

Formula Revision

CH-1 NO Formula

CH-2 - Utility

1 $TU = \sum MU$

2 $MU_n = TU_n - TU_{n-1}$
or $\frac{\Delta TU}{\Delta Qty}$

3 Consumer Eq, $P = MU$
 $\frac{P_x}{P_y} = \frac{MU_x}{MU_y}$

4 Consumer Surplus = Ready 2 pay - Price

5 Equilibrium under ordinal $MRS_{xy} = \frac{P_x}{P_y}$

CH 2 - Demand

1 $E_p \oplus \% \Delta = \frac{\% \Delta \text{ in } QD}{\% \Delta \text{ in } P} \quad \frac{\frac{Q_2 - Q_1}{Q_1} \times 100}{\frac{P_2 - P_1}{P_1} \times 100}$
 $\oplus$ Point elasticity derivative $-\frac{dq_p}{dp_q}$

⊕ Point elasticity derivative $-\frac{dq_p}{dp_q}$

⊕ geometric $= -\frac{LS}{VS}$

⊕ arc $= \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$

⊕ Total Outlay

Price	Tot. Exp	
↑	↑	inelastic
↓	↓	
↑	↓	elastic
↓	↑	
↑	no Δ	unit elastic
↓		

Income elasticity $\frac{\% \Delta \text{ in } QD}{\% \Delta \text{ in } Inc} = \frac{Q_2 - Q_1}{Q_1} \times 100$
 $\frac{I_2 - I_1}{I_1} \times 100$

Cross elasticity $\frac{\% \Delta \text{ in } QD_x}{\% \Delta \text{ in } P_y} = \frac{Q_{2x} - Q_{1x}}{Q_{1x}} \times 100$
 $\frac{P_{2y} - P_{1y}}{P_{1y}} \times 100$

advt elast $\frac{\% \Delta \text{ in } QD}{\% \Delta \text{ in adv exp}} = \frac{Q_2 - Q_1}{Q_1} \times 100$
 $\frac{Ex_2 - Ex_1}{Ex_1} \times 100$

⊕ Supply

E_s % Δ Method $\frac{Q_2 - Q_1}{Q_1} \times 100$
 $\frac{P_2 - P_1}{P_1} \times 100$

derivative $+\frac{dq_p}{dp_q}$

Arc

$$\frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

Relation betⁿ elasticity and slope

$$E = \frac{1}{\text{Slope}} \times \frac{P}{Q}$$

CH-3 Prodⁿ Cost & Revⁿ

1) Cobb Douglas $Q = K L^a C^{1-a}$

lab contⁿ $\frac{3}{4}$
Cap contⁿ $= \frac{1}{4}$

2 $TP = \sum \text{all Product}$

3 $MP_n = TP_n - TP_{n-1}$ or $\frac{\Delta TP}{\Delta Q}$

4 $AP = TP/Q$

5 Rev
- Acc cost
Acc Pro
- Implicit Cost
Eco Pro

$$\text{Acc cost} + \text{Imp cost} = \text{Eco cost}$$

6 $MC_n = TC_n - TC_{n-1}$ or $\frac{\Delta TC}{\Delta Q}$
 $TVC_n - TVC_{n-1}$ or $\frac{\Delta TVC}{\Delta Q}$

$$7 \quad AFC = TC/Q$$

$$8 \quad AVC = TVC/Q$$

$$9 \quad ATC = TC/Q$$

$$10 \quad AFC + AVC = ATC$$

$$11 \quad TR = P \times Q$$

$$12 \quad AR = \frac{TR}{Q} \quad \text{or} \quad \frac{P \times Q}{Q} = P$$

$$13 \quad MR_n = TR_n - TR_{n-1}$$

$$\text{or} \quad \frac{\Delta TR}{\Delta Q}$$

$$14 \quad MR = AR \frac{e-1}{e}$$

$e > 1$	$MR +ve$
$e = 1$	$MR = 0$
$e < 1$	$MR -ve$

15 Pro max condⁿ

$$MC = MR$$

MC Curve cuts MR from below

$$16 \quad AR > AC = SP$$

$$AR < AC = LOSS$$

$$\rightarrow AR > AVC = \text{cont}$$

$$\rightarrow AR = AVC = SDP$$

$$\rightarrow AR < AVC = \text{shut.}$$

$$AR = AC = NP$$

CH-5 NO Numerical

CH-6 National Income

1) 2 Sector 3 Sector 4 Sector

Eq $S = I$

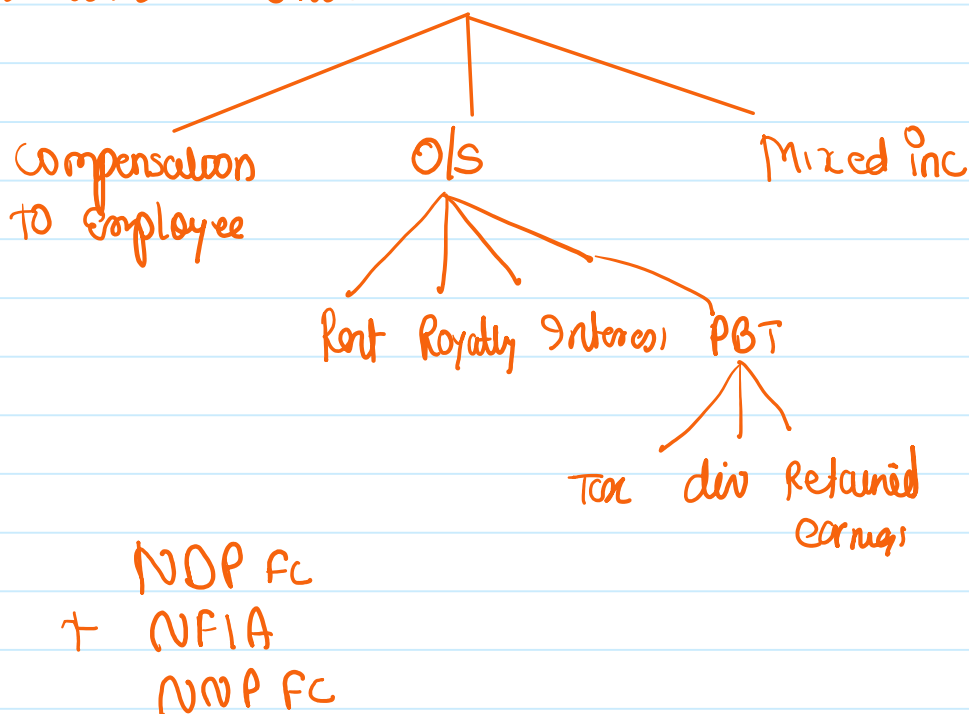
$S + T = I + G$

$S + T + m = I + G + X$

2 Value added Method

Final value of G&S of Pri / sec & tertiary sec
 - Intermediate Conⁿ of -1- -1- -1-
 GDP MP
 - dupⁿ
 + NFIA
 - NIT
 NNP FC

3 Income Method



4 Expenditure $C + I + G + (X - M) = GDP mp$
 - dup

$$\begin{aligned}
 & - \text{dep} \\
 & + \text{NFA} \\
 & - \text{NIT} \\
 & \text{NNP FC}
 \end{aligned}$$

$$\begin{aligned}
 5 \quad & \text{Gross-dep}^n = \text{Net} \\
 6 \quad & \text{dom} + \text{NFA} = \text{National} \\
 7 \quad & \text{FC} + \text{NIT} = \text{MP}
 \end{aligned}$$

$$8) \quad \text{NIT} = (\text{Ind tax} - \text{Sub})$$

$$9 \quad \text{Nominal GDP} = \text{Qty} \times \text{Current price}$$

$$10 \quad \text{Real GDP} = \text{Qty} \times \text{Base price}$$

$$11 \quad \text{GDP def} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

$$12 \quad \text{Inflation} = \frac{\text{GDP def } Y_2 - \text{GDP def } Y_1}{\text{GDP def } Y_1}$$

$$13 \quad \text{Real GDP} = \frac{\text{Nominal GDP}}{\text{Current Price}} \times \text{Base Price}$$

$$14 \quad C = a + b y_d$$

$$15 \quad b = \text{MPC} = \frac{\Delta \text{Con}}{\Delta Y}$$

$$16 \quad y_d = (Y - \text{tax} + t_p)$$

$$17 \quad a = \text{autonomous exp}$$

$$18 \quad b y_d = \text{Induced exp}$$

19 $Y - C = S$

20 In 2 Sector $Y = C + I$
 $= C + bY_d + I$

3 Sector $Y = C + I + G$

4 Sector $Y = C + I + G + X - M$

21 Inv multiplier = $K = \frac{\Delta Y}{\Delta I}$

& $K = \frac{1}{MPS}$
 $= \frac{1}{1 - MPC}$

CH-7 = NO Numerical

CH-8 Money Market.

