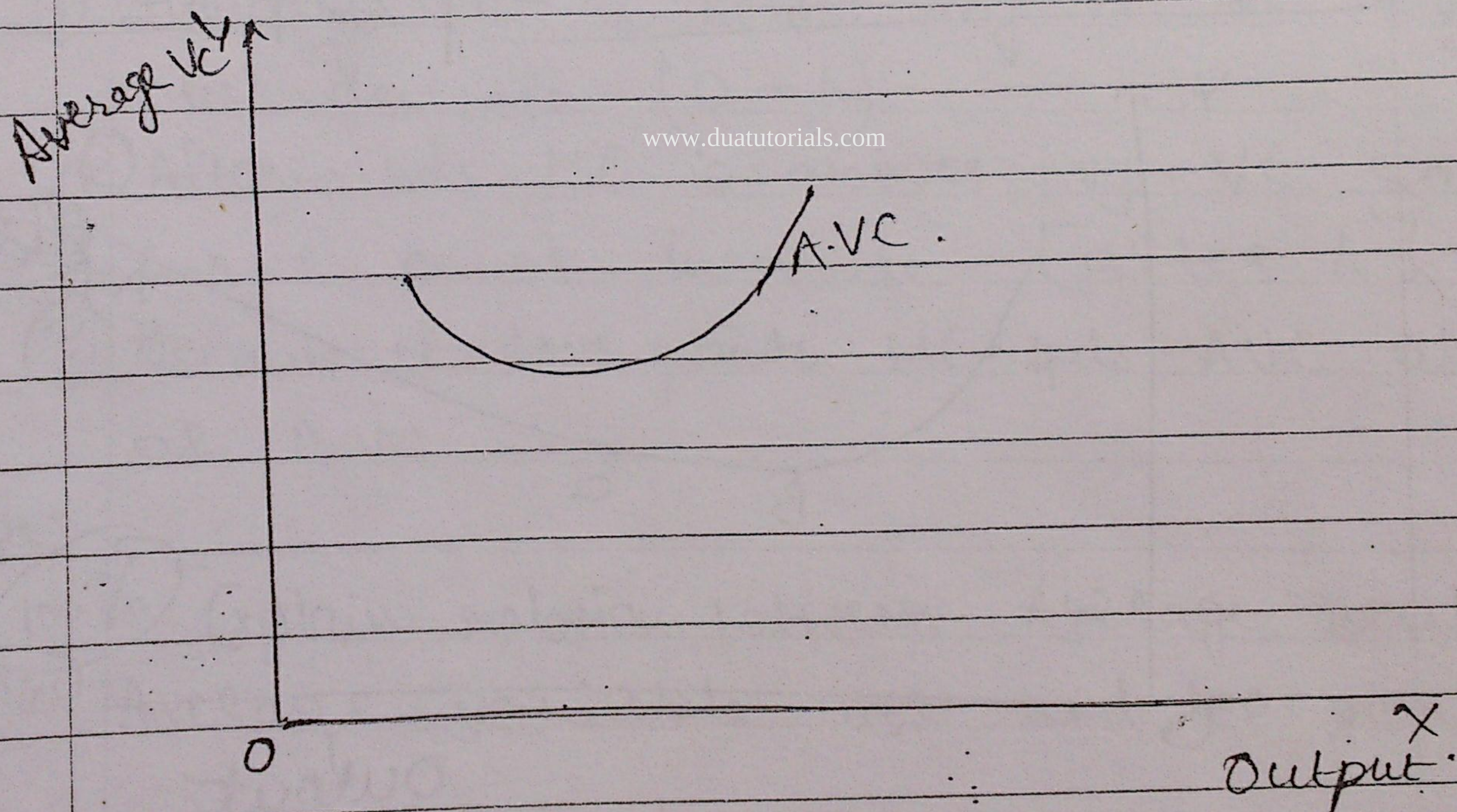


x axis as AFC is never zero (Fixed cost and output both are greater than zero)

(2) $\text{Average Variable Cost} = \frac{\text{Variable Cost}}{\text{Output}}$

Output	Variable Cost	Average VC
0	0	0
1	10	10
2	18	9
3	24	8
4	36	9
5	50	10



As marginal cost curve is U shaped; so average variable cost ~~is~~ curve is also U shaped.
[Cricketer logic - Marginal effects average]

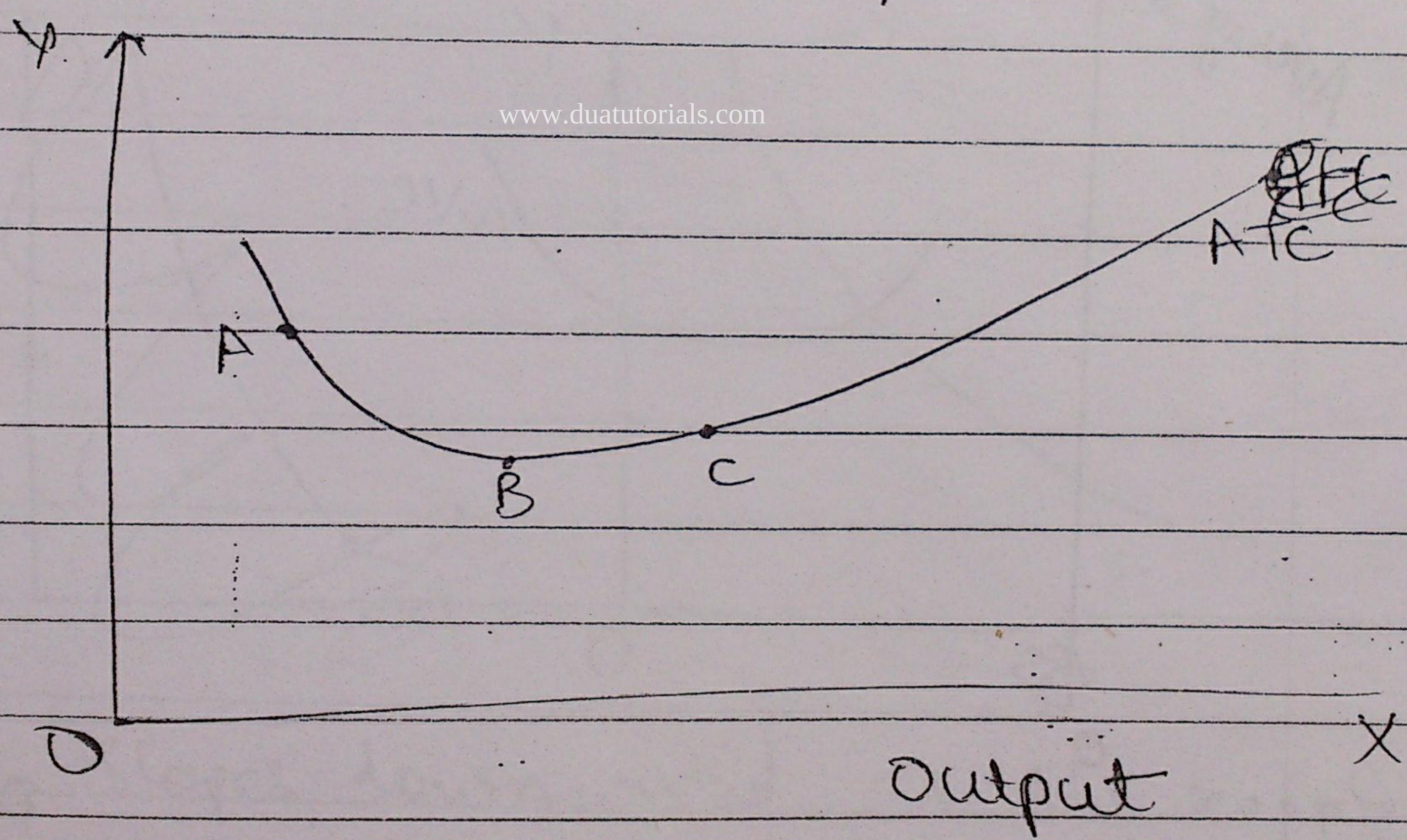
(3)

