$TC = TVC + TFC$

$MC = \frac{\Delta TC}{\Delta Q} = \frac{100-50}{1-0} = 50$

$\downarrow$

$\frac{128-100}{2-1} = 28$

(1) $ATC = \frac{TC}{Q}$

Or, $ATC = AVC + AFC$

$AFC = \frac{TFC}{Q}$

$AVC = \frac{TVC}{Q}$

If $q = 600 \Rightarrow TVC = 1140q$

Say total output is Q, $q > 600$

Remaining production $(Q - 600)$

$\downarrow$

$TVC = 1300(Q - 600)$

Total Q

TVC for $Q = 1140(600) + 1300(Q - 600)$

$TVC = 684000 + 1300Q - 780000$

$TVC = 1300Q - 96000$

then for output > 600

$AVC = \frac{TVC}{Q} = \frac{1300Q - 96000}{Q}$

$= 1300 - \frac{96000}{Q}$ (ans)

Cost minimisation:

Cost of production (TC) $TVC + TFC$

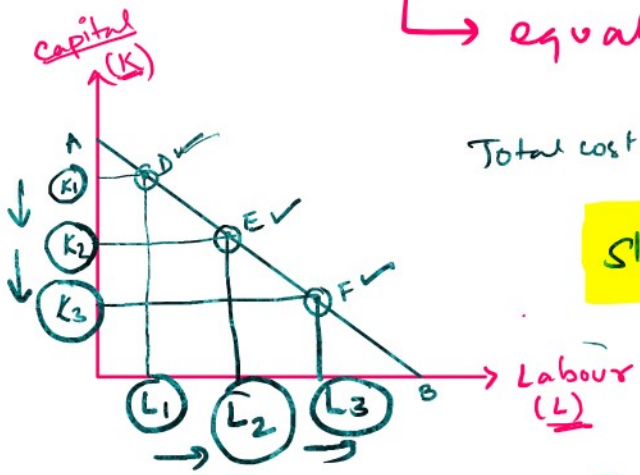
producing output $\Rightarrow$ using Labour (L) (paying 'w')

producing Q output ⇒ using Labour (paying 'w') using capital (paying 'r')

Since TC = TVC + TFC

$TC = wL + rK$

↳ equation of isocost line.



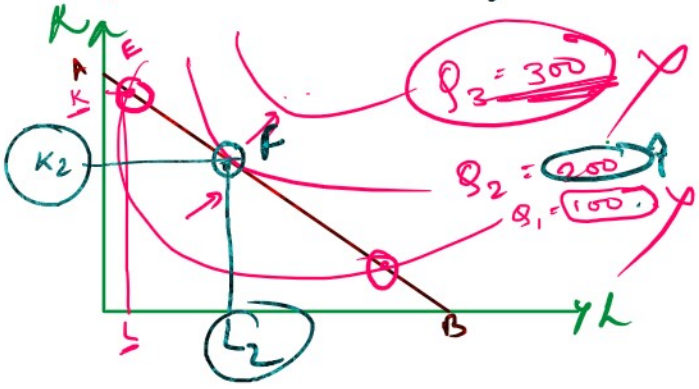
Total cost = 10,000 = $wL + rK$

Slope of isocost line = $\frac{\Delta K}{\Delta L} = -\frac{w}{r}$

What is cost minimisation? ⇒ maximise Q for given cost
⇒ minimise cost for given Q.

① ↳ suppose you have Rs 10,000.

How many L & K should be employ for max Q.



Point F condition for cost min

$\frac{\Delta Q/\Delta L}{\Delta Q/\Delta K} = \frac{w}{r}$

$\frac{MP_L}{MP_K} = \frac{w}{r}$

Relation between Returns to Scale and Long run AC.

1° Increase in Returns to scale (IRS)
↳ Economies of scale
↳ Decreasing Cost Industry
↳ Average cost of production

2. Constant Returns to Scale (CRS)
↳ AC of production is minimum.

↳ AC of production is minimum.

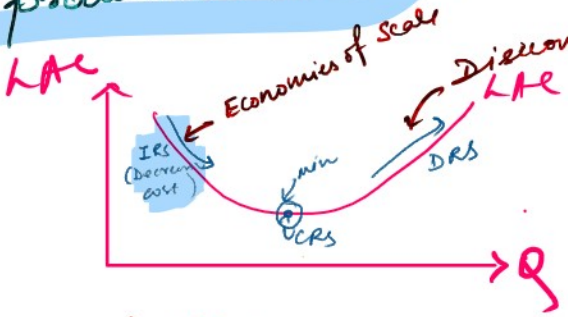
3. Decreasing Returns to Scale (DRS)

↳ DISECONOMIES of scale

↳ Average cost of production increases.