1

1) $M_1 = \text{Currency notes \& coins}$
 $+ \text{net Demand depo with banks}$
 $+ \text{Oth depo RBI}$
 $+ \text{Treasurer's Cheque}$

$M_2 = M_1 + \text{PO Savings}$

$M_3 = M_1 + \text{net time deposit}$

$M_4 = M_3 + \text{Total depo of PO}$

2) Reserve Money = $\text{Currency notes \& coins}$
 $+ \text{BANKER'S depo}$
 $+ \text{Oth depo with RBI}$

+ BANKERS depo
+ Oth depo with RBI

3) $M_s = M_B \times m$

4) $m = \frac{1}{\text{Req res ratio}}$

5) Fisher eq $P \times T = M \times V$

6) Cambridge $M_d = K P_y$

7) Inventory approach - $\sqrt{\frac{2AT}{C}}$

CH-9

Real Exchange rate = $\frac{\text{Nominal Exchange rate}}{\text{Exchange rate}} \times \frac{\text{Domestic Price}}{\text{Foreign Price}}$

a $GNDI = GNP_{mp} + \text{net trf payment from RoTW}$

b $NNDI = NNP_{mp} + \text{net trf payment from RoTW}$

c $\text{National inc} - \text{Govt Cont} + \text{net trf from RoTW} + \text{Net trf from Govt} + \text{Int on Nat. debt} = \text{Private inc}$

d $\text{Private inc} - \text{Corp tax} - \text{Undistributed pro} = \text{Personal inc}$

e $\text{Personal inc} - \text{direct tax} = \text{Personal disposable inc}$

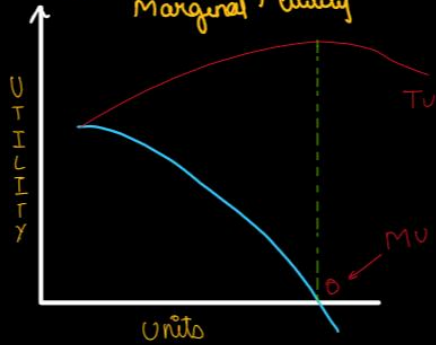
2 Personal inc - direct tax = Personal disposable inc



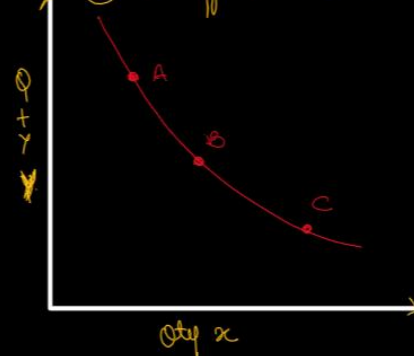
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Graphs on utility analysis

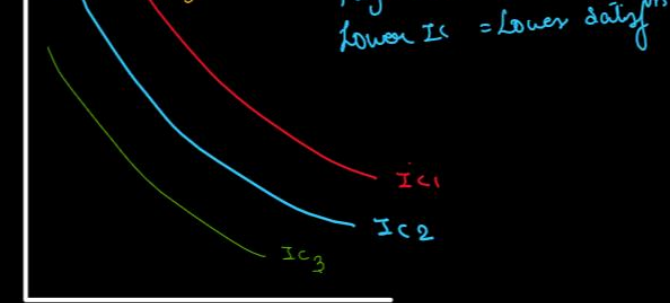
① - Total utility & Marginal utility



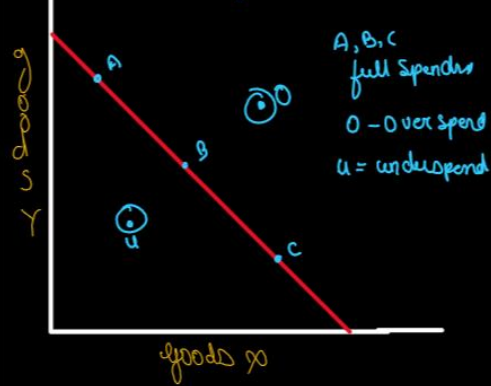
② Indifference curve



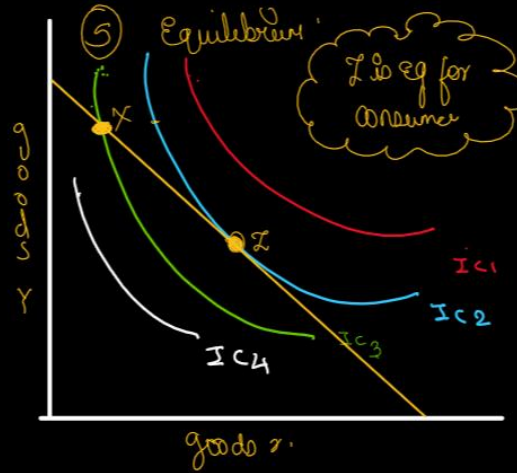
③ Indifference Map



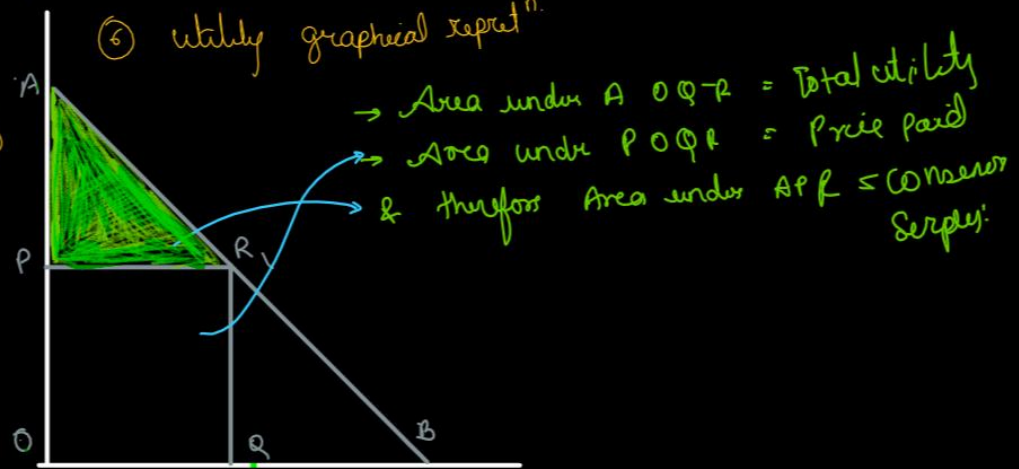
④ Budget line



⑤ Equilibrium



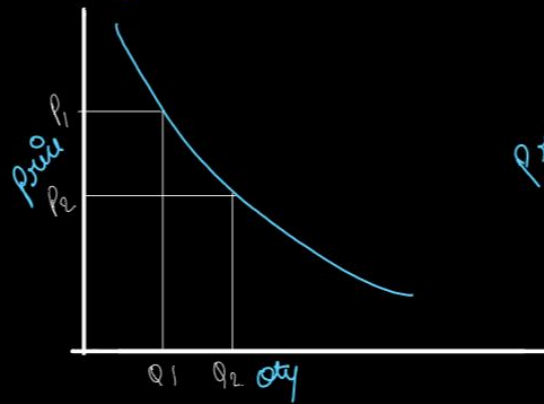
⑥ Utility graphical representⁿ



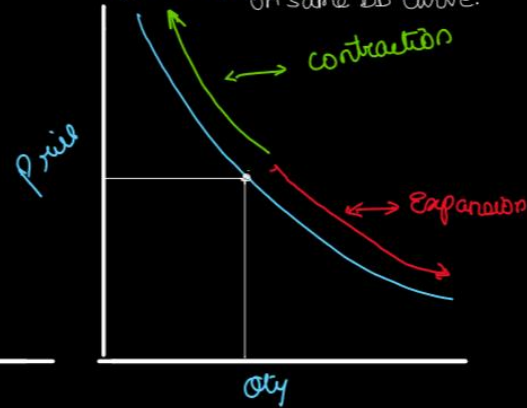
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→ graphs on DD analysis:

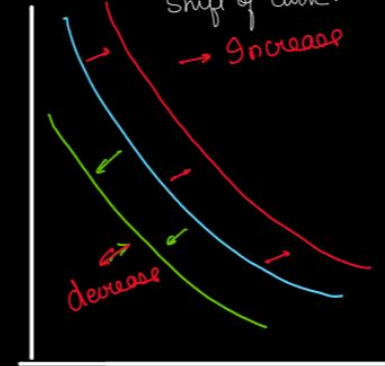
⑦ Normal DD curve.



⑧ Expansion & contraction on same DD curve.



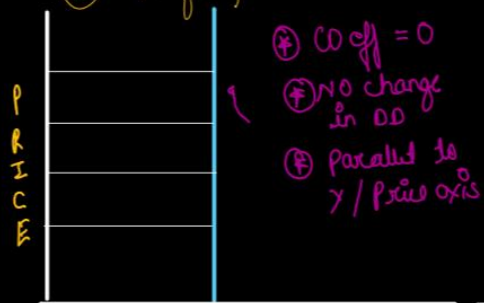
⑨ Increase / Decrease in DD Shift of curve.