Average Total cost = $\frac{\text{Total cost}}{\text{Output}}$

$$\frac{TC}{\text{Output}} = \frac{FC}{\text{Output}} + \frac{VC}{\text{Output}}$$

Average TC = Average FC + Average VC

Output	TC	Average TC	Avg. FC	Avg. VC	Avg. TC
0	10	—	—	—	—
1	20	20	10	10	20
2	28	14	5	9	14
3	34	11.3	3.3	8	11.3
4	46	11.5	2.5	9	11.5
5	60	12	2	10	12



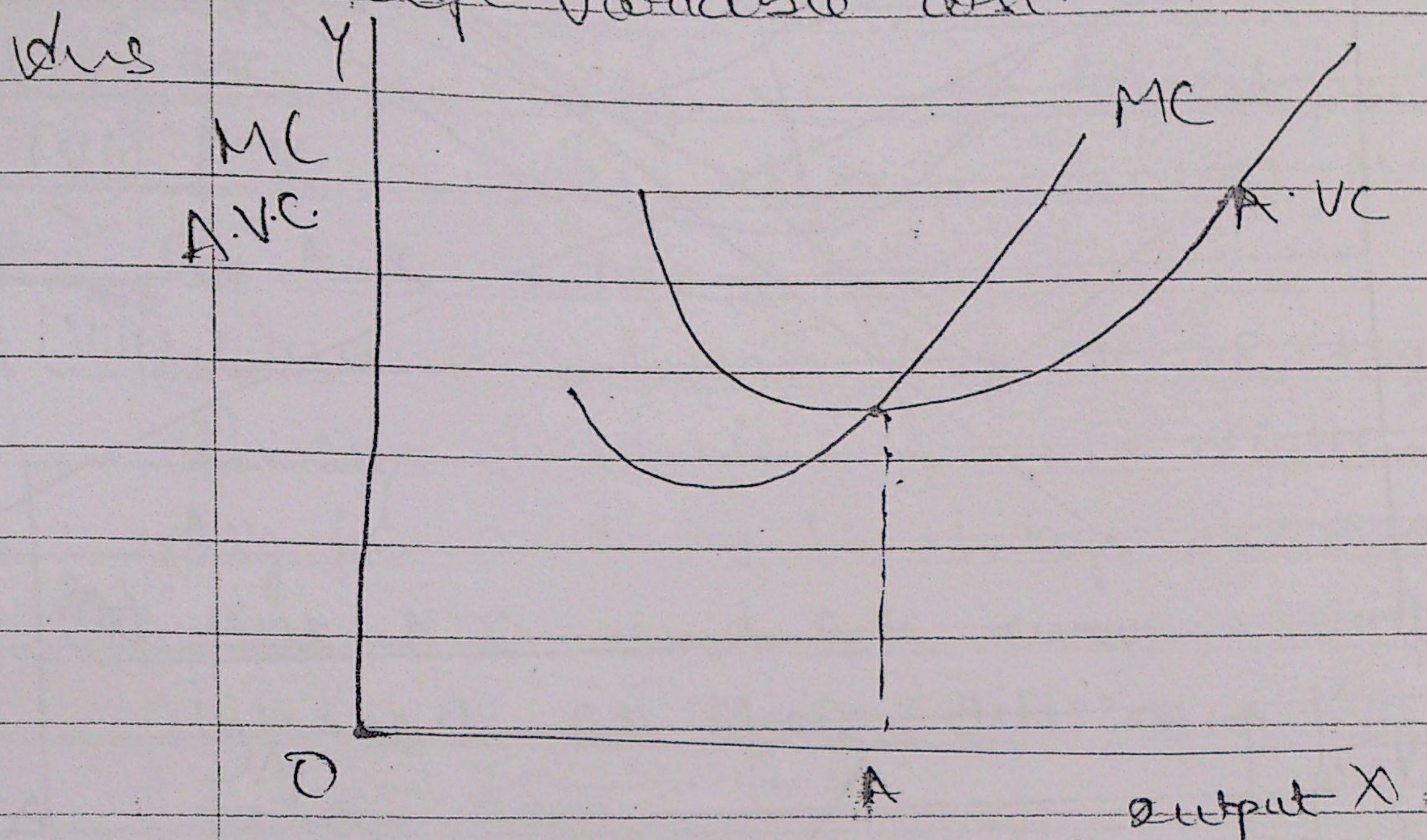
$$\text{Avg. TC} = \text{Avg. FC} + \text{Avg. VC}$$

Initially Avg. FC and Avg. VC both decrease
so their Total Avg. TC will also decrease
(A-B)

But afterwards Avg. VC starts increasing while
Avg. FC still decrease.

