

Numerical Questions

Consider the following table.

Output	TFC	TVC	TC	AFC	AVC	ATC	MC
0	60	0					
1	60	22					
2	60	42					
3	60	60					
4	60	100					
5	60	160					
6	60	240					

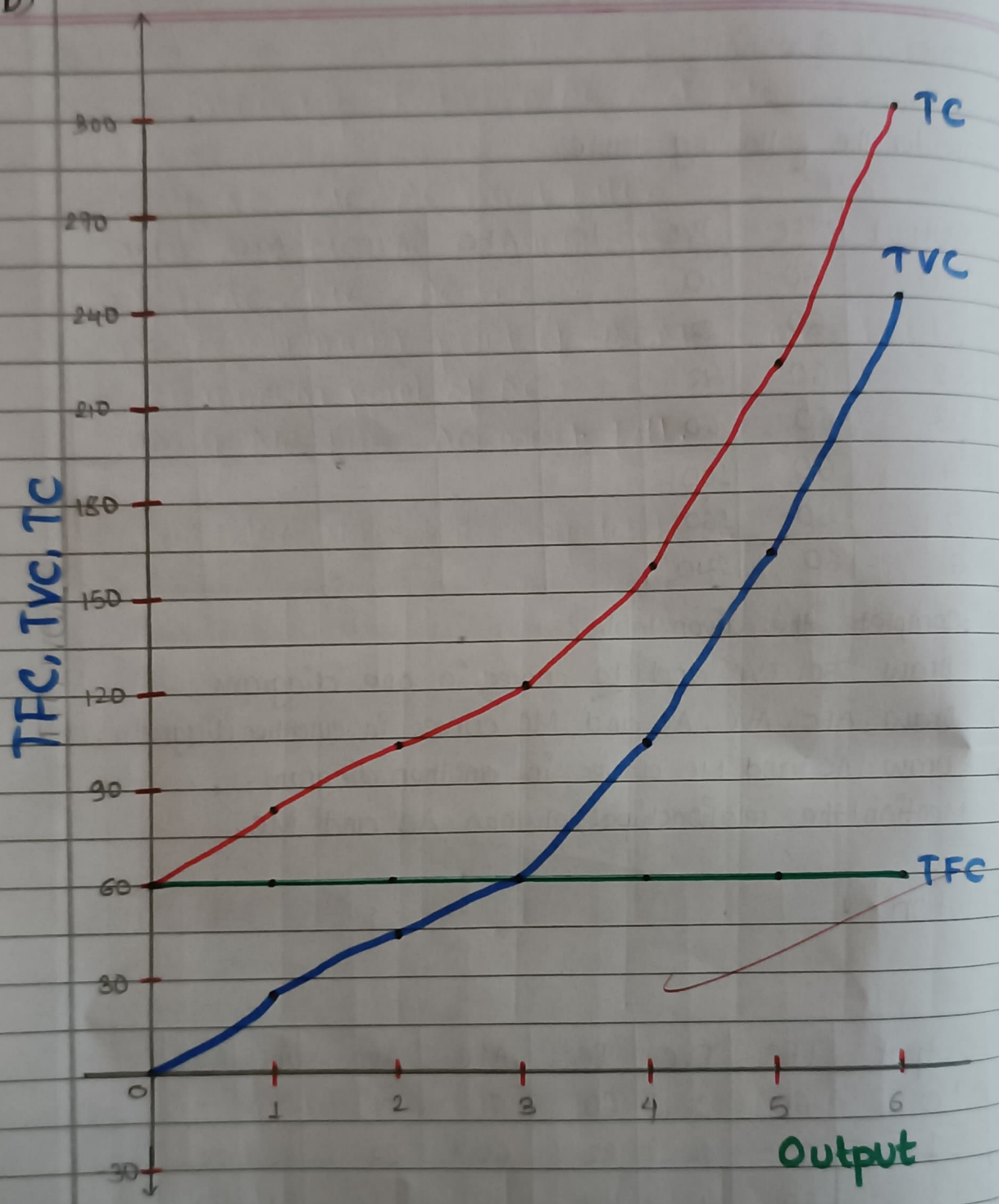
- Complete the given table.
- Draw TFC, TVC and TC curves in one diagram.
- Draw AFC, AVC, AC and MC curves in another diagram.
- Draw AC and MC curves in another diagram.
- Mention the relationships between AC and MC.