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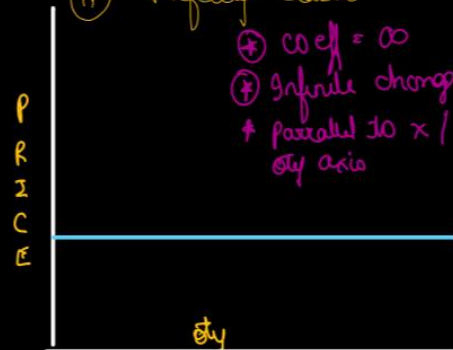
④ Elasticity of DD

⑩ Perfectly Inelastic



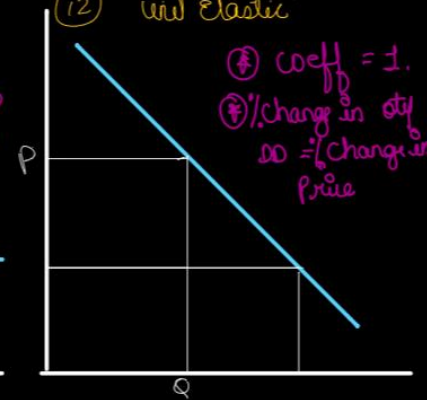
- ① Coeff = 0
- ② NO change in DD
- ③ Parallel to y / Price axis

⑪ Perfectly elastic

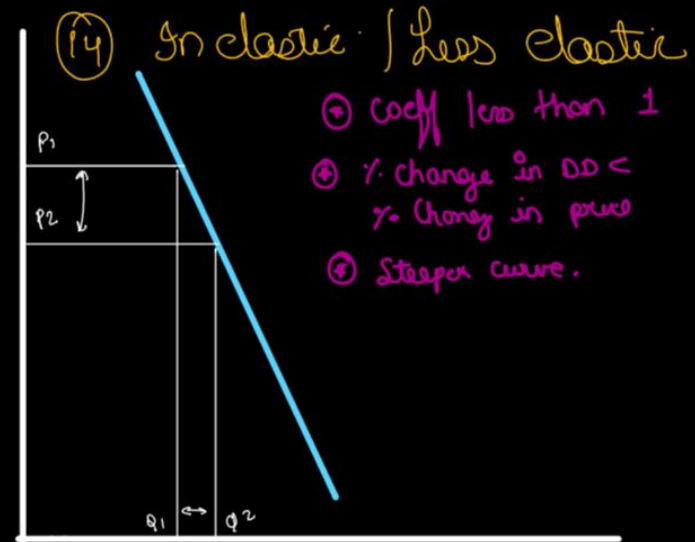
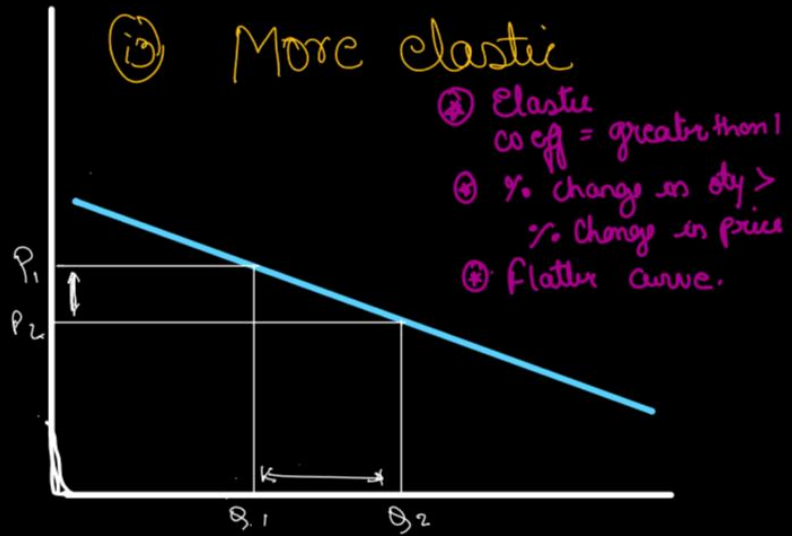


- ① Coeff = ∞
- ② Infinite change
- ③ Parallel to x / Qty axis

⑫ Unit Elastic

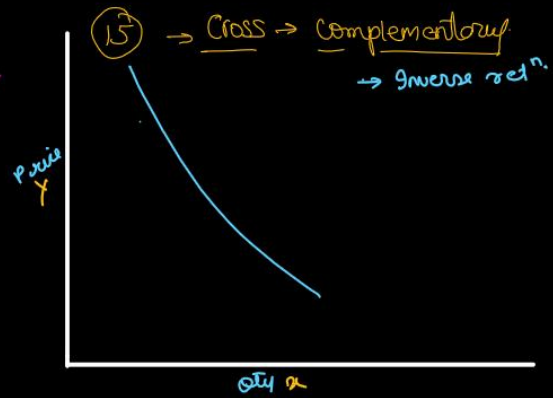


- ① Coeff = 1.
- ② % change in Qty DD = % change in Price

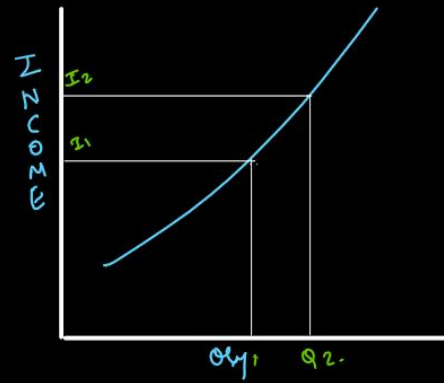


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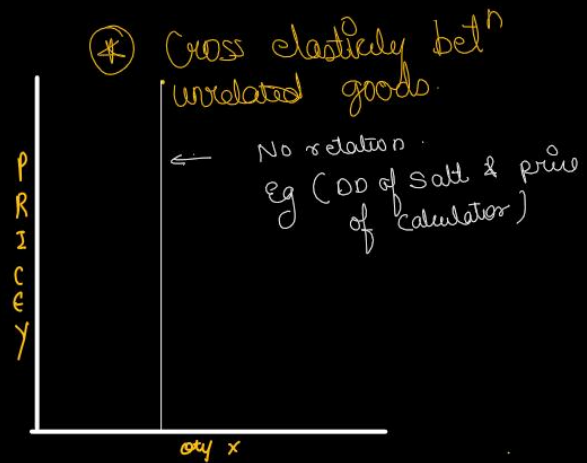
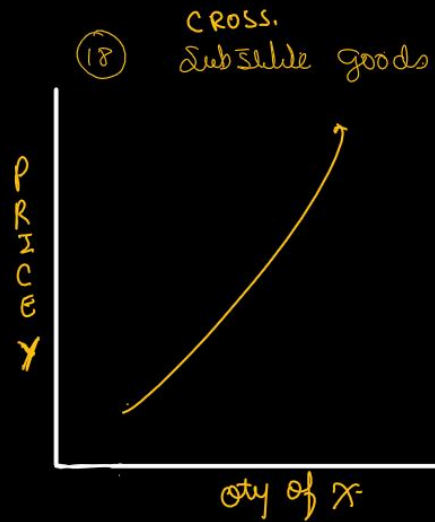
07 October 2020



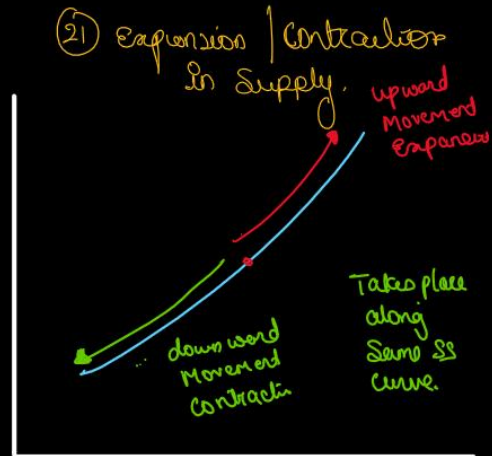
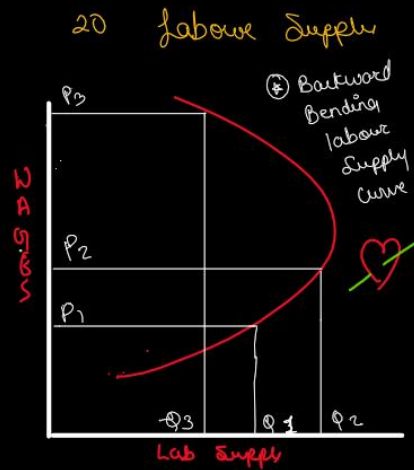
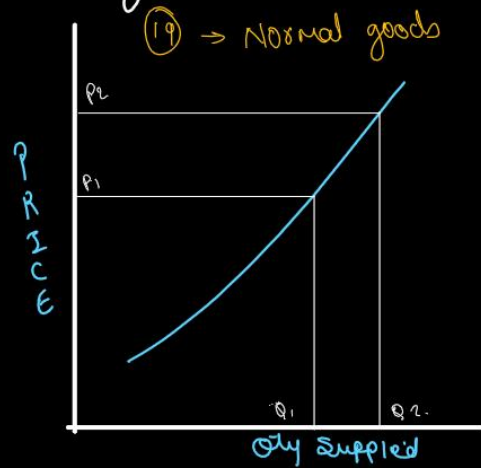
Income Elasticity & Cross
⑯ → Normal goods / Luxurious



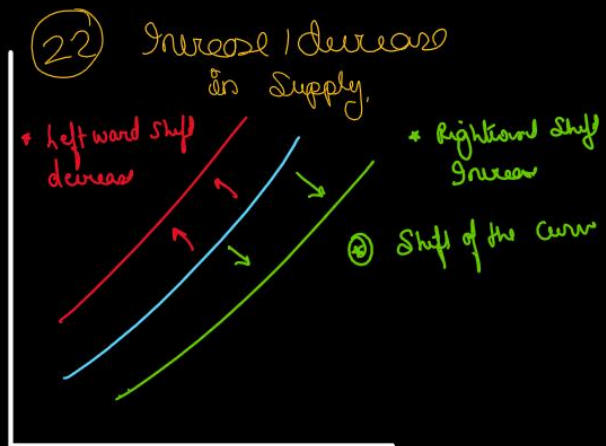
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→ graphs on Supply analysis

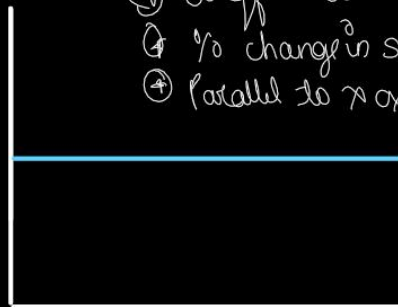


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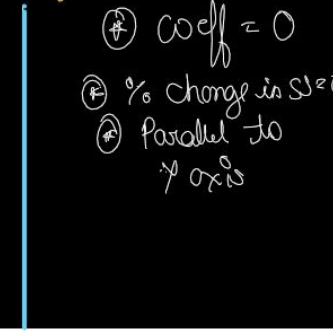
②③ Perfectly Elastic

- ④ $\text{Coeff} = \infty$
- ④ $\% \text{ change in SS} = \infty$
- ④ Parallel to X axis.