But ↑ in Avg VC > ↓ in Avg. FC
so their Total AV. TC must ↑ (B-C)

Imp
Q. Explain relation between Marginal cost and average variable cost.



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- ① Initially MC is below Avg. VC so Avg VC curve must decrease (O - A)
- ② Afterwards MC is above Avg. VC so Avg. VC curve must increase [after A]
- ③ Because of above points MC cuts AVC at lowest of A.V.C.

V.V. Imp.

100%
(6 marks) Q. Explain relation between Average Total Cost, Average variable cost and Marginal cost.

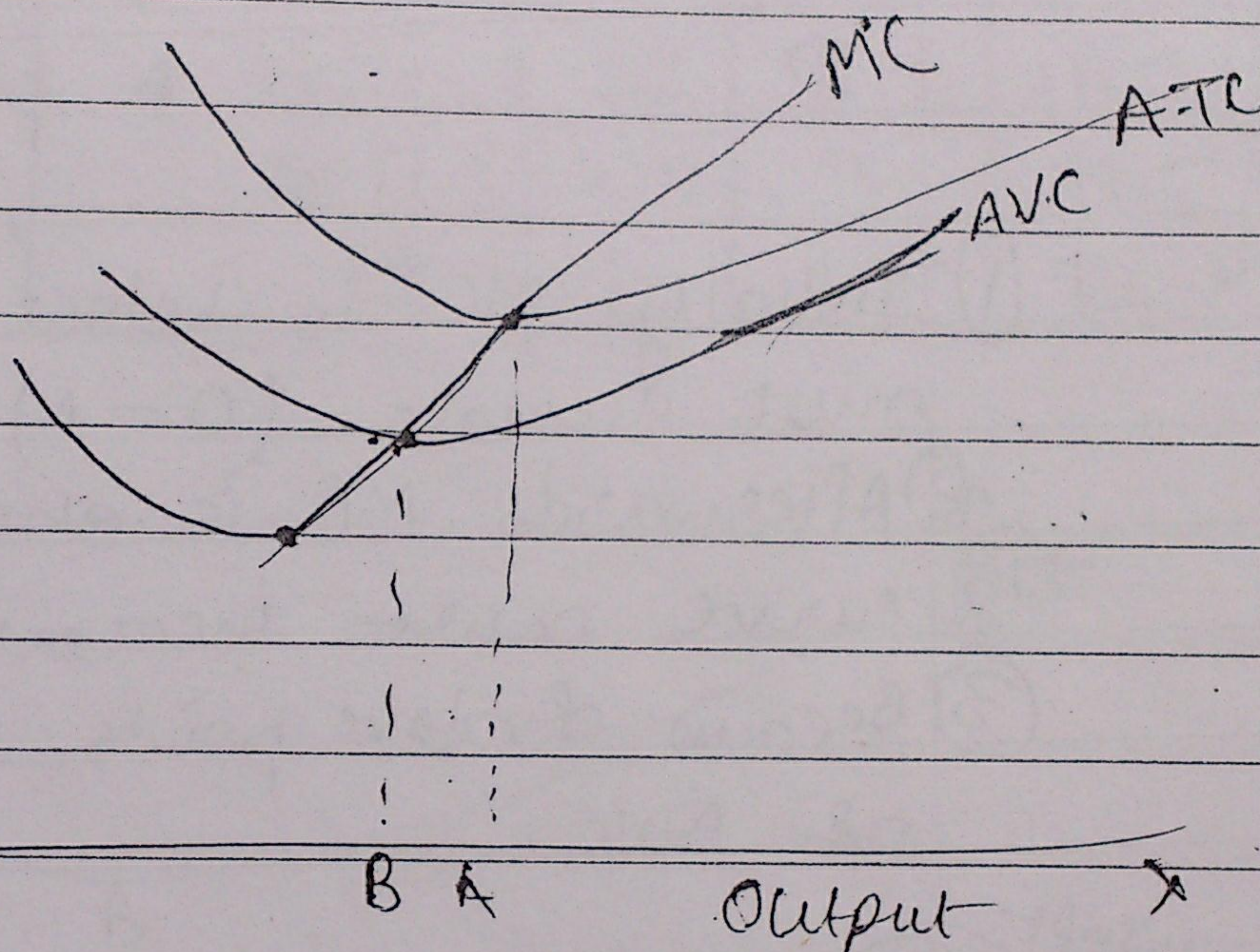
Ans.

$$AV \cdot TC = AV \cdot VC + AV \cdot FC$$

$$AV \cdot TC - AV \cdot VC = AV \cdot FC$$

Always
decreasing

This distance
always decreasing



A.T.C
& MC

(i) Initially MC is less than Average T.C. then Average T.C. must decrease (O-A)

(ii) [MC may ↓ or ↑ but kyunki MC ki height less than Avg. T.C., so Av. T.C. must decrease]

(iii) When MC > Avg. T.C. then Avg. T.C. must increase (after A)

(iii) [Because of (i) and (ii)] MC will cut Avg T.C. at lowest point of Avg. T.C.

(iv) When MC is below Avg V.C then Avg. V.C must decrease (O-B)

AVC & MC

(V) When $MC > \text{avg. VC}$ then avg. VC must increase

~~After B~~ After B

(vi) MC cuts Avg. VC at lowest point of Avg. VC

(vii) ATC curve is always above AVC curve

as $ATC = AFC + AVC$

(viii) Distance between Avg. TC & Avg. VC is

always decreasing as this distance is

Avg. FC and Av. FC always decrease.

But ATC and AVC curves will never intersect as their difference Avg. FC is never zero.

(ix) lowest point of Avg. VC curve is before the lowest point of Avg. TC curve.