↳ Industry ↓

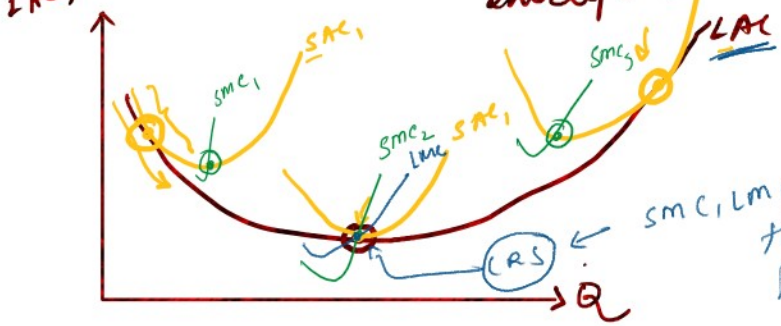
↳ Average cost of production falls with increase in output.



Relation between SACs and LACs.

↓

envelope curve of SACs.



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Perfect Competition and Monopoly Revision

features

PC

1. infinite no. of sellers & buyers
2. Price is fixed. Sellers are price 'taker' They take price as given.
3. products are homogenous/identical.
4. products are perfect substitute to each other.

Monopoly

1. only single seller many buyers.
2. Price is variable with Output. They are price makers.
3. Heterogeneous or non-identical products.
4. No close substitutes available.

4. products are perfect substitutes to each other.
5. There is free entry and free exit
No barriers to entry.
6. Perfect knowledge of buyers & sellers.
7. No transportation cost.
8. No govt intervention.
9. In PC, there is Supernormal profit in short-run ($\pi > 0$) and Normal profit ($\pi = 0$) in long run
10. charges lower price & sells higher quantity.
11. No social cost or dead-weight loss produces socially optimum output
12. In PC ⇒ profit maximisation requires: $\bar{P} = AR = MR = MC$

PC

Shape of Revenue Curves

$TR = \bar{P} \times Q$ (price is fixed)
∴ TR is upward sloping straight line through origin.

↓
TR is const and linear

Avg Revenue (AR) = $\frac{TR}{Q} = \frac{\bar{P} \times Q}{Q} = \bar{P}$ const

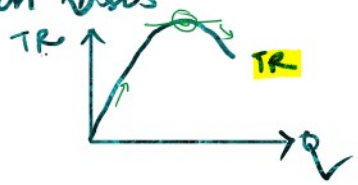
AR is const at $\bar{P}$
Demand curve (AR) is horizontal.

4. No close substitutes available.
5. Barriers to enter (No free entry exit allowed)
→ Types of barriers:
1. Legal restrictions (Patent, Copyright)
2. Access to critical inputs.
3. Economies of Scale (IRS)
6. In monopoly a firm always seeks profit $\pi > 0$.
7. Charges higher price and sells lower quantity.
8. produces less than socially optimum output and there is social cost of monopoly (Dead weight loss)
9. At profit max, $MR = MC$ and $P > MC$

monopoly

$TR = P \times Q$ (Price & Quantity both are variables).

↓
first ↑ rises with Q
Reaches max
then ↓ falls
} TR is non-const and non-linear.



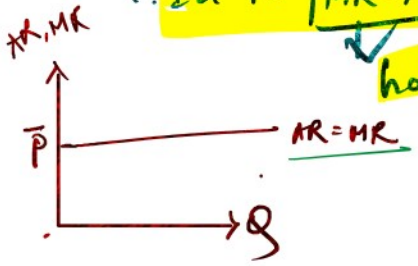
$AR = \frac{TR}{Q} = \frac{P \times Q}{Q} = P$ (Not const inversely related)

Demand curve

$$MR = \frac{\Delta TR}{\Delta Q} = \frac{\Delta(PQ)}{\Delta Q} = \bar{P}\frac{\Delta Q}{\Delta Q} = \bar{P} = AR$$ (= constant)

∴ In PC $MR = AR = \bar{P}$

horizontal.