24) Perfectly Inelastic

- ④ $\text{Coeff} = 0$
- ④ $\% \text{ change in SS} = 0$
- ④ Parallel to Y axis

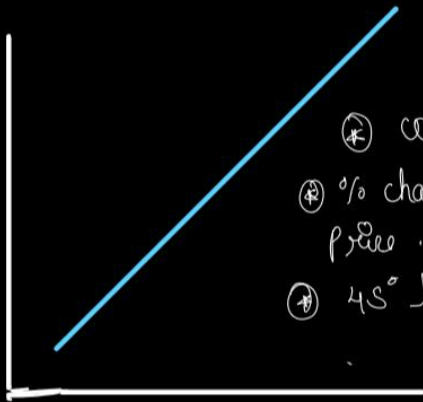




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25) unit elastic

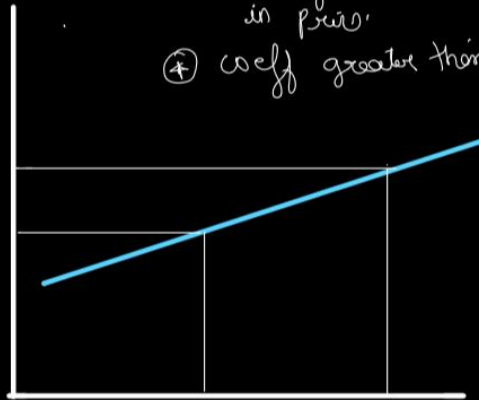
-1



- ① coeff -
- ② % change in SS = % change in price
- ③ 45° line

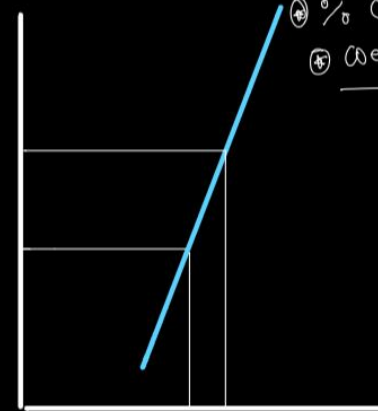
26) More elastic

- ① % change in SS > % change in price
- ② coeff greater than 1



27) Less elastic / inelastic

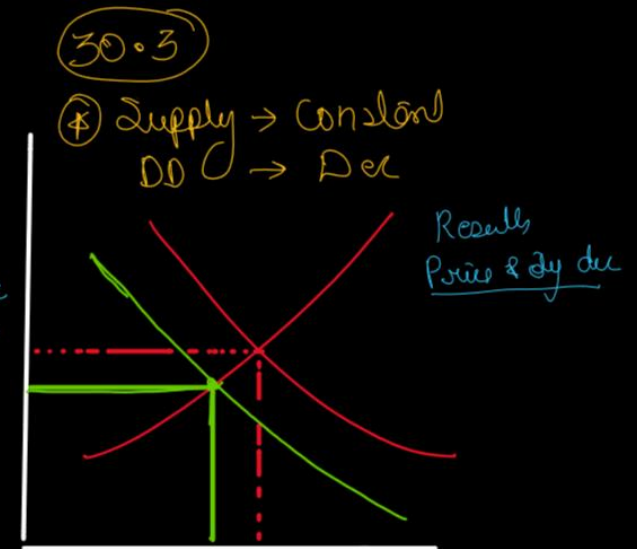
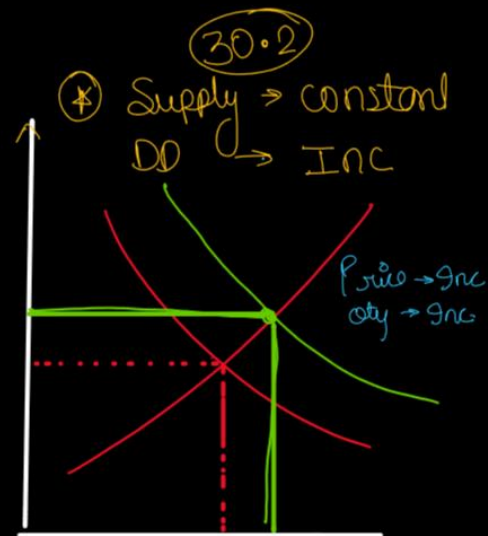
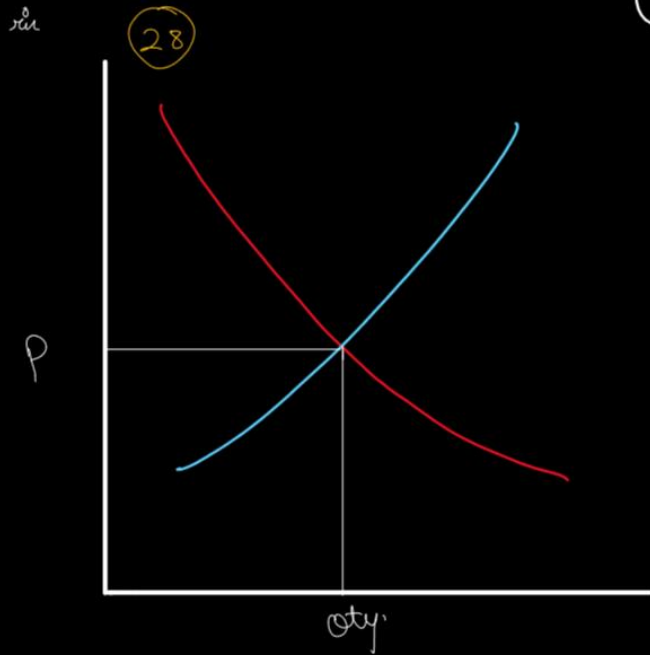
- ① % change in SS < % change in price
- ② coeff < 1



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→ Demand & Supply Equilibrium.



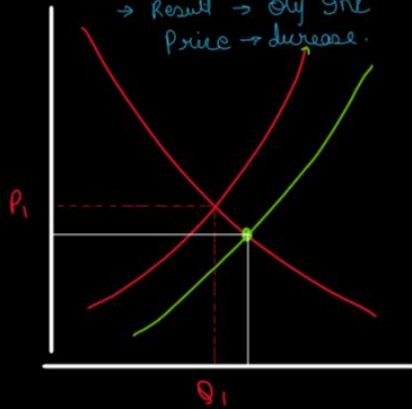
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Some cases of New Equilibrium.

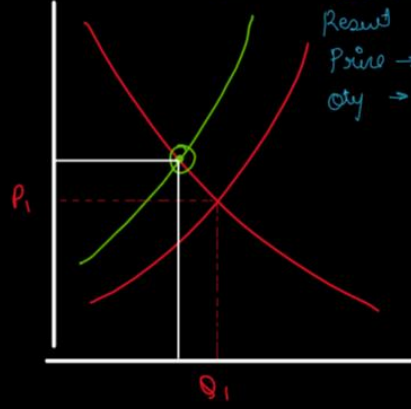
(29) $DD \rightarrow$ Constant
 $SS \rightarrow$ Increase.

$\rightarrow$ Result $\rightarrow$ Qty $\uparrow$
Price $\rightarrow$ decrease.



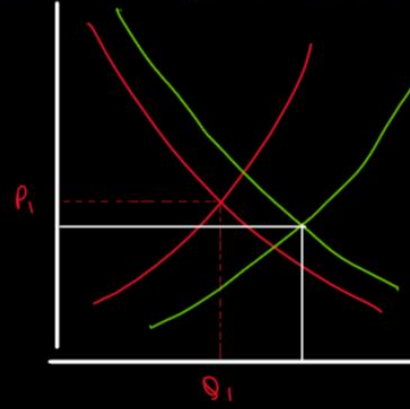
(30) $DD \rightarrow$ Constant
 $SS \rightarrow$ decrease.

Result
Price $\rightarrow$ $\uparrow$
Qty $\rightarrow$ dec.