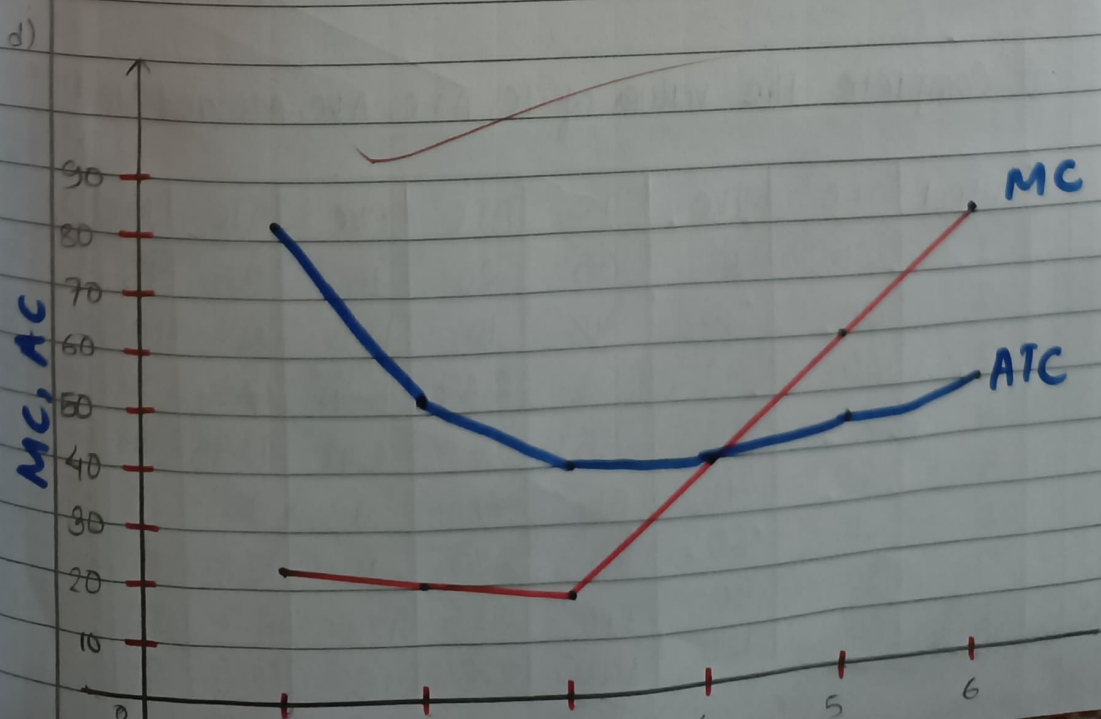
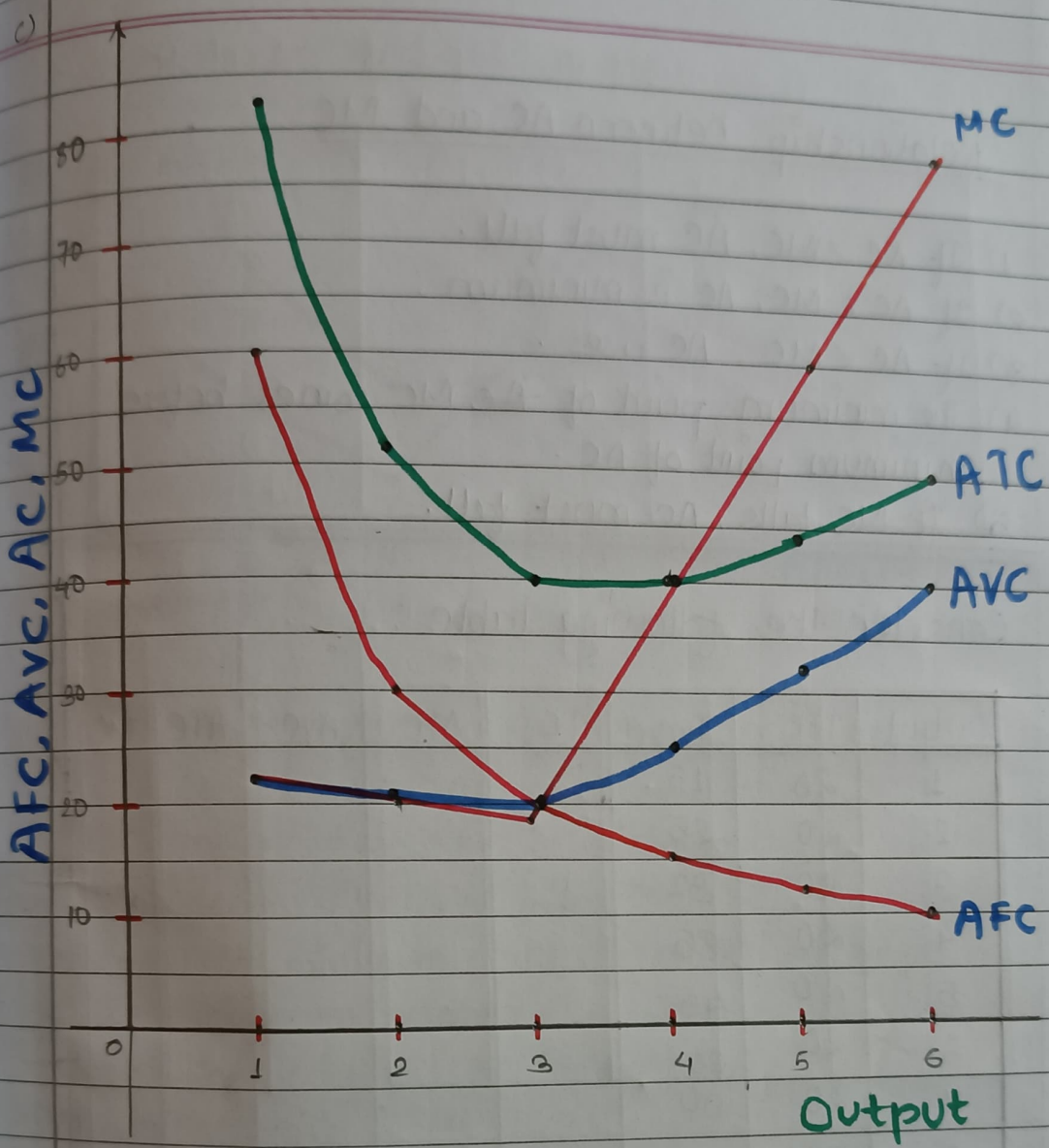
Solution

