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Lab - 1

Calculate the price elasticity from the table for point B to C.

	A	B	C	D
Price	100	80	60	40
Quantity	100	200	300	400

Solution:

In the question above we are asked to calculate the price elasticity from point B to C so, for this we are taking the price and quantity of point B as initial values (i.e. P_1 and Q_1) and price and quantity of point C as final values (i.e. P_2 and Q_2).

Table 1: Calculation of price elasticity

Points	Price	Quantity	$\Delta P = P_2 - P_1$	$\Delta Q = Q_2 - Q_1$	$e_p = \frac{\Delta Q}{\Delta P} * \frac{P_1}{Q_1}$
B	80	200	-20	100	
C	60	300			-2

Hence, the price elasticity for point B to C is -2.

Lab - 2

Cost Schedule (Fixed Cost = 100)

Q	0	1	2	3	4	5	6	7	8	9
TVC	0	10	18	24	32	50	80	124	180	260

- Compute TFC, TC, AC, AVC, AFC, MC.
- Graph TVC, TVC and TC
- Graph AVC, AFC and AC
- Graph AC and MC

Solution:

a.

Q	TVC	TFC	TC	AFC	AVC	AC	MC
0	0	100	100				
1	10	100	110	100	10	110	10
2	18	100	118	50	9	59	8
3	24	100	124	33.33333	8	41.33333	6
4	32	100	132	25	8	33	8
5	50	100	150	20	10	30	18
6	80	100	180	16.66667	13.33333	30	30
7	124	100	224	14.28571	17.71429	32	44
8	180	100	280	12.5	22.5	35	56
9	260	100	360	11.11111	28.88889	40	80

b.

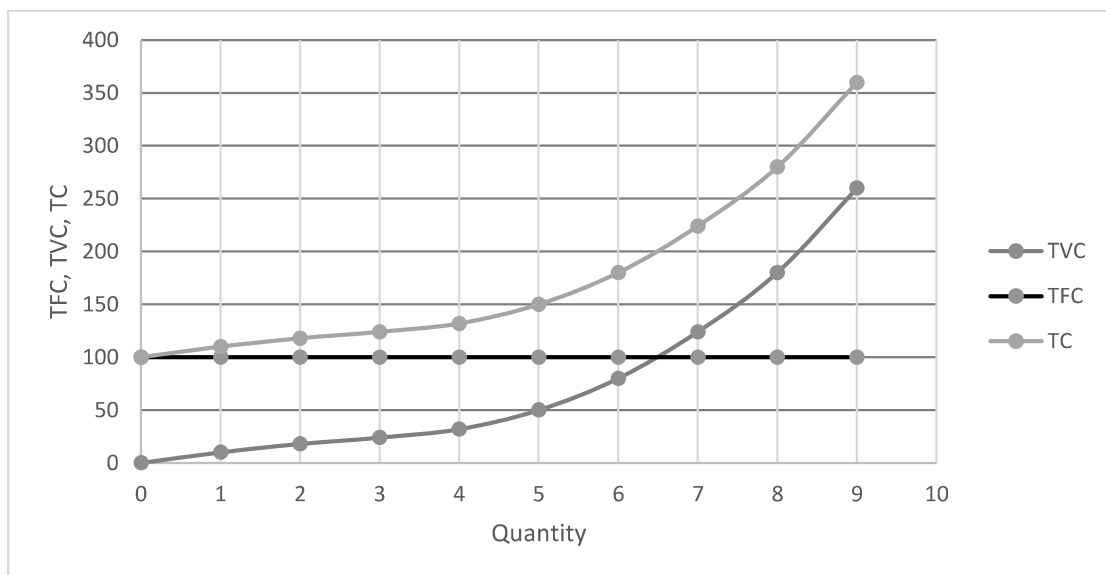


Figure 1: TFC, TVC and TC curves

c.