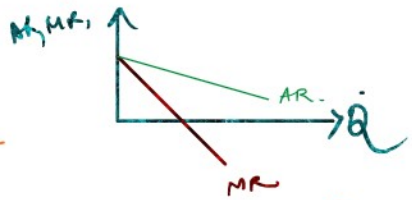


$$AR = \frac{TR}{Q} = \frac{PQ}{Q} = P$$ (inversely related to Q)

Demand (AR) is downward sloping.

$$MR = \frac{\Delta TR}{\Delta Q} = \frac{\Delta(PQ)}{\Delta Q} = P + Q\frac{\Delta P}{\Delta Q}$$

and MR < AR (MR is below AR)



Profit maximisation

PC

$\Pi = TR - TC$

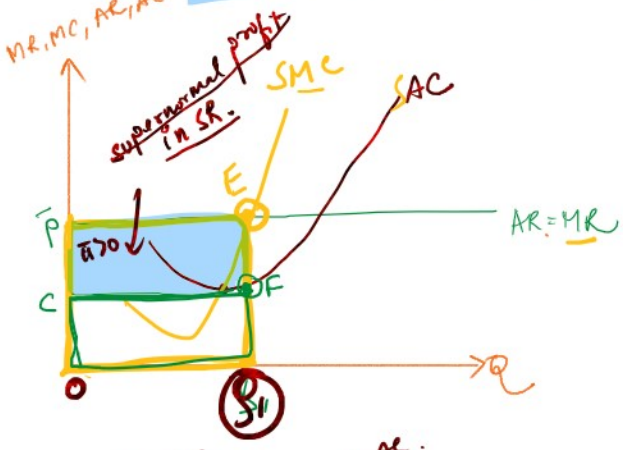
$\Delta\Pi = \Delta TR - \Delta TC$

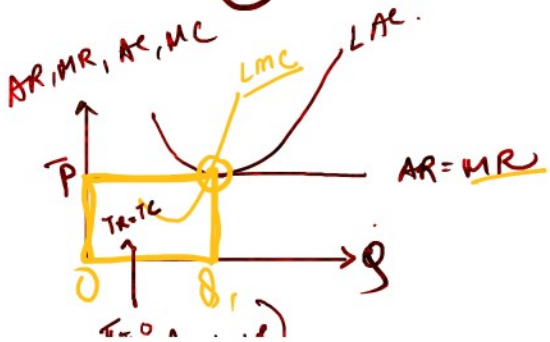
$\frac{\Delta\Pi}{\Delta Q} = \frac{\Delta TR}{\Delta Q} - \frac{\Delta TC}{\Delta Q} = 0$

$\Rightarrow MR - MC = 0$

$\Rightarrow MR = MC$

$\Rightarrow \bar{P} = AR = MR = MC$





Monopoly

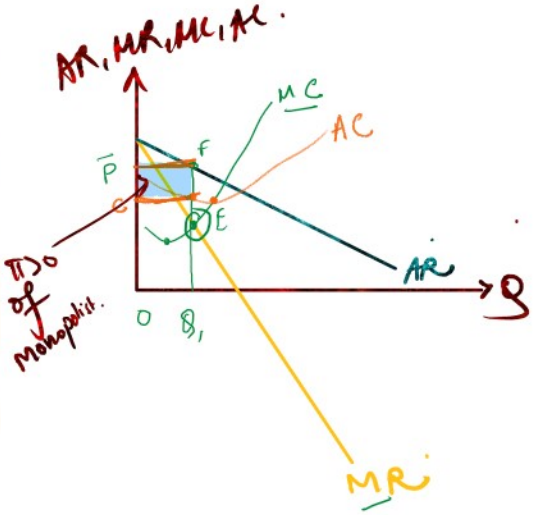
$\Pi = TR - TC$

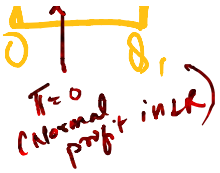
$\frac{\Delta\Pi}{\Delta Q} = \frac{\Delta TR}{\Delta Q} - \frac{\Delta TC}{\Delta Q} = 0$

$MR - MC = 0$

$MR = MC$

and $P > MR = MC$





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1. Short-run Supply } PC
   Long-run Supp }

2. Relation TR & MR
   MR & ep
   Rule of Thumb
   Lerner's Index
   dead-weight loss
   Numericals.

(8am - 9:30am Wednesday.)