a)

Output	TFC	TVC	TC	AFC	AVC	ATC	MC
0	60	0	60	-	-	-	-
1	60	22	82	60	22	82	22
2	60	42	102	30	21	51	20
3	60	60	120	20	20	40	18
4	60	100	160	15	25	40	40
5	60	160	220	12	32	44	60
6	60	240	300	10	40	50	80

b)





e) Relationship between AC and MC

- 1) If $AC > MC$, AC must fall.
- 2) If $AC = MC$, AC is minimum.
- 3) If $AC < MC$, AC rises.
- 4) The minimum point of ~~AC~~ MC comes before minimum point of AC.
- 5) If MC falls, AC must fall.

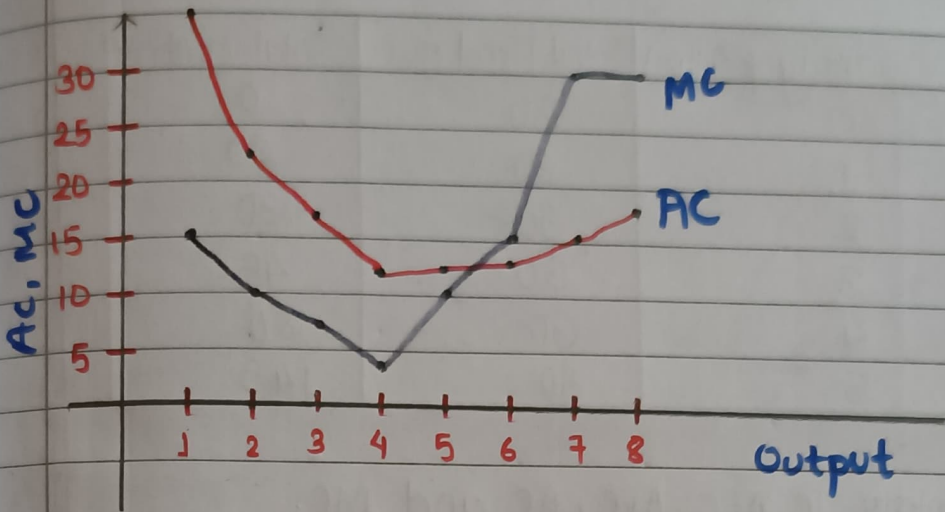
3. Consider the following table:

Output	TFC	TVC	TC	AFC	AVC	ATC	MC
1	20	15					
2	20	25					
3	20	32					
4	20	35					
5	20	45					
6	20	60					
7	20	80					
8	20	120					

a) Complete the values of TC, AFC, AVC, ATC and MC.

Output	TFC	TVC	TC	AFC	AVC	ATC	MC
1	20	15	35	20	15	35	15
2	20	25	45	10	12.5	22.5	10
3	20	32	52	6.67	10.67 10.67	17.34	7
4	20	35	55	5	8.75	13.75	3
5	20	45	65	4	9	13	10
6	20	60	80	3.33	10	13.33	15
7	20	80	110	2.85	12.85	15.7	30
8	20	120	140	2.5	15	17.5	30

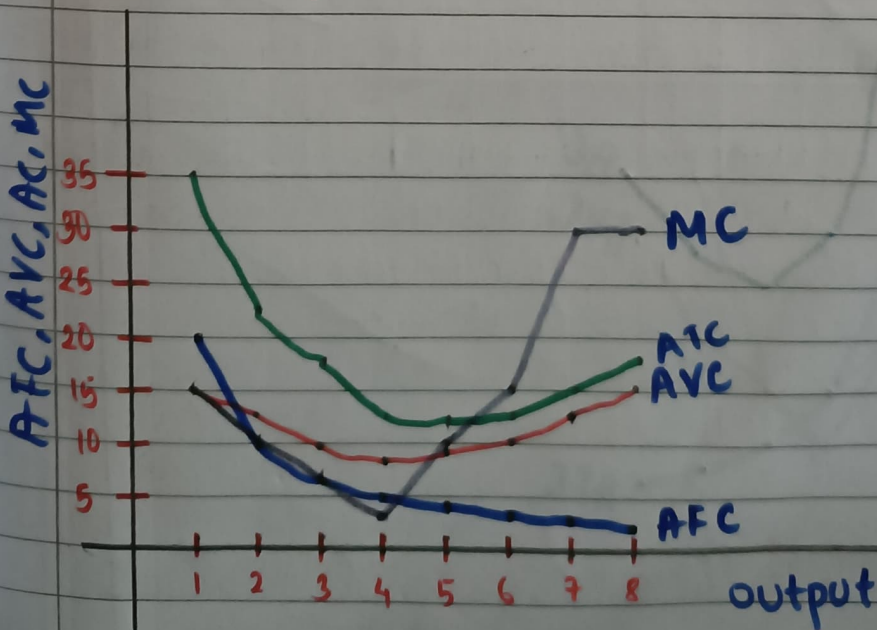
b) Draw AC and MC curves.



c) State the relationship between AC and MC.

- ⇒ 1) If $AC > MC$, AC must fall.
- 2) If $AC = MC$, AC is minimum.
- 3) If $AC < MC$, AC rises.
- 4) The minimum point of MC comes before minimum point of AC.
- 5) If MC falls, AC must fall.

d) Draw AFC, AVC, AC and MC.