(x) $MC(n) = TC(n) - TC(n-1)$; $A \cdot TC = \frac{T \cdot C}{\text{Output}}$, $AVC = \frac{VC}{\text{output}}$

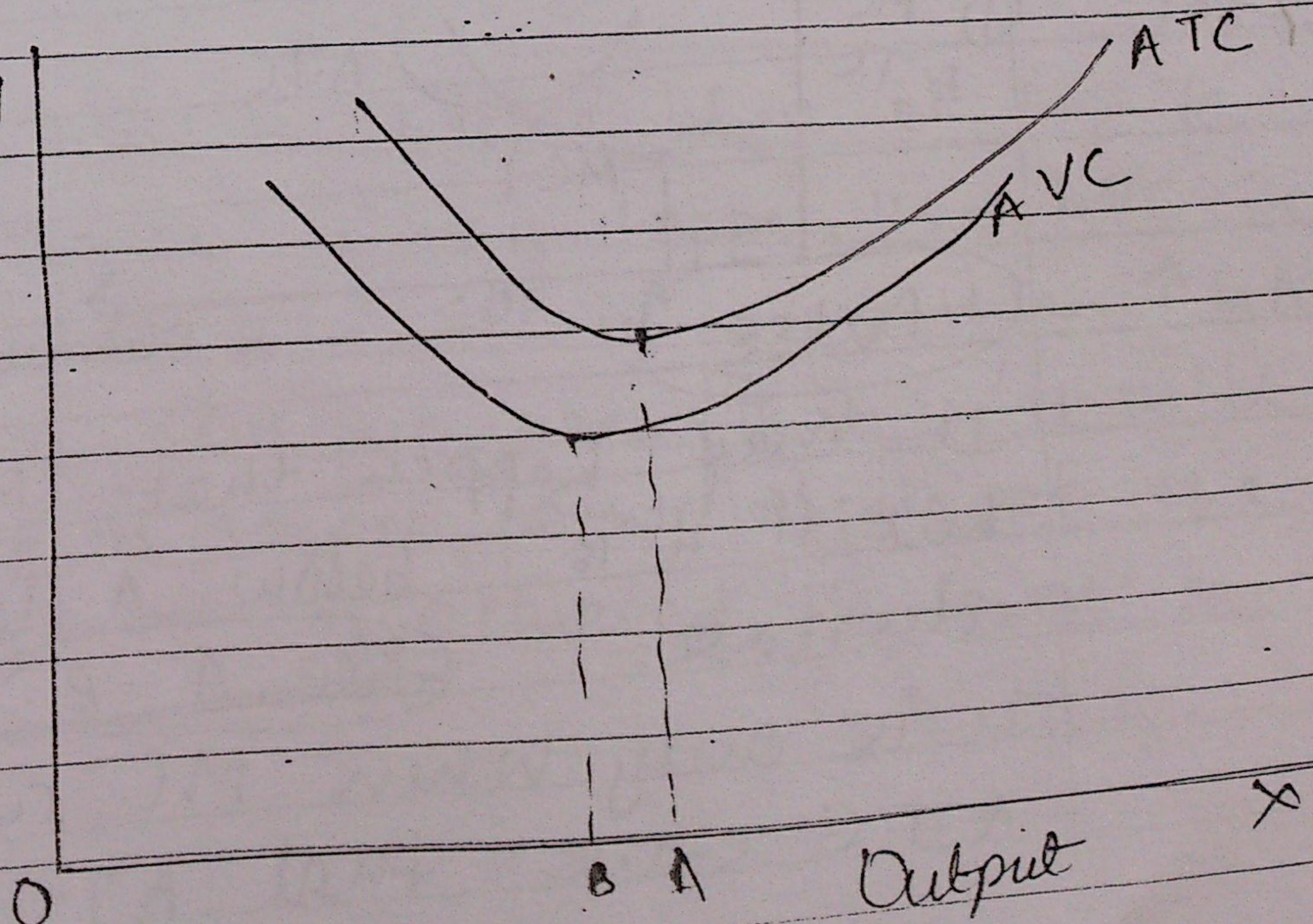
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Q

Why lowest of AVC is before lowest of ATC or?

When ATC and AVC move in reverse direction and why?

ATC
AVC



Ans

We know

$$\text{Avg. TC} = \text{Avg. FC} + \text{Avg. VC}$$

O-B

$$\text{Avg. FC} \downarrow (-10) + \text{Avg. VC} \downarrow (-10)$$

$$\text{So Avg. TC} \downarrow (-20)$$

B-A

$$\text{Avg FC} \downarrow$$

$$(-10)$$

$$\text{Avg VC} \uparrow (+3)$$

$$\text{So Avg. TC} \downarrow (-7)$$

After A

$$\text{Avg FC} \downarrow$$

$$(-10)$$

$$+ \text{Avg VC} \uparrow$$

$$(+17)$$

$$\text{So Avg TC} \uparrow (+7)$$

Q

True/False - with Reasons.

(i) When MC $\uparrow$, then A.T.C must $\uparrow$.

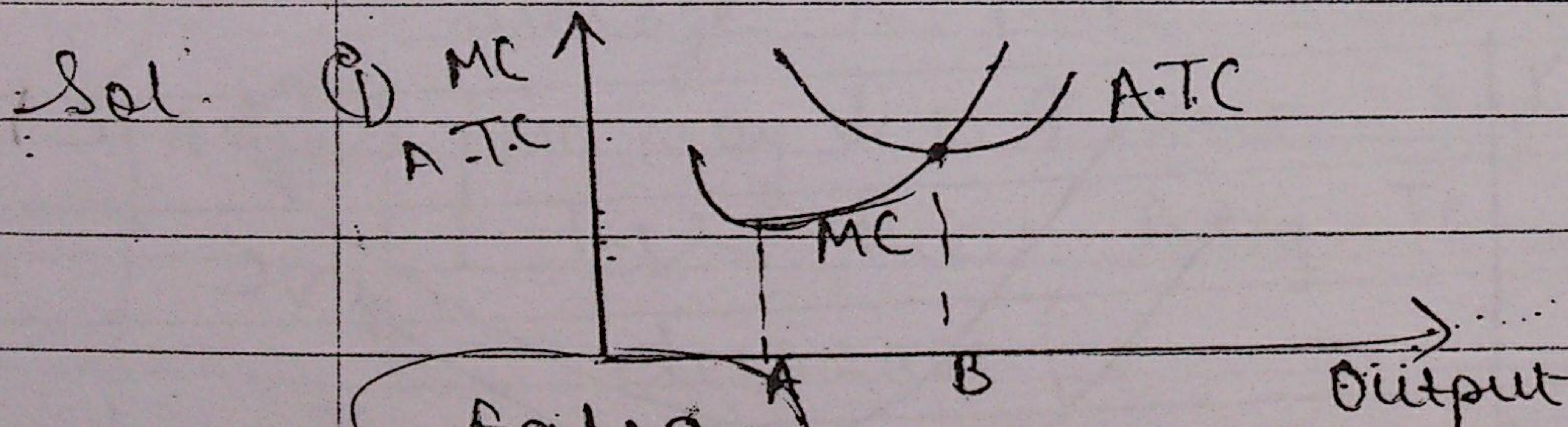
(ii) When MC $\uparrow$, then A.T.C. can $\uparrow$.

