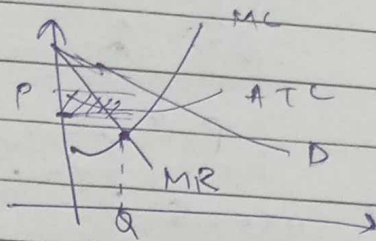Tutorial – ⑪.

## Monopoly →

$P = a - bQ$
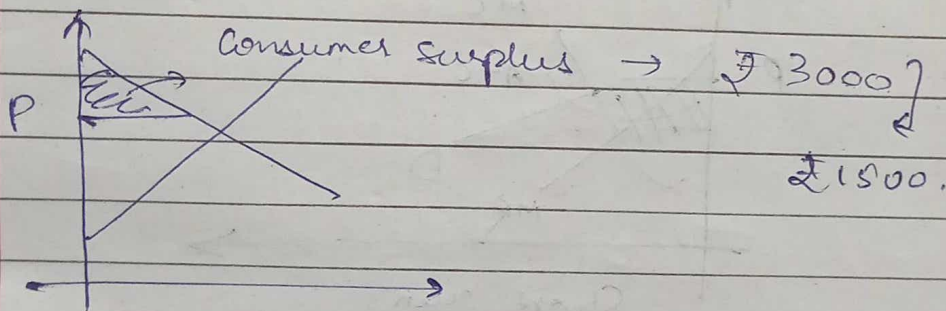
$TR = PQ = aQ - bQ^2$

$MR = \dfrac{dTR}{dQ} = a - 2bQ$

$$\left. \begin{array}{l} P = a - bQ \\ MR = a - 2bQ \end{array} \right]$$

$$MR = MC$$
$$\left. \pi = (P - ATC)Q \right] \checkmark$$

Consumer surplus → ₹ 3000 ]
₹1500.

## Q1.  $TC = Q^2 + 12$

$$P = 24 - Q$$
$$MR = 24 - 2Q$$

$$MC = 2Q$$

$MR = MC$

$$24 - 2Q = 2Q$$
$$\boxed{Q = 6}$$

$P = 24 - 6 = 18$

(24)

$P = 18$

$ATC = 8$

$Q = 6$
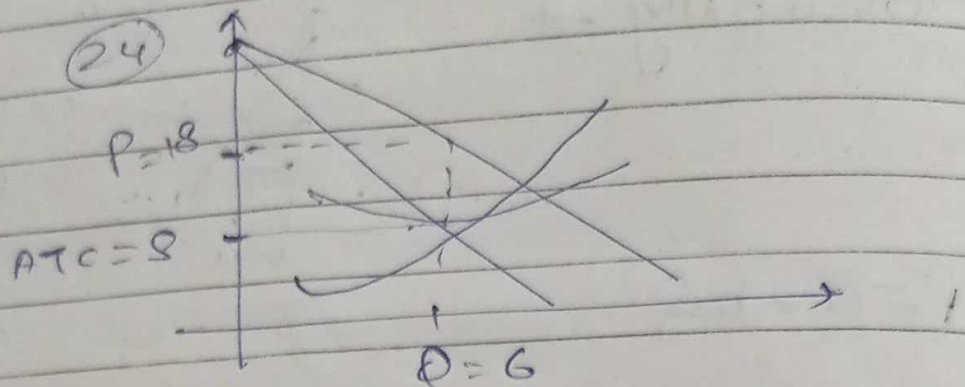
$ATC = \dfrac{Q + 12}{Q}$

$P = 18 \quad Q = 6$

$\pi = 60$

$\boxed{ATC = 8}$

$CS = \dfrac{1}{2}(6)(6)$

$\Rightarrow \underline{18}$

**Q2.** Concept →
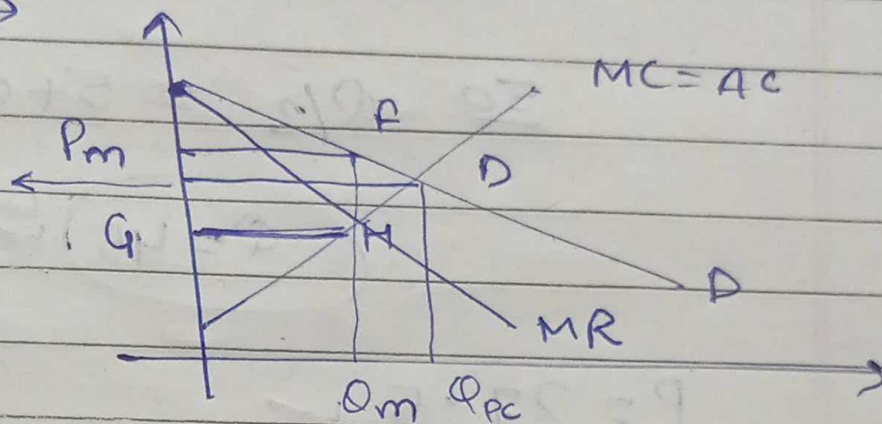


( Consumer
  Surplus ) ⟹ → ABO
  
  perfect
  comp.