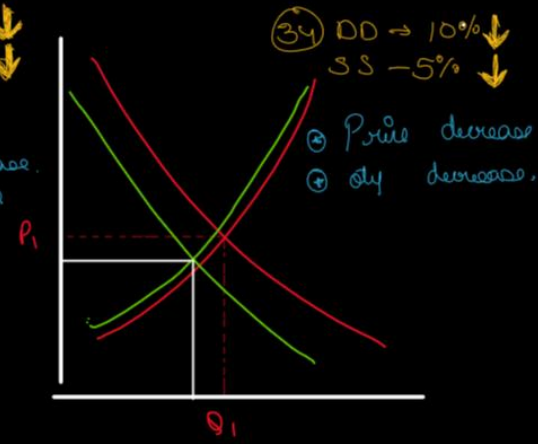
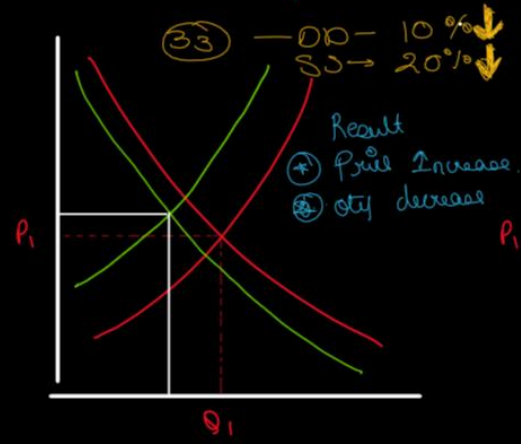
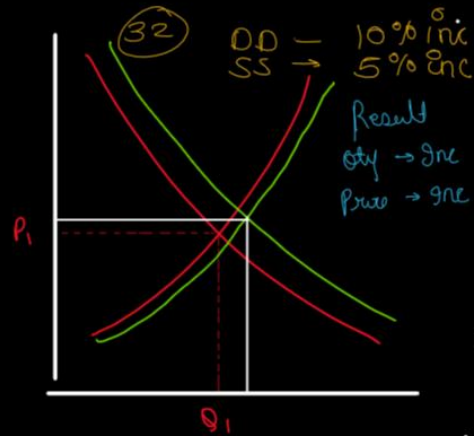


(31) $DD \rightarrow$ 10% increase
 $SS \rightarrow$ 20% increase

Results
 $\rightarrow$ Price $\rightarrow$ decrease
 $\rightarrow$ Qty $\rightarrow$ increase

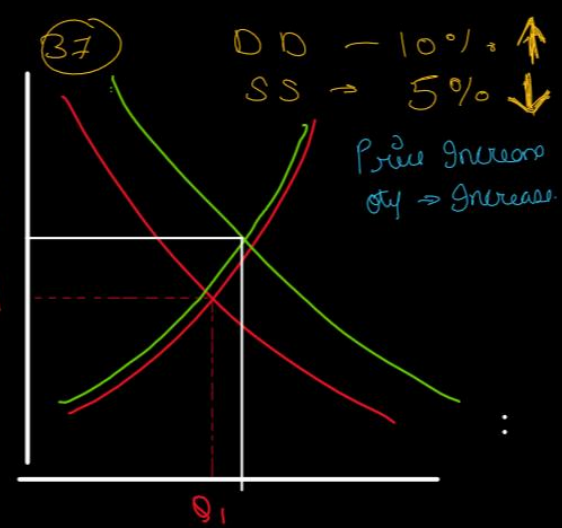
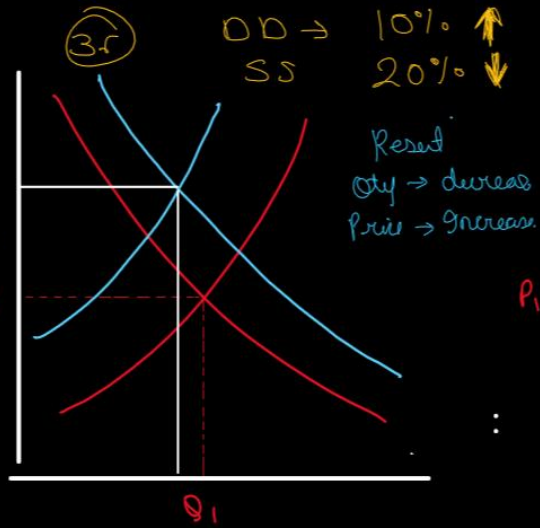
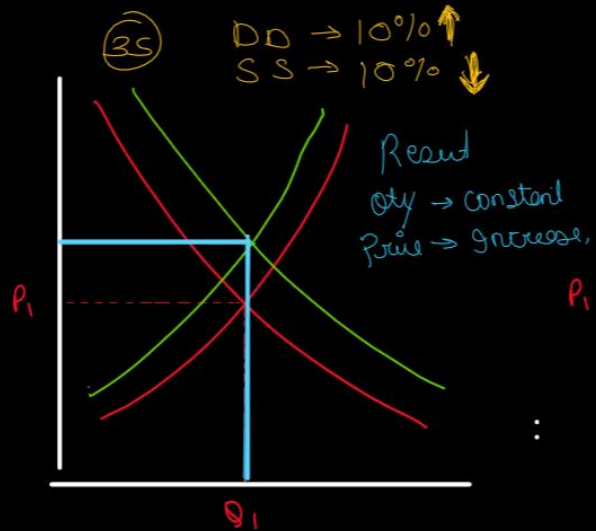


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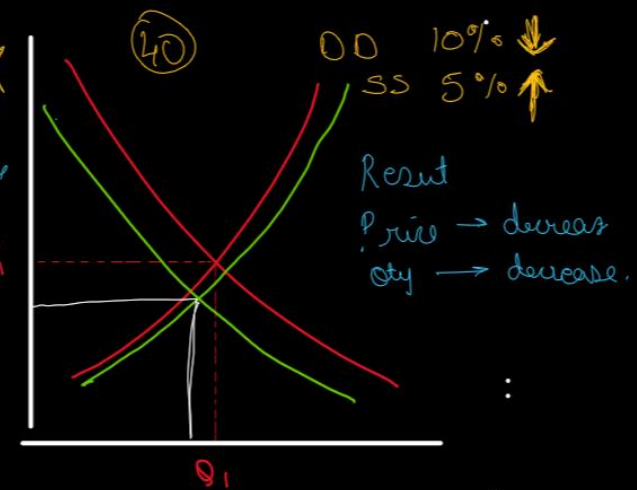
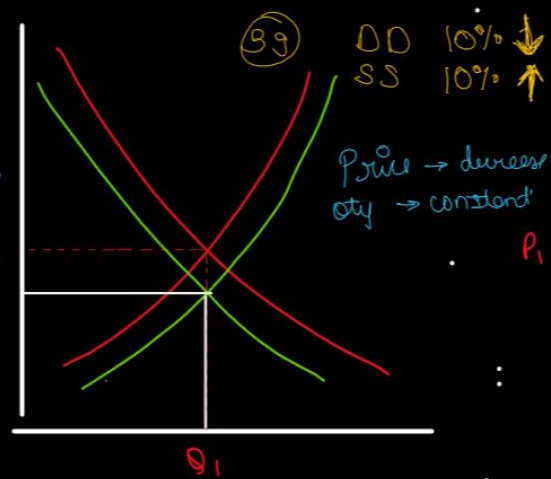
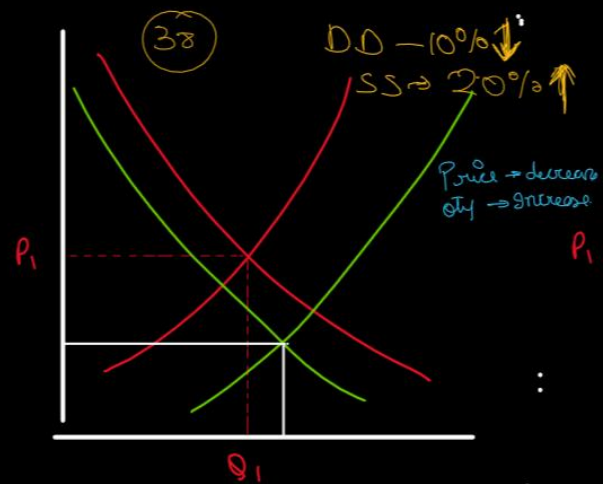