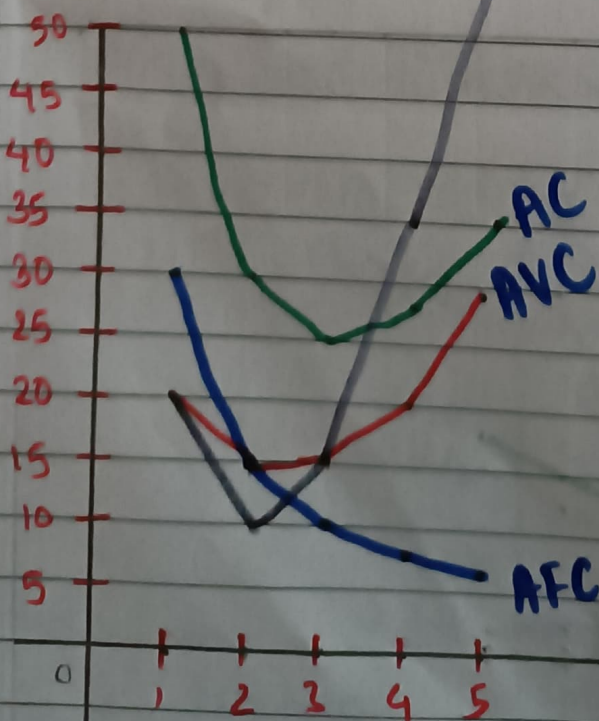
4. You are given the following cost schedule:

Quantity of Output	Total Fixed Cost	Total variable cost
0	30	0
1	30	20
2	30	30
3	30	45
4	30	80
5	30	145

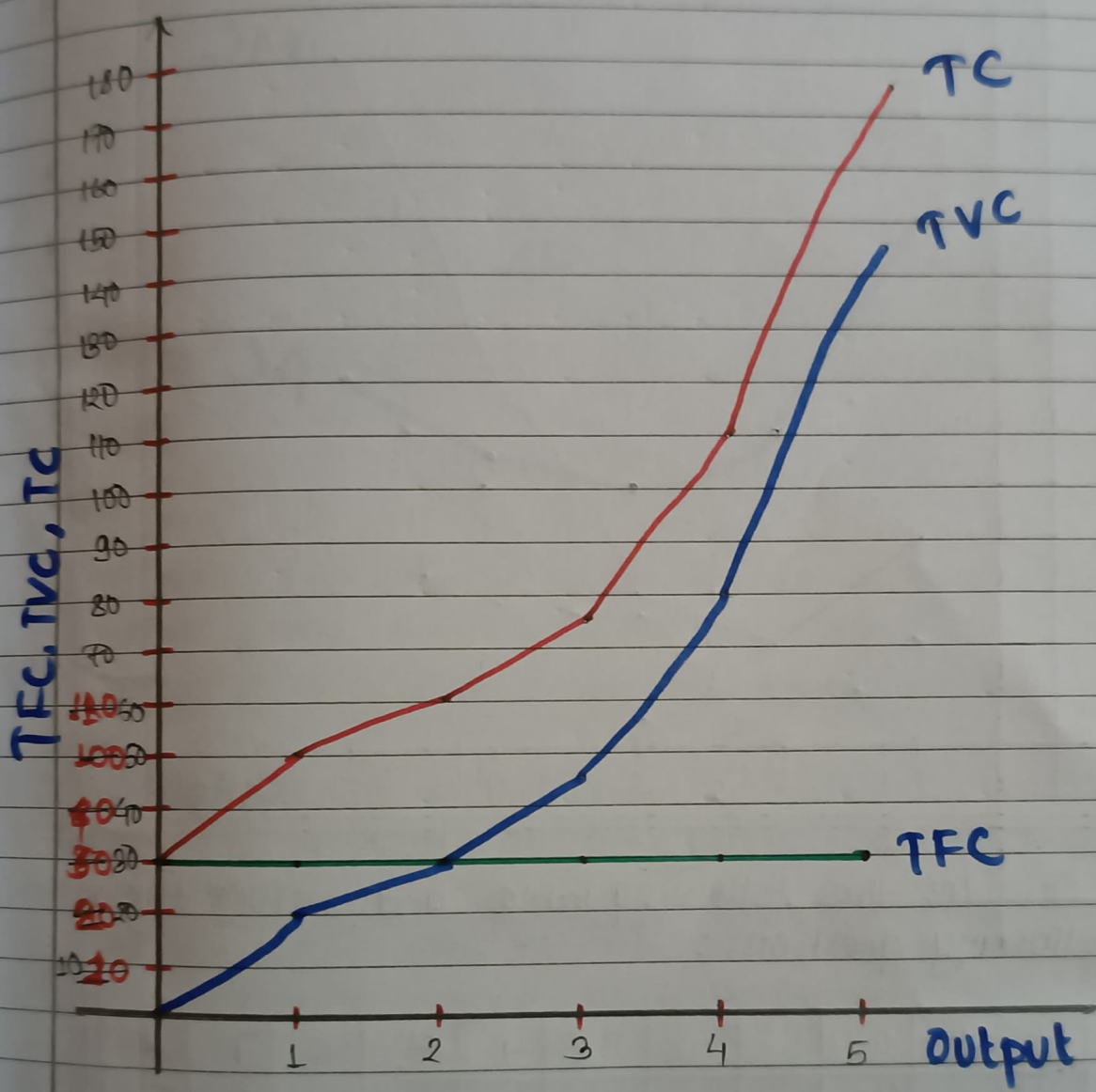
a/c) calculate TC, AFC, AVC, AC and MC.