( Producer Surplus )pc → BDC

( Consumer Surplus )monopoly → AEF

π monopoly → EGHF

( Producer surplus )mono. → GCH

Dead weight loss
              Dw → FHD.

Q2.

$Q = 100 - 2P$

$2P = 100 - Q$

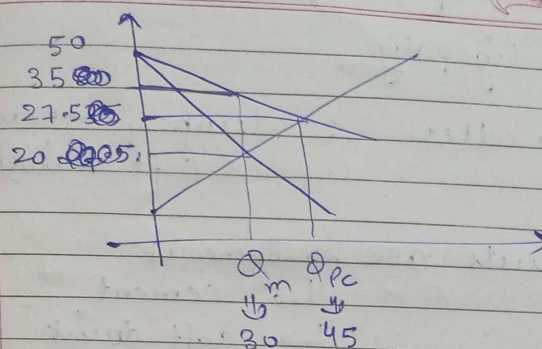$P = 50 - Q/2$

$MC = 5 + 0.5Q$

$50 - Q/2 = 5 + 0.5Q$

$\boxed{Q = 45}$ ✓

$\underline{P = 27.5}$ ✓

$MC = 5 + 0.5Q$

$MR = 50 - Q$

$MR = MC$
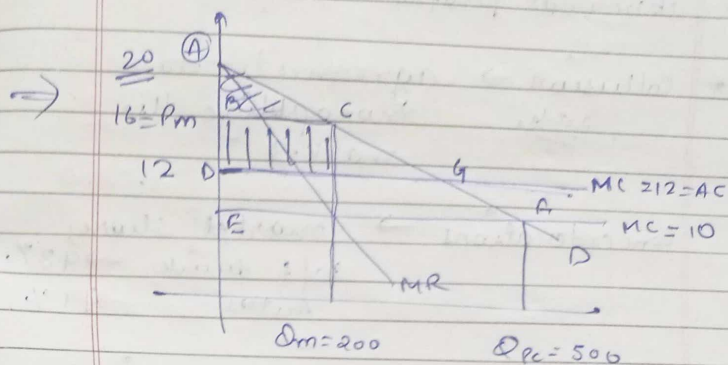


50
35
27.5
20

$Q_m$   $Q_{PC}$

30   45

$$MC = 5 + 0.5Q$$

Q3.
$$CS_{pc} = AEF$$
$$CS_m = ABC$$

$$\pi_m = BDGC$$

(b) $\Rightarrow$  $C \cdot S_{p-c} - C \cdot S_m$

(c)  $DW = CS_{pc} - CS_m - \pi_m$

$\Rightarrow$



20 Ⓐ

16 = P_m

12 D

MC = 12 = AC

MC = 10

MR

D

$Q_m = 200$        $Q_{pc} = 500$

10th December.

next week → MCQ

Q4.

$$P = 36 - 2Q$$

$$AC = Q^2 - 18Q + 100$$

$$P = AC$$

$$Q = 8$$

Q5.