Shapes



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Shapes



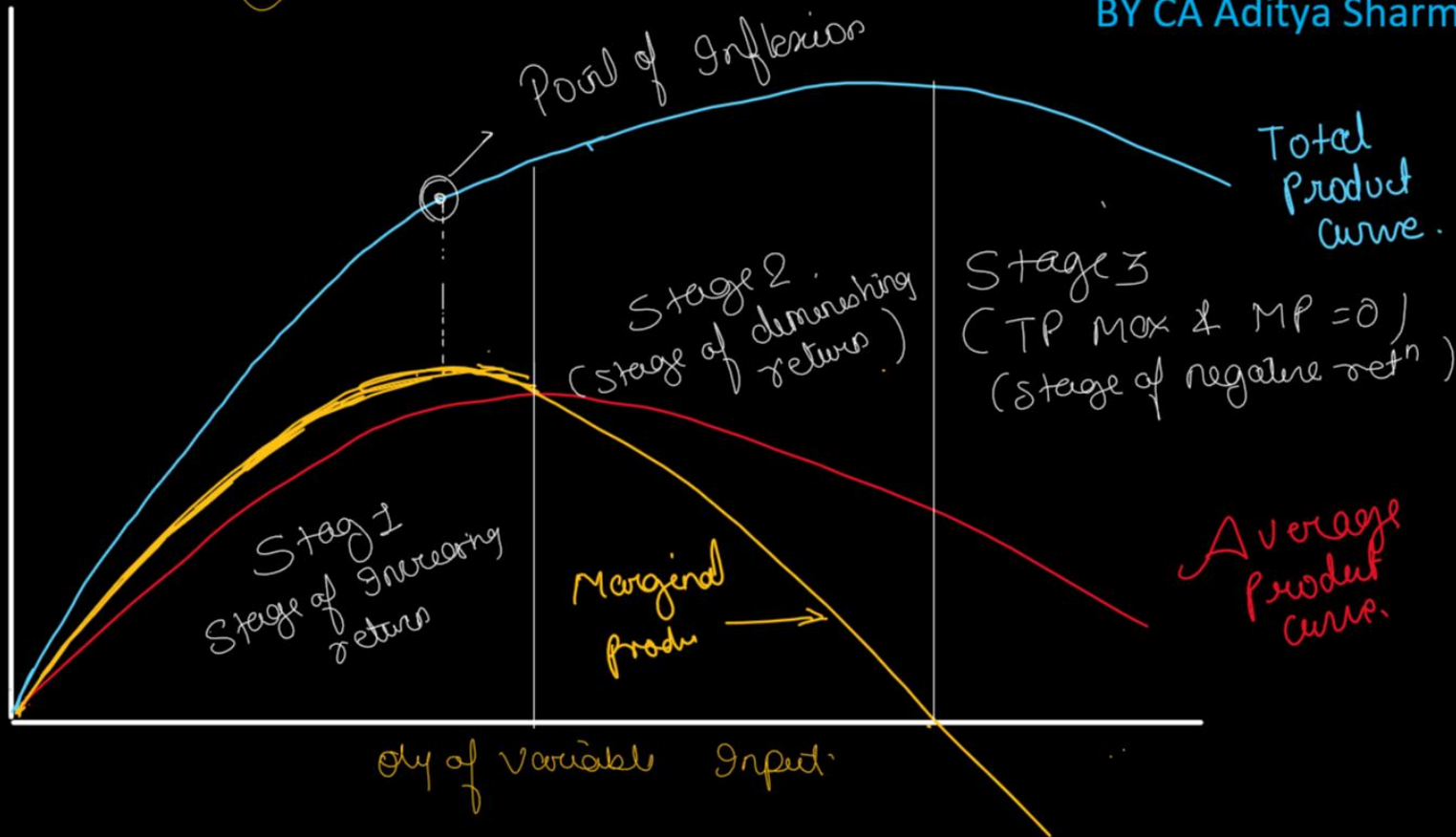
→ Production

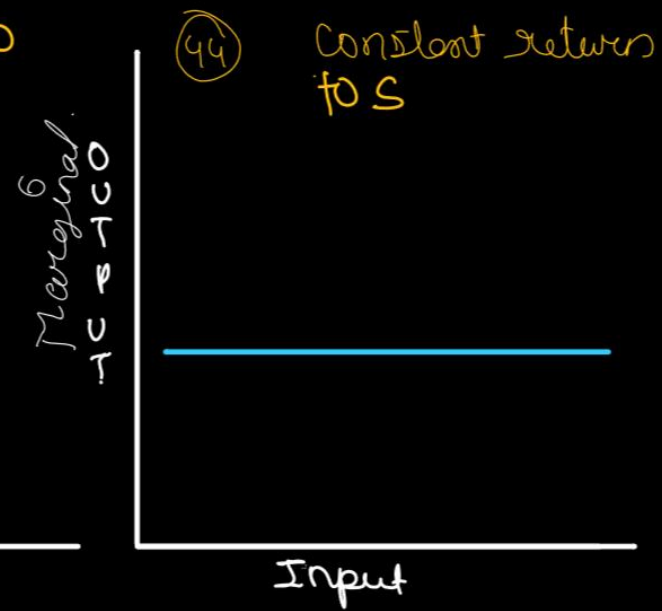
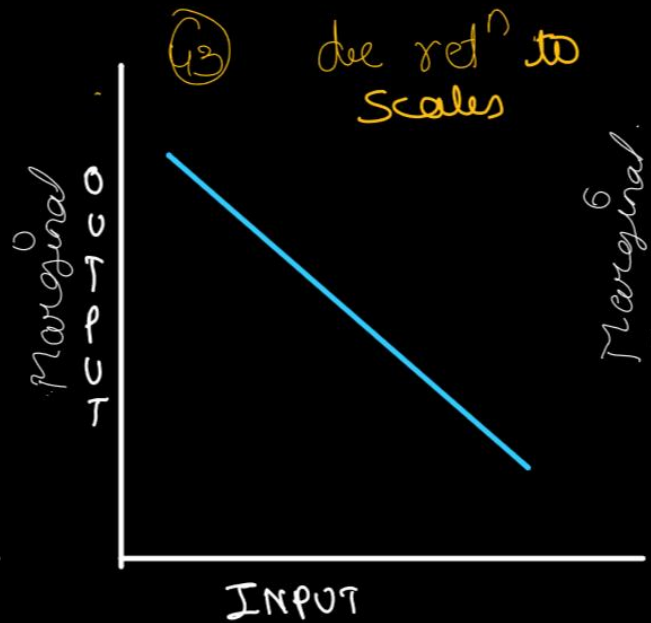
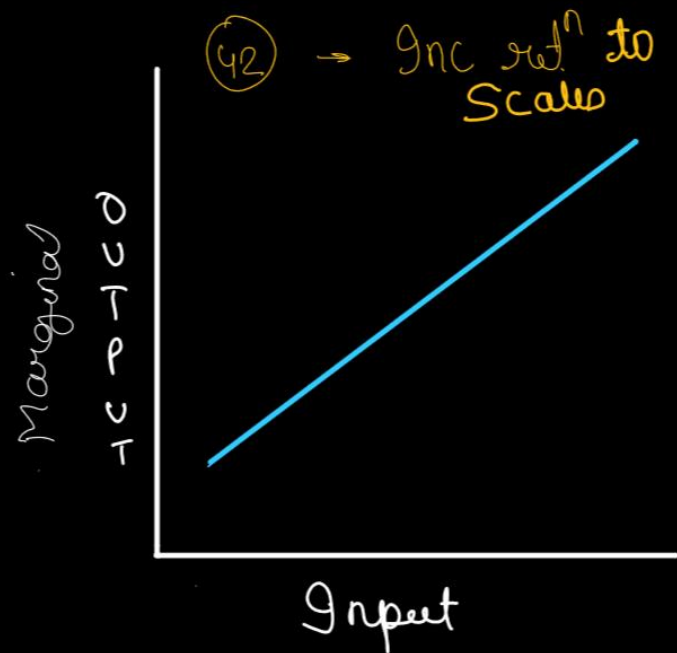
(41)

Short Run Prodⁿ Curve

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OUTPUT



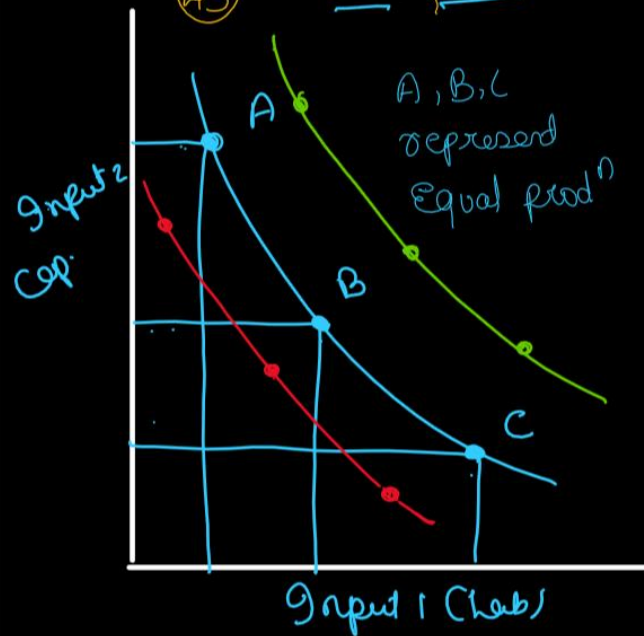


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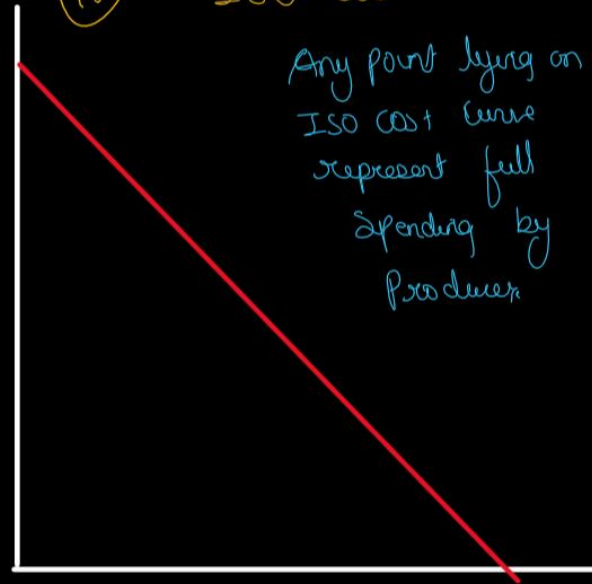
→ Prodⁿ optimization