Output	TFC	Var	TC	AFC	AVC	AC	MC
0	30	0	30	-	-	-	-
1	30	20	50	30	20	50	20
2	30	30	60	15	15	30	10
3	30	45	75	10	15	25	15
4	30	30 80	110	7.5	20	27.5	35
5	30	145	175	6	29	35	65

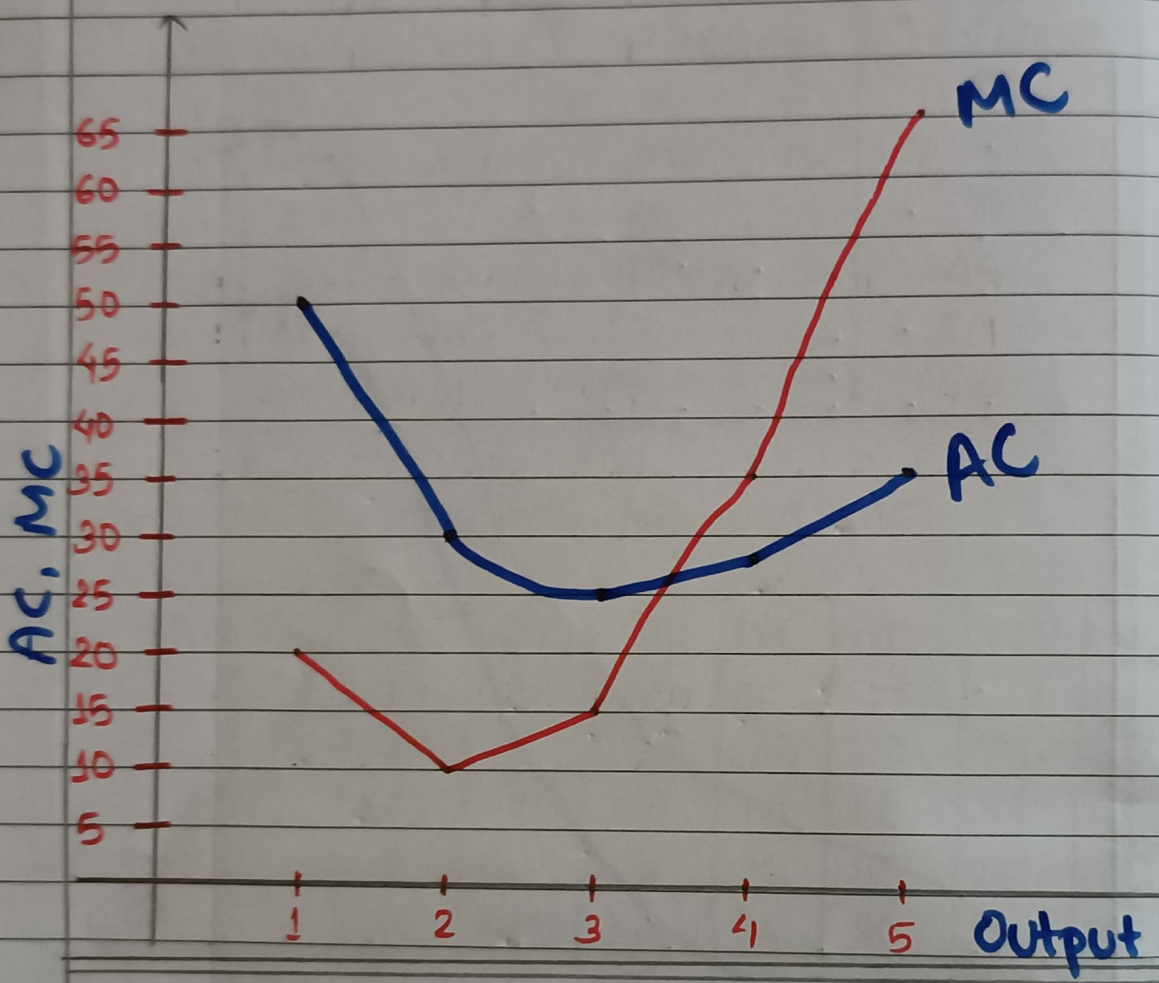
d) Draw AFC, AVC, AC and MC.