(iii) When A.V.C $\downarrow$ then MC must $\downarrow$

(iv) Lowest of A.T.C is before lowest of AVC

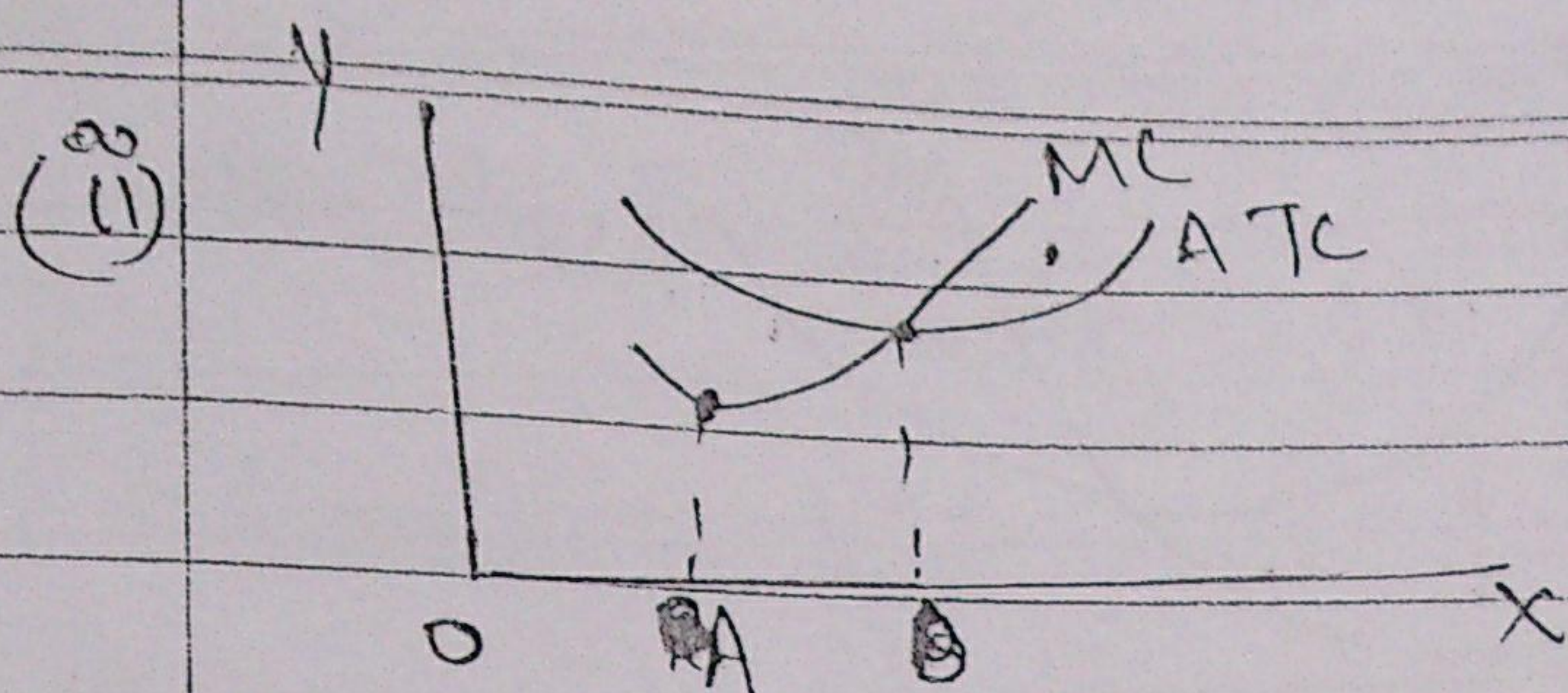
(v) When AVC $\uparrow$ then MC must $\uparrow$.

Use
diag.
logic
and in
add
click the
logic
theory



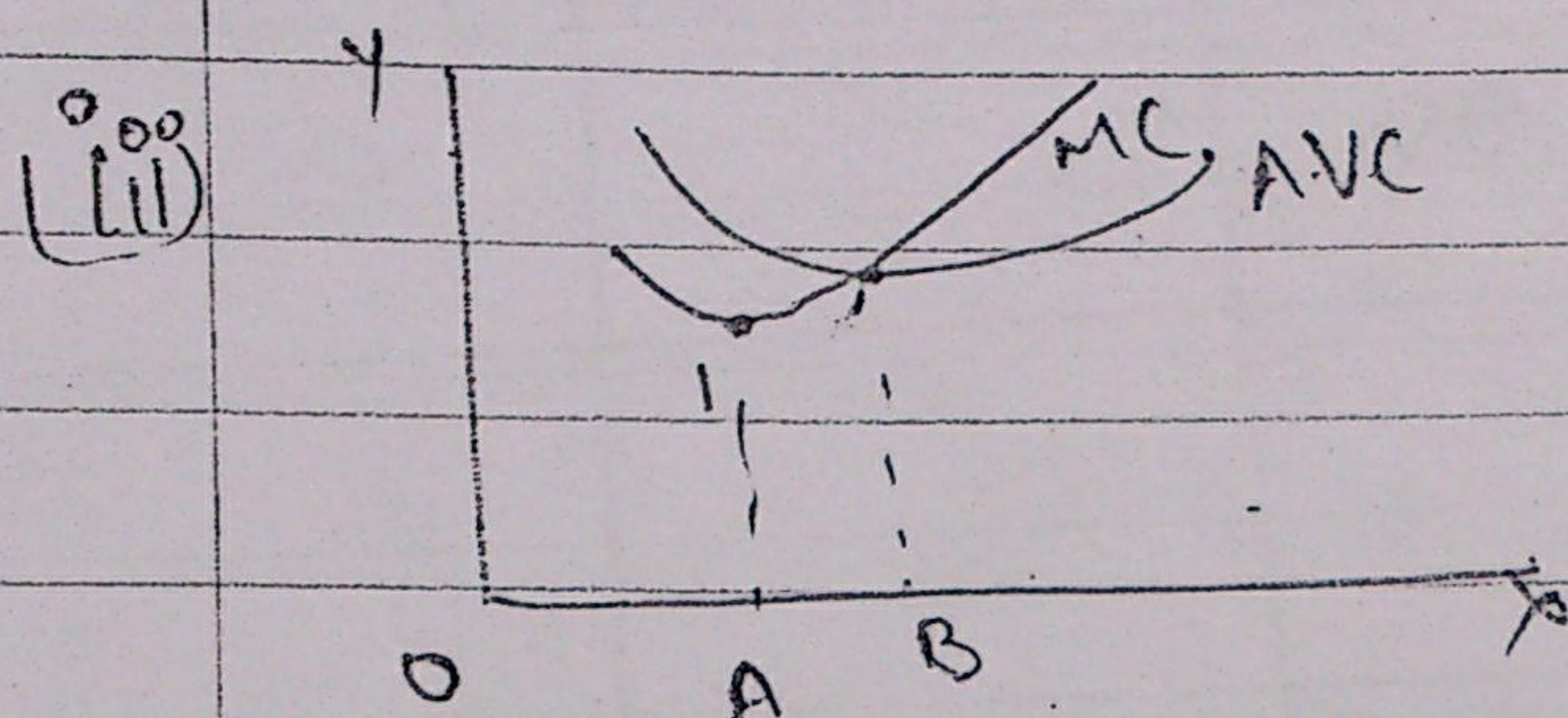
It may happen that MC is increasing but if it is below A.T.C, then Avg. TC will decrease. See A-B