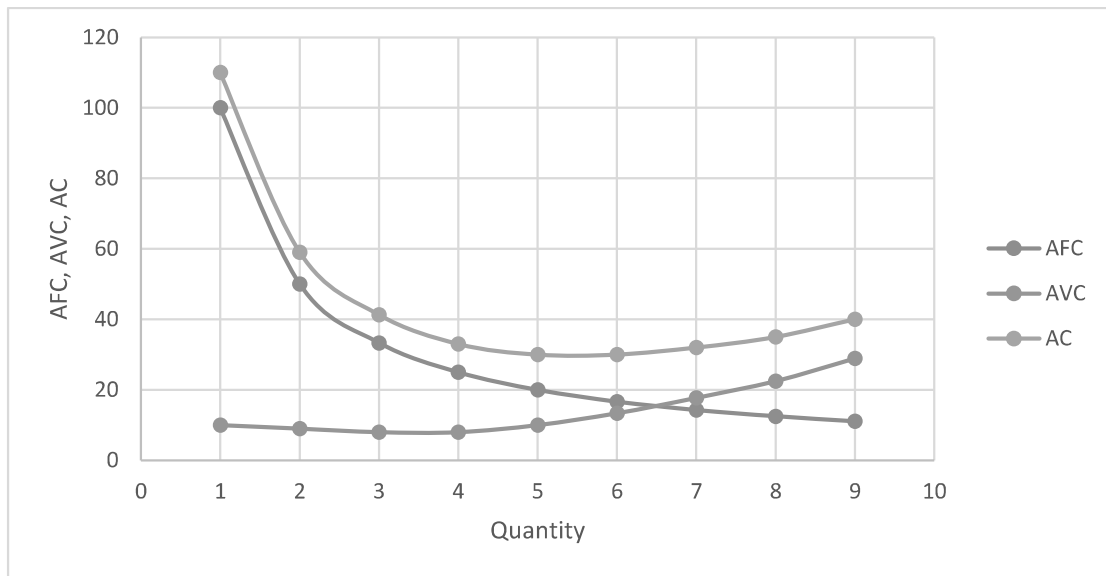


Figure 2: AFC, AVC and AC curves

d.

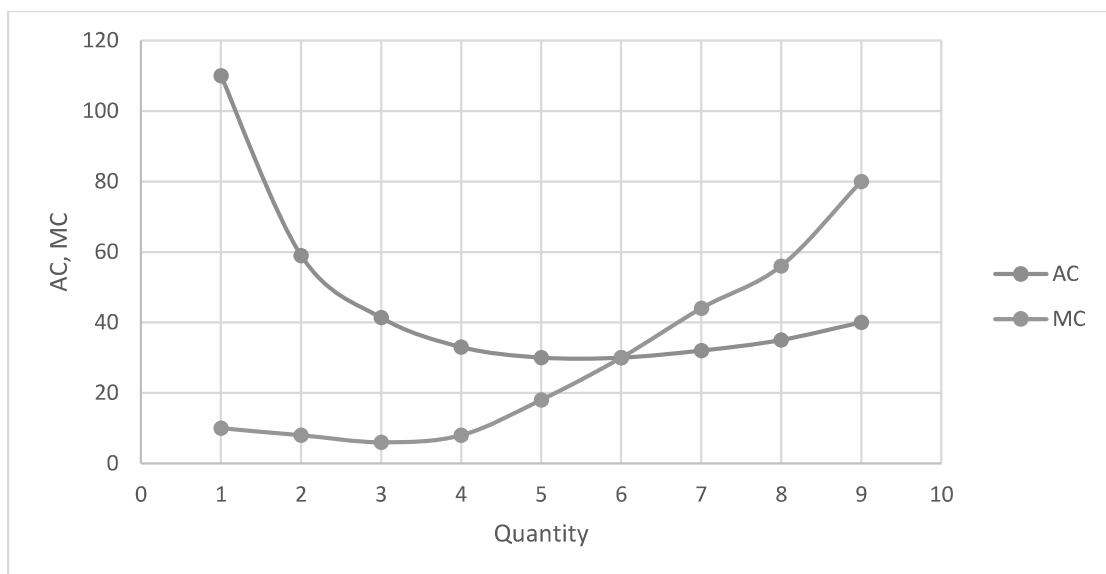


Figure 3: AC and MC Curves

Lab-3

Let, cost function, $C = 60 + 7Q^2$, and demand function, $P = 120 - 5Q$.

- i. Compute TR, TC and profits up to output level 12 units, graph them and determine profit maximizing output and maximum profit.
- ii. Compute MR and MC up to output level 12 units, graph them and determine profit maximizing output.