(45) → ISO Quant



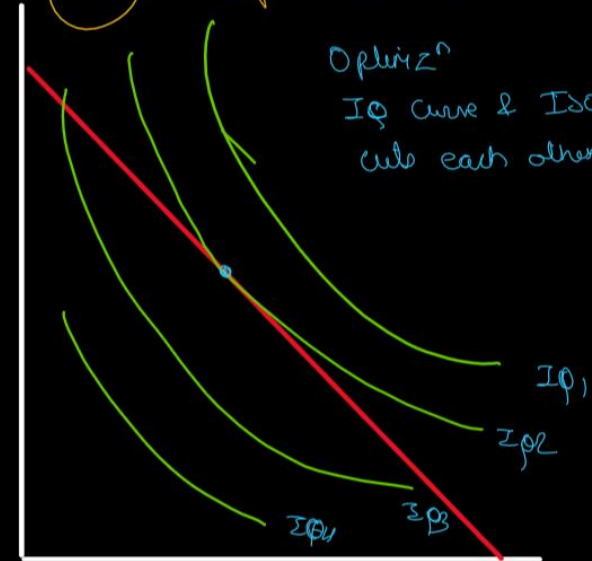
(46) ISO Cost

Any point lying on
ISO cost curve
represent full
Spending by
Producer



(47) Optimization

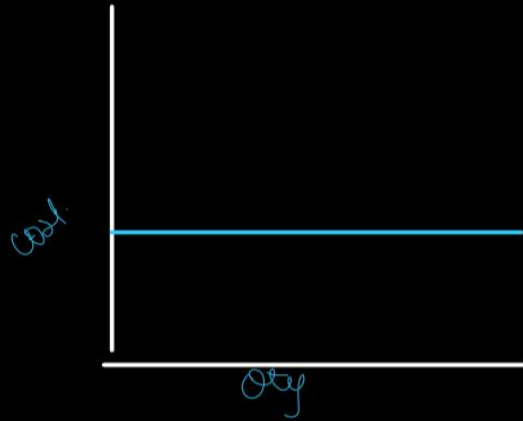
Optimizⁿ
IQ curve & ISO cost line
will each other tangent



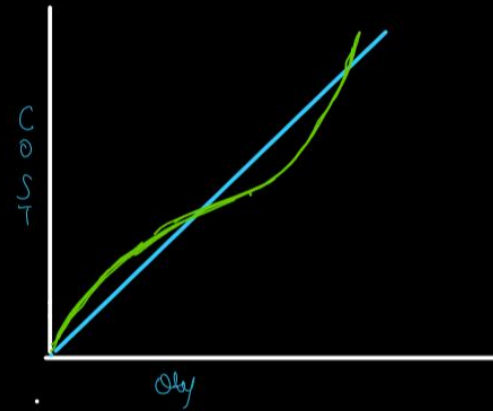
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→ Cost Curves

(48) → Total FC



(49) Total V.C



(50) Total cost ally

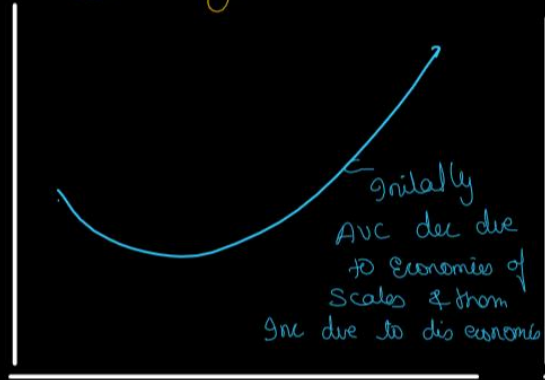


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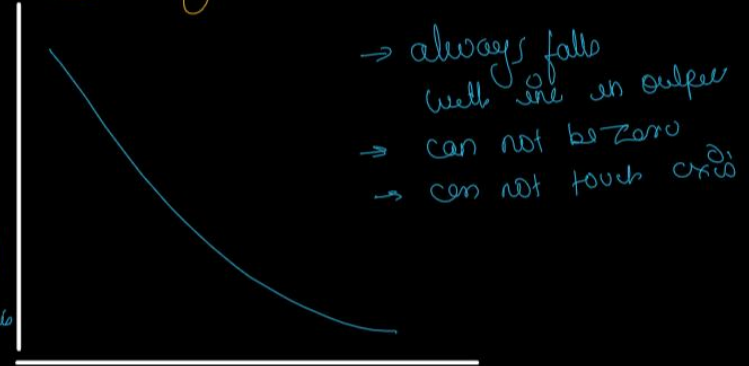
(51) → Min of above 3

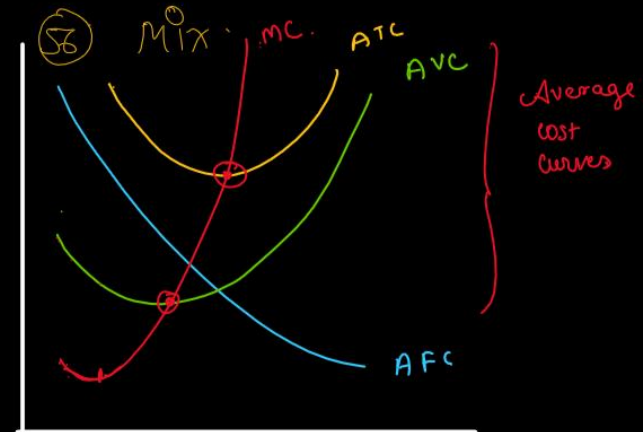
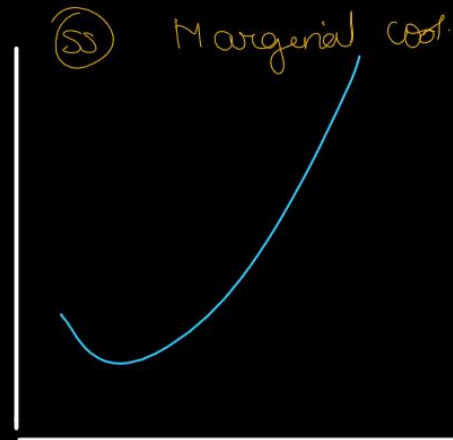


(52) Avg. V.C

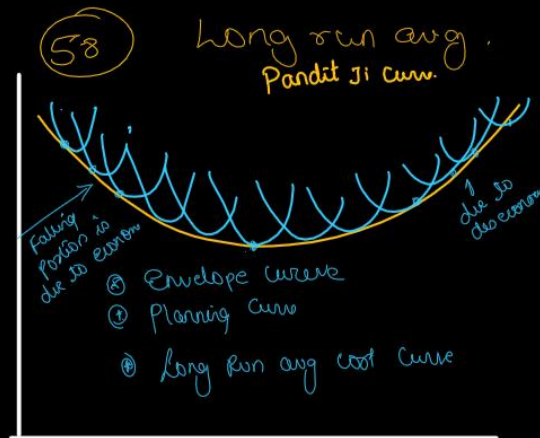
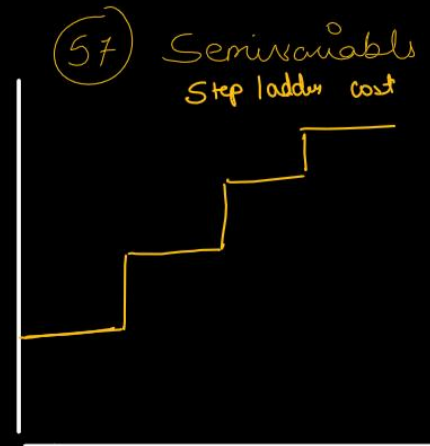


(53) Avg FC





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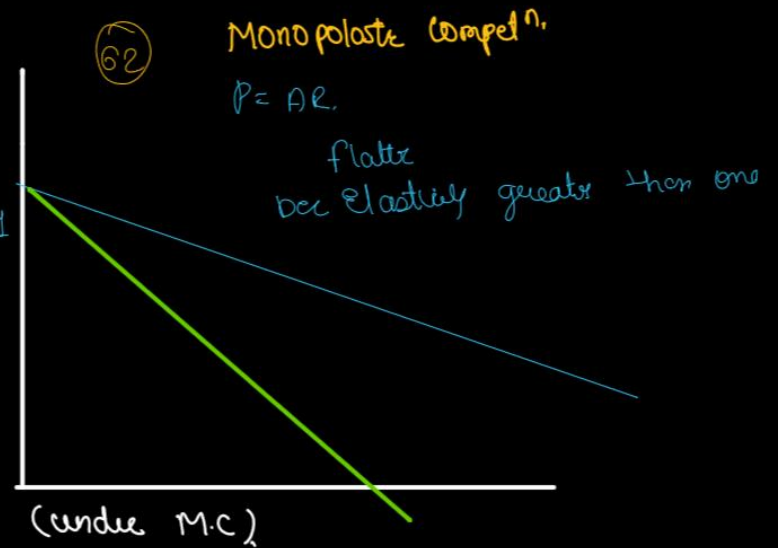
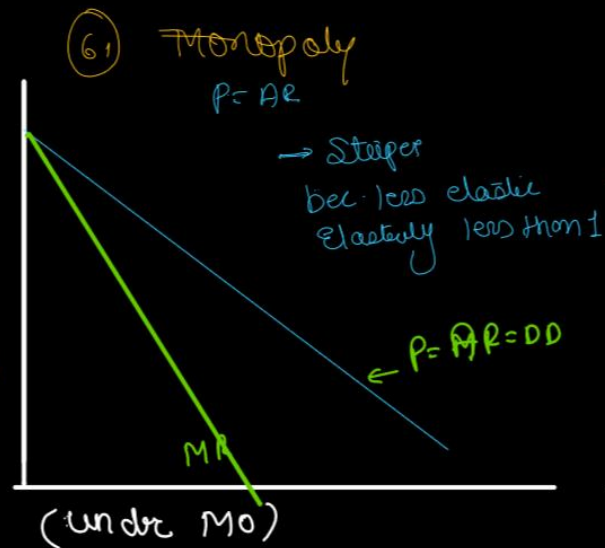
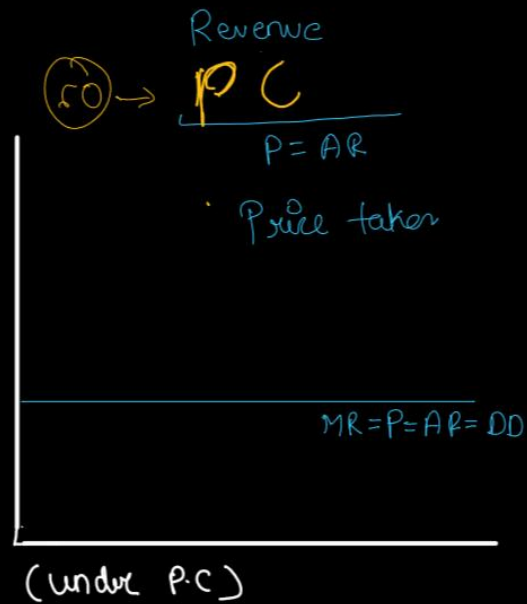