b) Draw TFC, TVC, and TC curves.



e) Draw AC and MC curves.



5. Consider the following table and answer the following questions:

Output	0	1	2	3	4	5	6	7	8
TFC	100	-	-	-	-	-	-	-	-
TVC	-	50	80	120	140	175	230	310	400

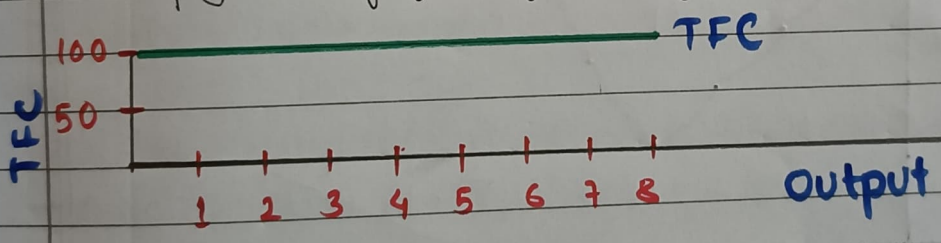
a) Calculate TC, AVC, AFC, AC and MC

Output	TFC	TVC	TC	AVC	AFC	AC	MC
0	100	0	100	-	-	-	-
1	100	50	150	50	100	150	50
2	100	90	190	45	50	95	40
3	100	120	220	40	33.3	73.3	30
4	100	140	240	35	25	60	20
5	100	175	275	35	20	55	35
6	100	230	330	38.33	16.67	55	55
7	100	310	410	44.28	14.28	58.57	80
8	100	400	500	50	12.5	62.5	90

b) Define TFC and derive TFC curves.

⇒

Total ~~cost~~ Fixed Cost (TFC) is the cost incurred for the payment of fixed factors of production.