It is only when MC curve is above A.T.C curve that A.T.C must $\uparrow$.



True After B

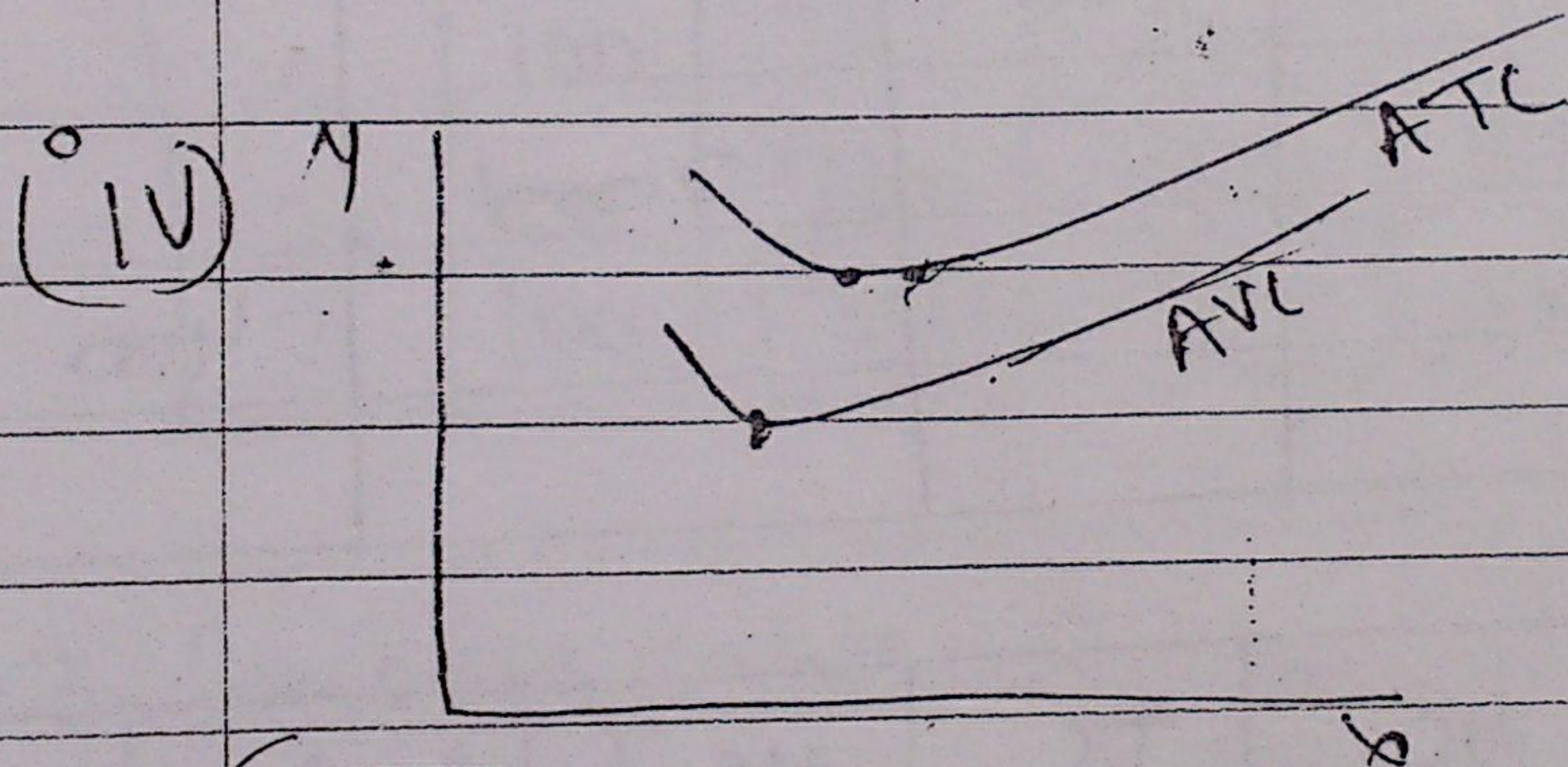
It is only when MC is ↑ but it is above ATC that ATC will ↑.



False

~~For A-B~~

It may happen that MC is ↑ and is below AVC, so AVC will decrease.