Solution:

a.

Table 1: Calculation of TR, TC and Profit

Q	TR	TC	Profit(π)
0	0	60	-60
1	115	67	48
2	220	88	132
3	315	123	192
4	400	172	228
5	475	235	240
6	540	312	228
7	595	403	192
8	640	508	132
9	675	627	48
10	700	760	-60
11	715	907	-192
12	720	1068	-348

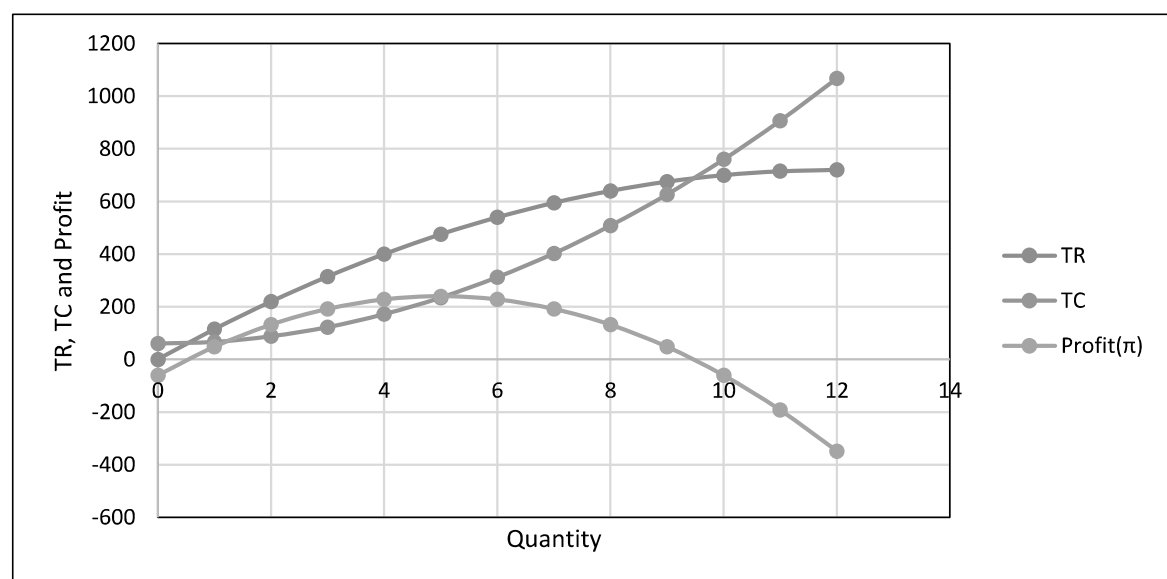


Figure 1: Graph of TR, TC and Profit

Based on above Table and Figure,

- At output range of 0 to 9 units, $TR > TC$. Hence, firm obtains economic profit.
- At output range of 10 to 12 units, $TC > TR$. Hence, firm has to bear loss.
- At output level 5 units, the difference between TR and TC is the greatest. Hence, firm reaches at its equilibrium. Here, profit maximizing output = 5 units and maximum profit (π) = Rs. 240.