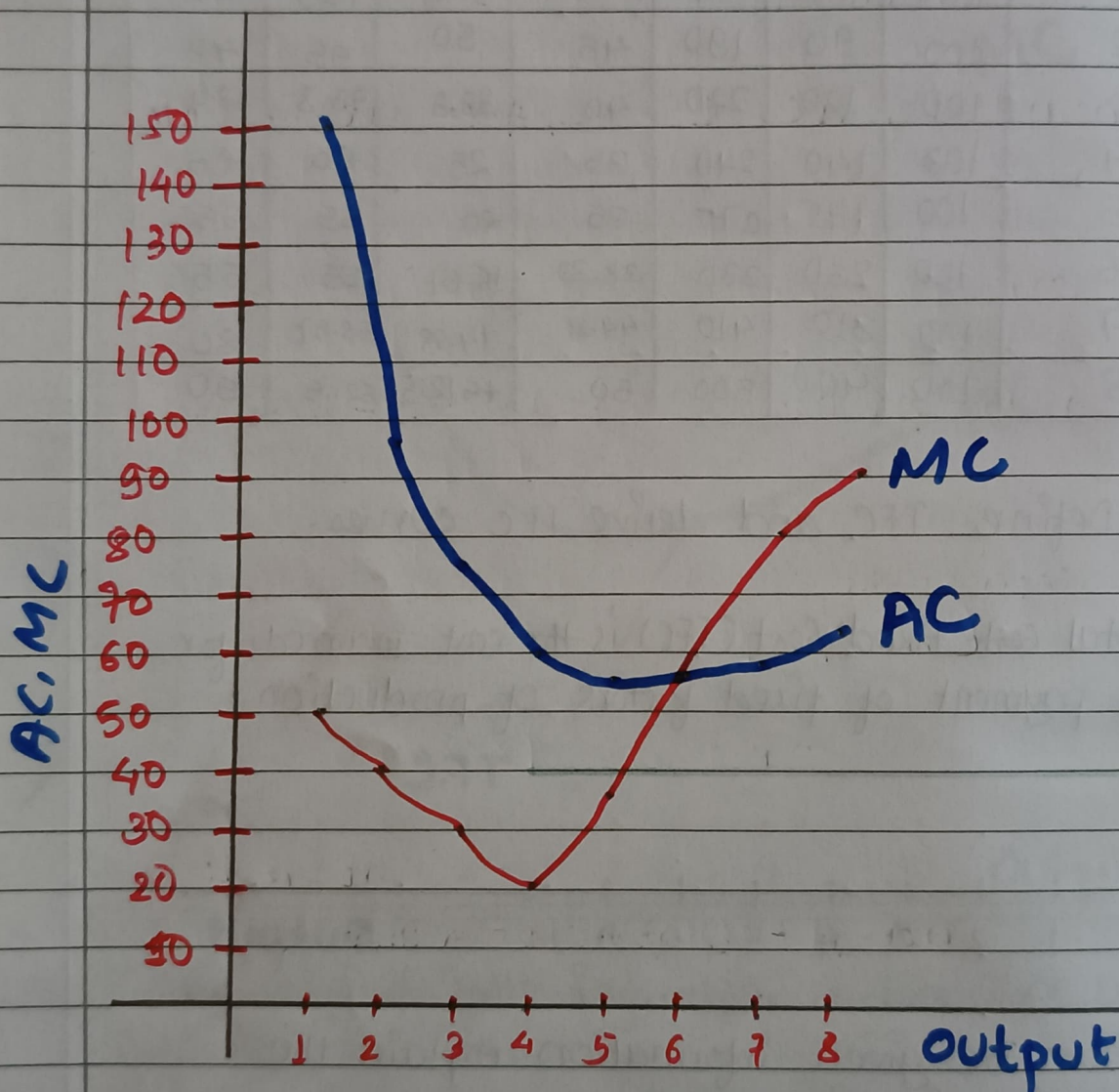


c) From the given information explain the relationship between output and cost.

⇒

The relationship between output and cost is that the cost increases with the increase in output.

d) Draw AC and MC curves and show the relationship between them.



Relationship between AC & MC

- 1) If $AC > MC$, AC must fall.
- 2) If $AC = MC$, AC is minimum.
- 3) If $AC < MC$, AC rises.
- 4) The minimum point of MC comes before minimum point of AC.
- 5) If MC falls, AC must fall.

6) You are given the cost function as :

$$C = 150 + 200Q - Q^2 + Q^3$$

Calculate TFC, TVC, TC, AC, AFC, AVC and MC at $Q = 10$

Solution

Given cost function : $C = 150 + 200Q - Q^2 + Q^3$
and $Q = 10$ units

We know that,

$$TFC = TC \text{ at } Q = 0$$

Now,

$$TC = 150 + 0 - 0 + 0$$

$$\text{or; } TC = 150 = TFC$$

\therefore At $Q = 10$, $TFC = \text{Rs. } 150$ since TFC remains same whatever be the level of output.

$$TVC = TC - TFC$$

$$= 150 + 200Q - Q^2 + Q^3 - 150$$

$$= 200Q - Q^2 + Q^3$$

At $Q = 10$,

$$TVC = 200 \times 10 - 10^2 + 10^3$$

$$= 2000 - 100 + 1000$$

$$= \text{Rs. } 2900$$

$$TC = TFC + TVC$$

$$= 150 + 2900$$

$$= \text{Rs. } 3050$$

$$AFC = \frac{TFC}{Q} = \frac{150}{10} = \text{R. } 15$$

$$AVC = \frac{TVC}{Q} = \frac{2900}{10} = \text{R. } 290$$

$$AC = AFC + AVC$$

$$= 15 + 290$$

$$= \text{R. } 305$$

$$MC = \frac{dc}{dq}$$

$$= \frac{d}{dq} (150 + 200Q - Q^2 + Q^3)$$

$$= 0 + 200 \times 1 - 2Q^1 + 3Q^2$$

At $Q = 10$,

$$MC = 200 + 2 \times 10 + 3(10)^2 = \text{R. } 480$$