MC
ATC
P
D
MR

Short run



MC
ATC
P
D
MR
Q
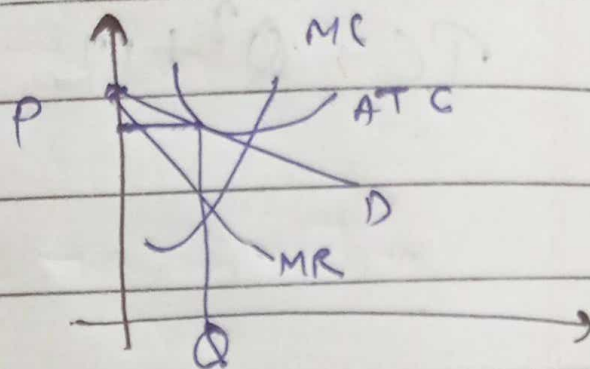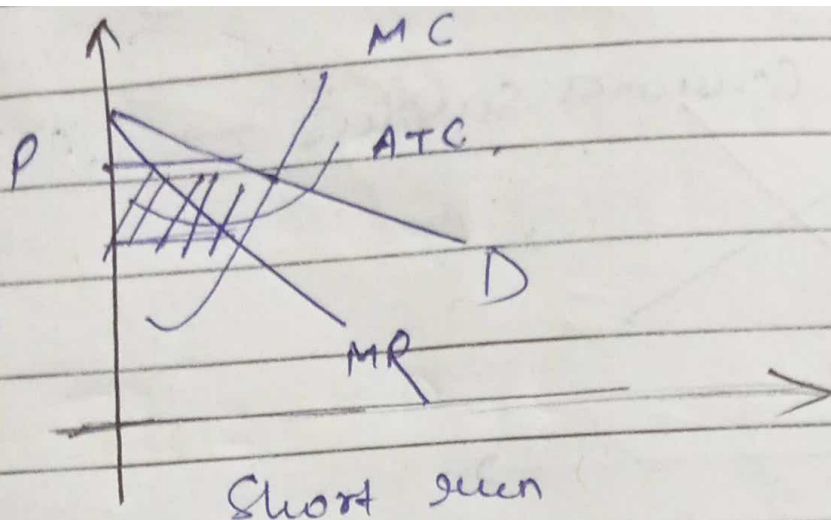
Long Run

$P = MR = LAC = LMC$

## Tutorial - ⑩;

① 
$$TC = 2q^2 - 40 \qquad P = 16 = MR$$

$$MC = 4q$$
$$q = 4$$

$$ATC = 2q + \frac{40}{q} \qquad ATC = 18$$

$$\pi = (16 - 18)\,4$$
$$= -8$$

$$P > AVC$$

$$TC = \underbrace{2q^2}_{TVC} + \underbrace{40}_{TFC}$$

$$AVC = 2q$$
$$AVC = 8$$

$$16 > 8$$

$$\boxed{\pi = 8 - 16 \\ = -8}$$

## Tutorial (10)

**2.**

$$P = 100 - 4Q$$

$$P = Q$$

$$P = 20 \; ; \quad Q = 20$$

$$P = 20 = MR \qquad\qquad TC = 50 + 4Q + 2q^2 \text{ (given)}$$

$$MC = 4 + 4Q$$

$$MR = MC$$

$$4 + 4q = 20$$

$$\boxed{q = 4}$$

$$\begin{bmatrix} Q \to \text{entire market} \\ q \to \text{One firm} \end{bmatrix}$$

(number of firms) $\quad n = \dfrac{Q}{q} = \dfrac{20}{4} = \boxed{5}$

$$\pi = (P - ATC)\,q$$

$q = 4$

$$ATC = \dfrac{50}{q} + 4 + 2q$$

$$\boxed{ATC = 24.5}$$

(3)

$$P = MR = \angle MC = LAC$$

$$TC = 2q^2 + 5q$$

$$MC = 4q + 5$$

$$AC = 2q + 5 + \frac{50}{q} \quad \Rightarrow 225$$

$$q = 5$$

$$P = MR = 25$$

$$\pi = (20-24.5) \, 4$$
$$= \boxed{-18} \checkmark$$

For long run;  $\boxed{\pi = 0} \checkmark$

$$P = MR = MC = AC$$
$$TC = 50 + 4q + 2q^2$$

$$MC = 4 + 4q$$
$$AC = \frac{50}{q} + 4 + 2q$$

$$4 + 4q = \frac{50}{q} + 4 + 2q$$

$$\boxed{q = 5} \checkmark$$

$$\boxed{P = 24 = MC = AC}$$

$$P = 100 - 4Q$$
$$Q = 19$$

$$\boxed{n = \frac{Q}{q} = \frac{19}{5} = 3.8}$$

4. $TC = 100 + 12Q + 0.06 Q^2$

Breakeven $\rightarrow \pi = 0$

$$P = MR = AC = MC$$

$$\begin{cases} Q = 40.82 \\ P = 16.89 \end{cases}$$

5. $Q = 660,000 - 1633.33P$

MC → perfect comp
↓ (will do as
a supply line)

5000
identical
firms;

$P = 12 + 0.12 Q$ or 12

$Q = 8.333 - 100$

[ × 5000 firms ]

$Q_s = (8.333P - 100) 5000$

$Q_s = Q_d$

$P = 20$
$Q =$