b. Computation of MR and MC Functions and Profit maximizing output

$$\text{MR function} = \frac{dTR}{dQ} = \frac{d(120Q - 5Q^2)}{dQ} = 120 - 10Q$$

$$\text{MC function} = \frac{dTC}{dQ} = \frac{d(60 + 7Q^2)}{dQ} = 14Q$$

Table 2: Calculation of MR and MC

Q	MR	MC
0	120	0
1	110	14
2	100	28
3	90	42
4	80	56
5	70	70
6	60	84
7	50	98
8	40	112
9	30	126
10	20	140
11	10	154
12	0	168

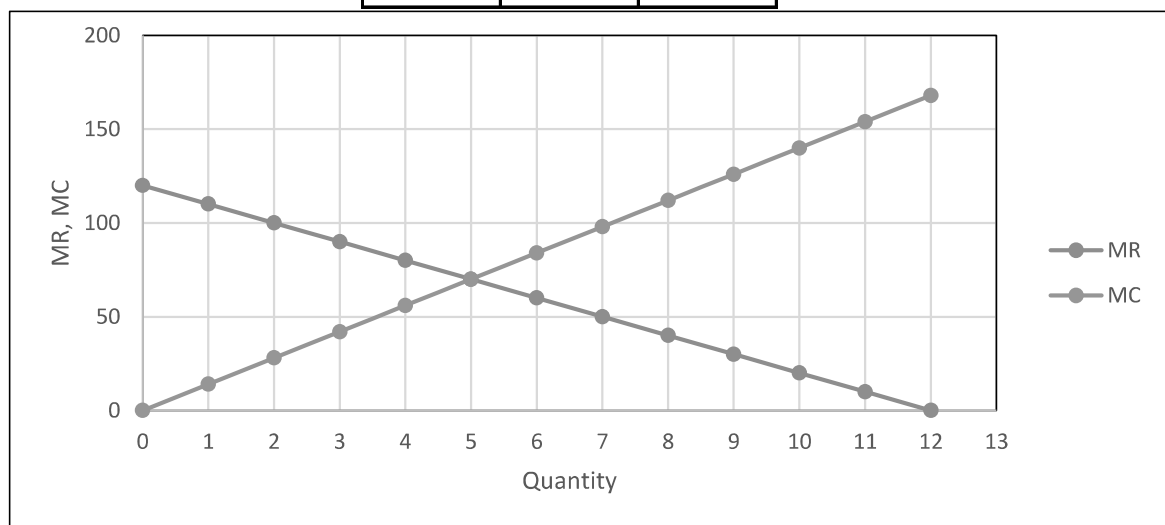


Figure 2: Graph of MR and MC

Based on above Table and Figure,

- At any level of output less than 5 units, $MR > MC$. Hence, it is profitable to expand production.
- At any level of output more than 5 units, $MR < MC$. Hence, it is reasonable to contract output.
- At output level 5 units, $MR = MC$ and also after this output rate of change in $MC >$ rate of change in MR . Hence, firm reaches at its equilibrium. Hence, profit maximizing output = 5 units.

Lab-4

Consider the following data for national accounts.

Description	Rs. in million
Personal Consumption expenditure	5164
Consumption of fixed capital	878
Indirect business taxes	676
Compensation of employees	4746
Rents	28
Net private domestic investment	462
Government expenditure	1630
Business interest payments	576
Proprietor's income	484
Corporate profit taxes	172
Corporate dividends	168
Retained earnings	258
Net exports	-148
Personal taxes	986

- Calculate GNP_{MP} and GDP_{MP} by both expenditure and income method.
- Calculate NI, PI and PDI.

Solution:

a.) Expenditure Method:

$$GDP_{mp} = 5164 + (462 + 878) + 1630 - 148$$

$$= \text{Rs. 7986 millions}$$

$$GNP_{mp} = GDP_{mp} + 0$$

$$= \text{Rs. 7986 millions}$$

Income Method:

$$GDP_{mp} = 4746 + 28 + 576 + (258 + 168 + 172) + 878 + 676 + 484$$

$$= \text{Rs. 7986 millions}$$

$$GNP_{mp} = GDP_{mp} + 0$$

$$= \text{Rs. 7986 millions}$$

Hence, the value of GDP and GNP are equal from both methods i.e. $GDP = 7986$ and since, there is not given the data for NFIA so GNP also equals to 7986.

b.) At first,

$$\begin{aligned}\text{NNP}_{\text{mp}} &= \text{GNP}_{\text{mp}} - 878 \\ &= \text{Rs. } 7108 \text{ millions}\end{aligned}$$

$$\begin{aligned}\text{NNP}_{\text{fc}} &= \text{NNP}_{\text{mp}} - 676 \\ &= \text{Rs. } 6432 \text{ millions}\end{aligned}$$

Now,

$$\begin{aligned}\text{NI} &= \text{NNP}_{\text{fc}} \\ &= \text{Rs. } 6432 \text{ millions}\end{aligned}$$

$$\begin{aligned}\text{PI} &= \text{NI} - 258 - 172 \\ &= \text{Rs. } 6002 \text{ millions}\end{aligned}$$

$$\begin{aligned}\text{PDI} &= \text{PI} - 986 \\ &= \text{Rs. } 5016 \text{ millions}\end{aligned}$$