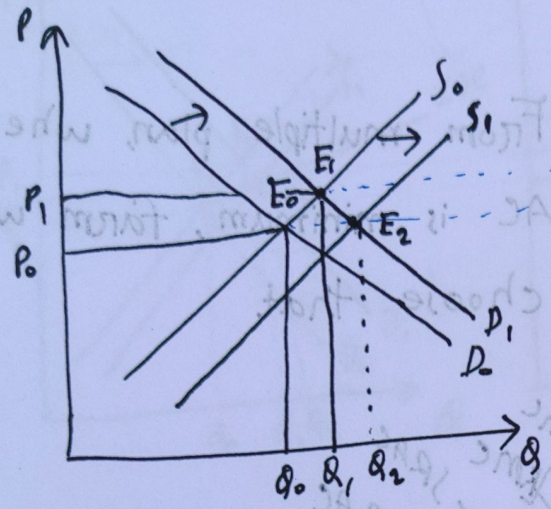
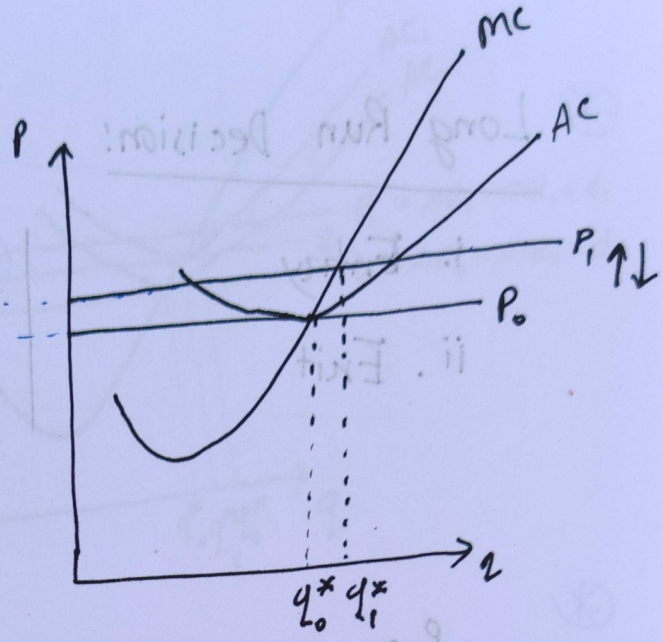
For demand shift:





⇒ if Demand shifted from $D_0 \rightarrow D_1$,

then price will increase to P_1 and Market will earn economic profit. For profit there will be new entry. So supply will increase and shifted to S_1. For that Equilibrium point will shift to E_2. And the price will restore again to P_0. And market will earn zero economic profit.

~~Vice v~~ Same for left shift.

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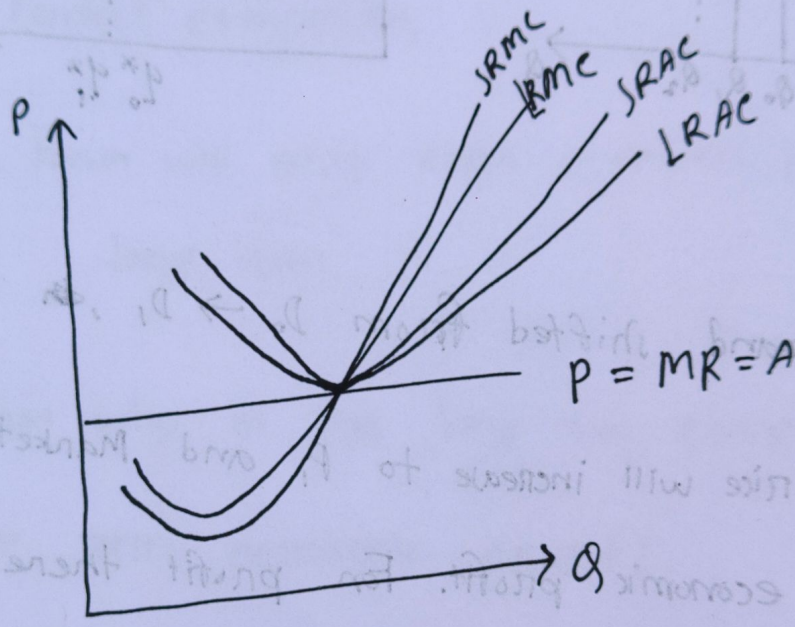
Long Run Decision:

i. Entry

ii. Exit

From multiple plan, where AC is minimum, farm will choose that.



Industry & Cost Relations:

⇒ (i) Increasing Cost Industry — $q\uparrow \Rightarrow AC\uparrow$

(ii) Constant Cost Industry — $q\uparrow \Rightarrow \overline{AC}$

(iii) Decreasing Cost Industry — $q\uparrow \Rightarrow AC\downarrow$

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