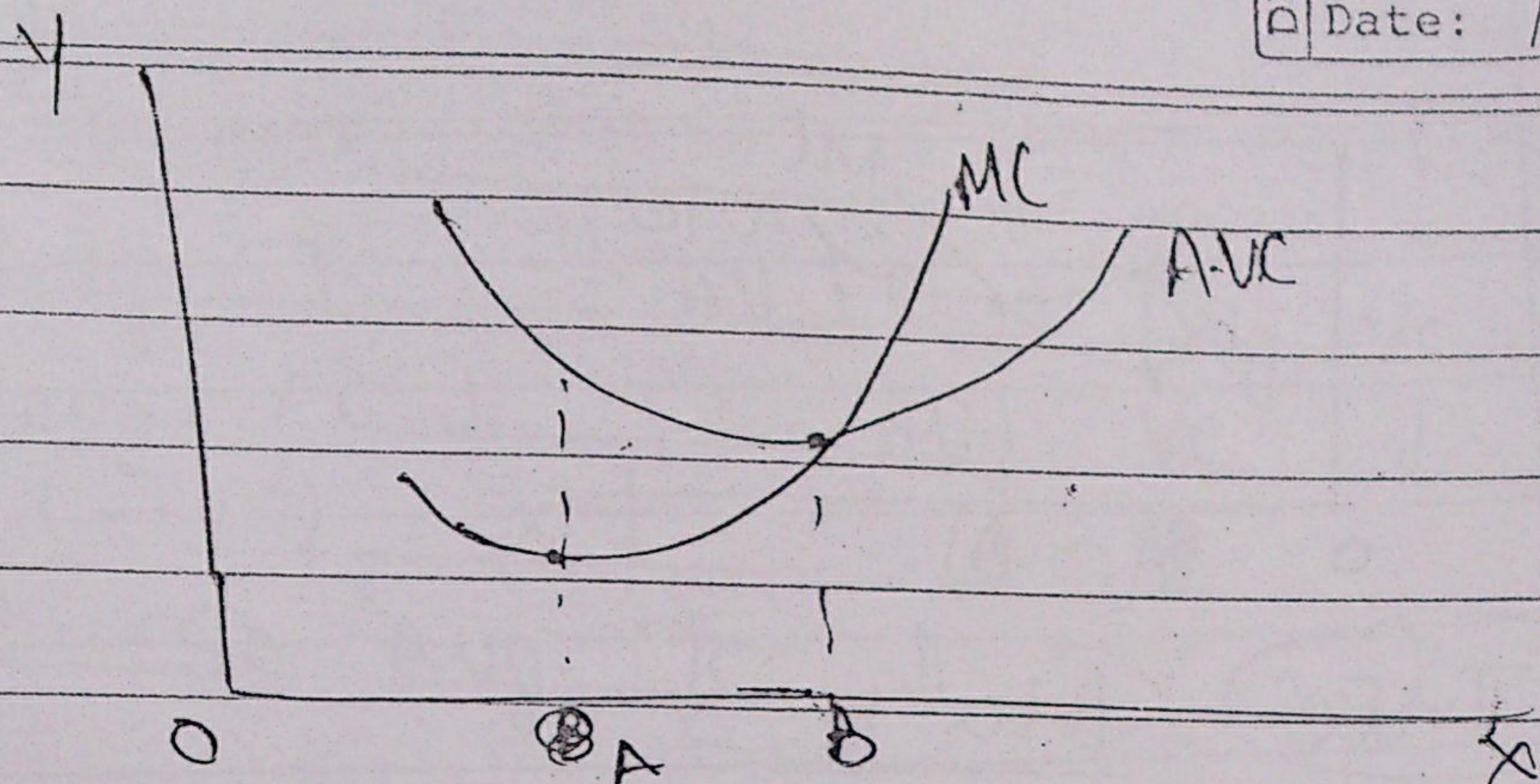


False

Lowest of AVC is before lowest of Avg. TC
This is because it may happen that AVC is increasing but ↓ in AFC is more than ↑ in AVC so ATC will still decrease [That is it will not achieve its lowest point inspite of the fact that AVC has achieved its lowest points]

(3) Add all MC's to get VC

(10)(V)



True

This is because here MC is above AVC so AVC ~~now~~ keeps on ↑.

V.V. Imp

NUMERICALS

Q1. Complete Table :-

Output	Avg. FC	TC	MC	Avg VC
0		100		
1				
2			200	
3	30			400

Ans.	Output	FC	VC	TC	MC	Avg FC	Avg. VC
	0	90	0	90	—	—	—
	1	90	10	100	10	90	10
	2	90	210	300	200	45	105
	3	90	1200	1290	990	30	400

$$AFC = \frac{FC}{\text{Output}}$$

$$30 = \frac{FC}{3}$$

$$FC = 90$$

$$MC @ 2 = TC @ 2 - TC @ 1$$

$$200 = TC @ 2 - 100$$

$$TC @ 2 = 300$$

$$\text{Avg. VC} = \frac{\text{VC}}{\text{Output}}$$

$$400 = \frac{\text{VC}}{3}$$

$$\text{VC} = 1200$$

Q2. Complete Table :-

Output	Avg FC	TC	MC	Avg. TC
0		100		
1			300	
2				400
3			600	

Ans 2.

Output	FC	VC	TC	MC	Avg. FC	Avg TC
0	100	0	100	—	—	—
1	100	300	400	300	100	400
2	100	700	800	400	50	400
3	100	1300	1400	600	33	467

Q3. Complete Table :-

Output	AVC	TC	MC	A.TC
1		50		
2	100			120
3			1000	

Ans.

Output	FC	VC	TC	MC	Ave	A TC
0	40	0	40	—	—	—
1	40	200	240	10	100	120
2	40	200	240	1000	400	413
3	40	1200	1240	1000		

Me note
MC nikane
ke liye 0 output
ka extra
column
banaya.

$$AUC = \frac{VC}{\text{output}}$$

$$120 = \frac{VC}{2}$$

$$VC = 240$$

$$ATC = \frac{TC}{\text{output}}$$

$$120 = \frac{TC}{2}$$

$$TC = 240$$

$$FC = TC - VC$$

$$= 240 - 200$$

$$= 40$$

Q4. Complete table whe AEC of 4th output is 25

Output	MC	ATC
0	—	
1	20	
2	15	
3	10	
4	25	

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Ans.

Output	FC	VC	TC	MC	ATC
0	100	0	100	—	—
1	100	20	120	20	120
2	100	35	135	15	67.5
3	100	45	145	10	48.3
4	100	70	170	25	42.5

$$AFC = \frac{FC}{\text{Output}}$$

$$25 = \frac{FC}{4}$$

$$FC = 100$$

Q5. AVC & ATC of producing 5 pen is 6 & 7 respectively. MC of producing 6th pen is 5. Find VC of 6th pen.

Ans.

Output	FC	VC	TC	MC	ATC	AVC
5	5	30	35	-	7	6
6	5	35	40	5		

Q. Difference

Ans.

Explicit Cost	Implicit Cost
① These are the actual expenditure done on inputs purchased by a firm.	It is the imputed/estimated value of inputs supplied by owner.
② Eg. purchase of Raw material, electricity, etc	Eg land supplied to firm by owner, free of cost, labour services given by owner free of cost etc.
③ It is recorded as cost in accounting sense.	It is not recorded as cost in accounting sense.

NOTE ① Definition of "Cost" - It is the total expenditure on inputs of a firm including estimated value of inputs supplied by owner. That is cost includes explicit & implicit costs.

theory
topic

② "Cost" = "Total Cost" $\Rightarrow FC + VC$

"Average cost" $\Rightarrow$ "Average TC"

$AC = ATC = AVC + AFC$

③ "Total Fixed Cost" = "Fixed Cost"

$TFC = FC$

④ "Total Variable Cost" = "Variable cost"

$TVC = VC$

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⑤ Social cost

It is the cost, which is paid by society during production process.

Eg. Pollution of air, water etc. by a plastic manufacturing company creates health problems for people living near that company.

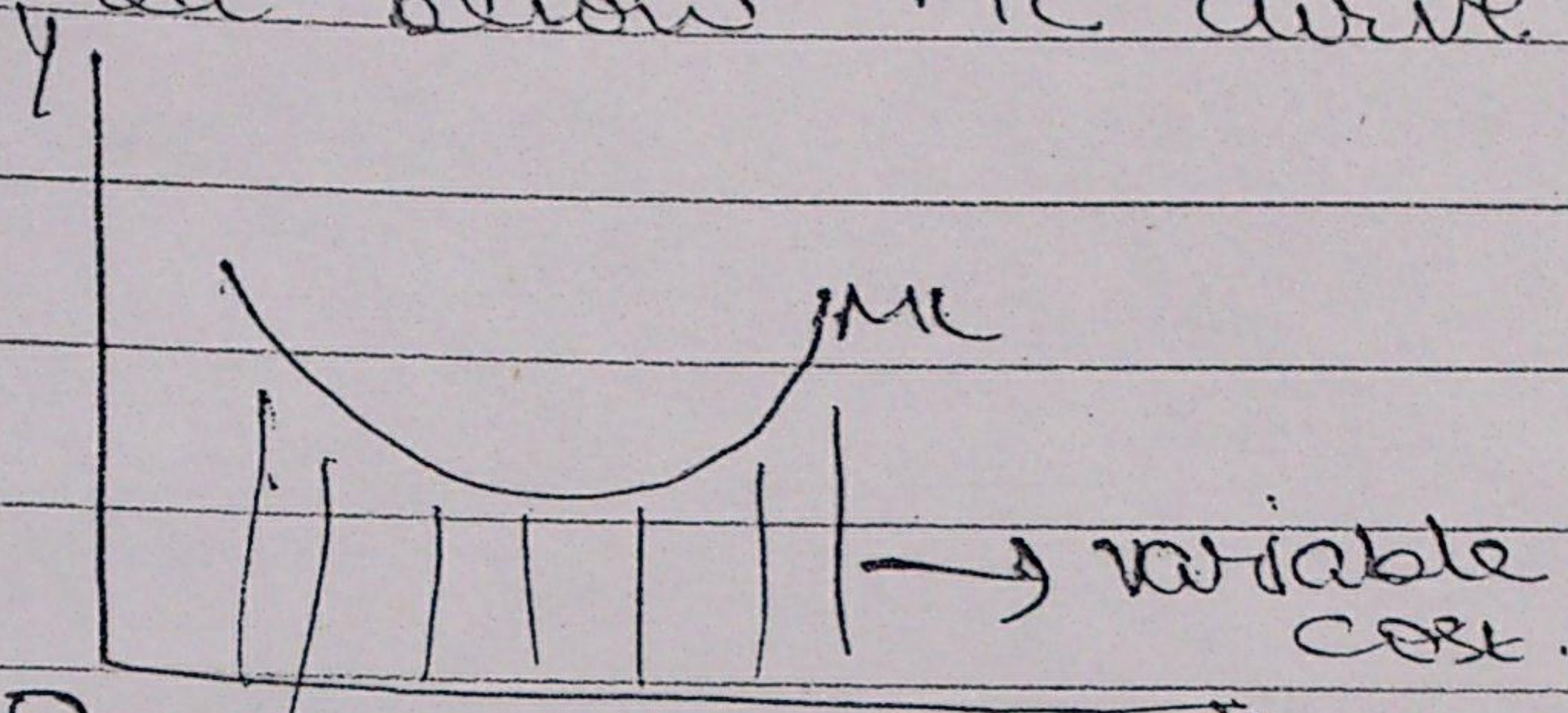
[This cost is not paid by owner]

⑤ Real cost

It is the total pains/sacrifices/expenditure incurred in producing a good.

Notes ① "Cost function" - It is the relationship between cost and output.

② Add all MC's to get variable cost.
(OR) Area below MC curve is variable cost.



MC = Increase in Total Cost. and increase in Total Cost is entirely because of increase in variable cost [Not because of fixed cost]

$$\begin{aligned} MC(n) &= TC(n) - TC(n-1) \\ &= (FC(n) + VC(n)) - (FC(n-1) + VC(n-1)) \\ &= FC(n) + VC(n) - FC(n-1) - VC(n-1) \\ &= VC(n) - VC(n-1) \quad [\text{because FC are all same}] \end{aligned}$$

③ Fixed cost is also called as overhead cost.

④ Examples :- Minimum Electricity bill - fixed cost

⑤ Above minimum electricity bill - Variable cost.

Interest on loan - fixed cost.

Rent to Landlord = fixed cost.

Wages of Temporary staff - Variable cost

Wages of Permanent staff - fixed cost.

⑤ In long term period all costs are variable costs [No fixed costs.] like TATA, Biola etc.

go
Output
ke change
hove par
change
ho jaye
no variable
cost
OR
no change
no tot
fixed
cost.