Shapes



→ Revenue Curves



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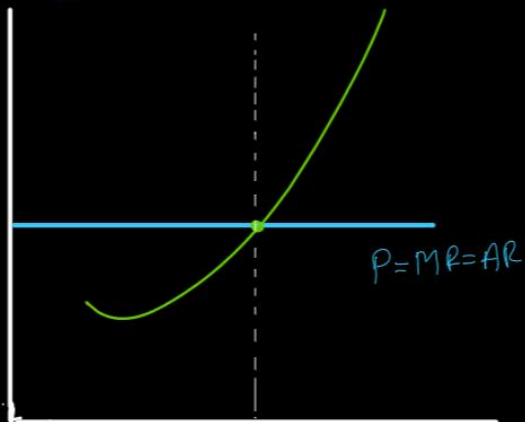


Shapes



→ Optimization under P.C

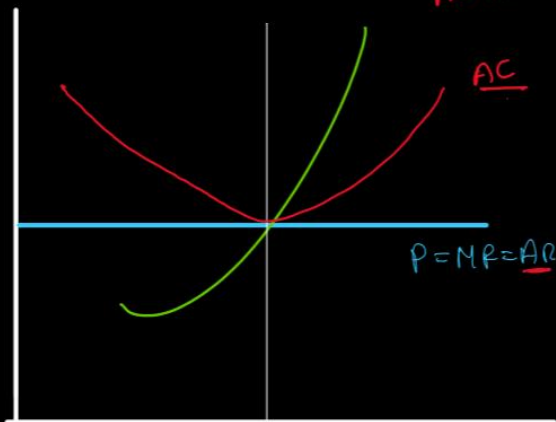
(63) → optimization



(64)

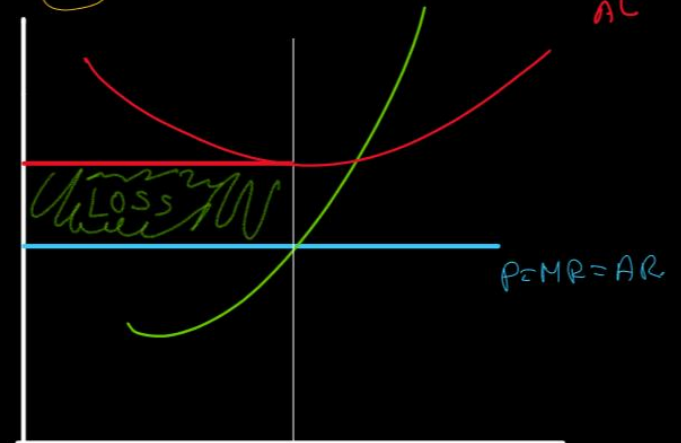
Normal profit

$AC = AR$



(65)

loss.



④ $Prod^n$

1) $MC = MR$

⇒ 2) MC curve cut MR from below

④ To check Profit or loss compare AR & AC.

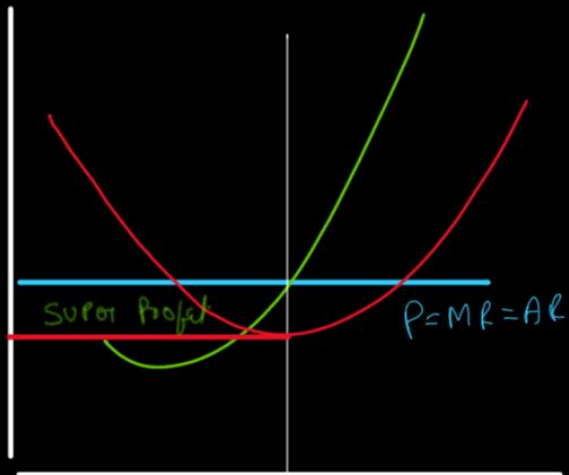


Shapes

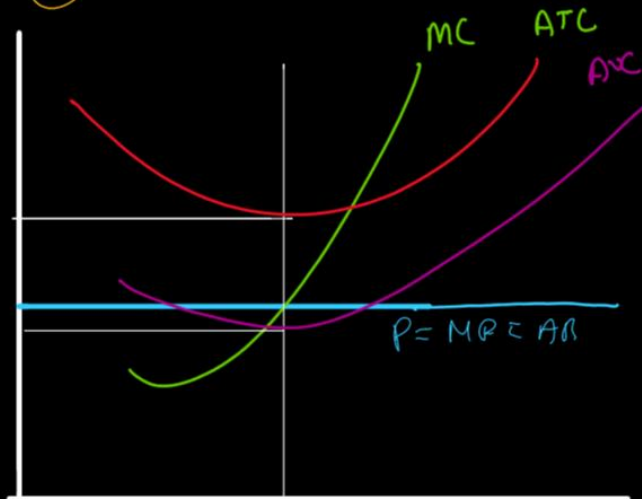


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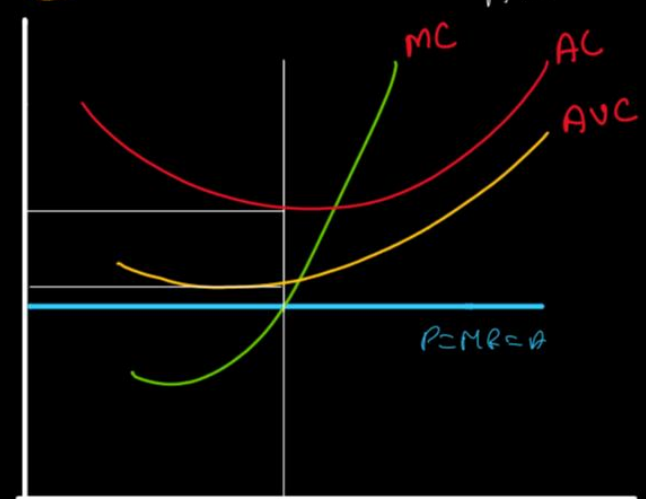
66 Super profit $AR > AC$



67 loss but no shut down



68 loss & shut down. $AVC \& AR$

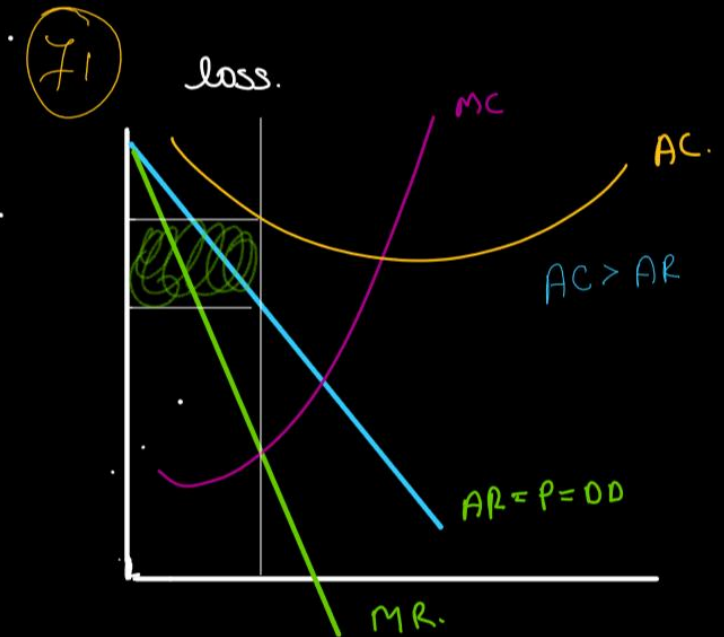
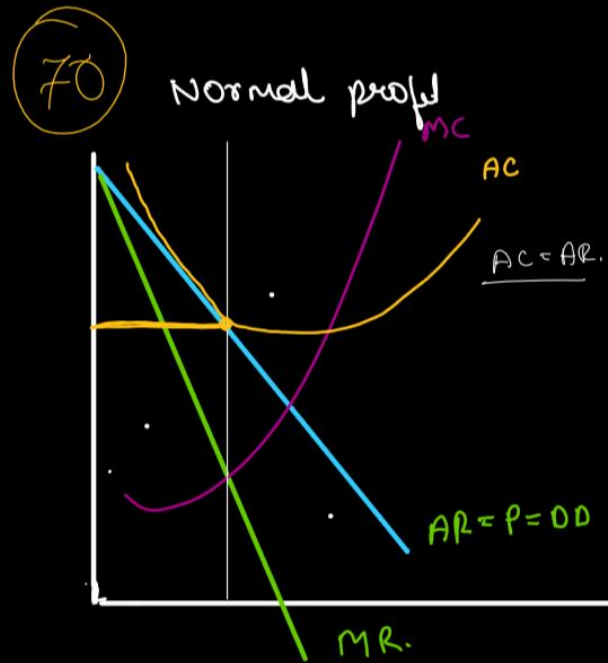
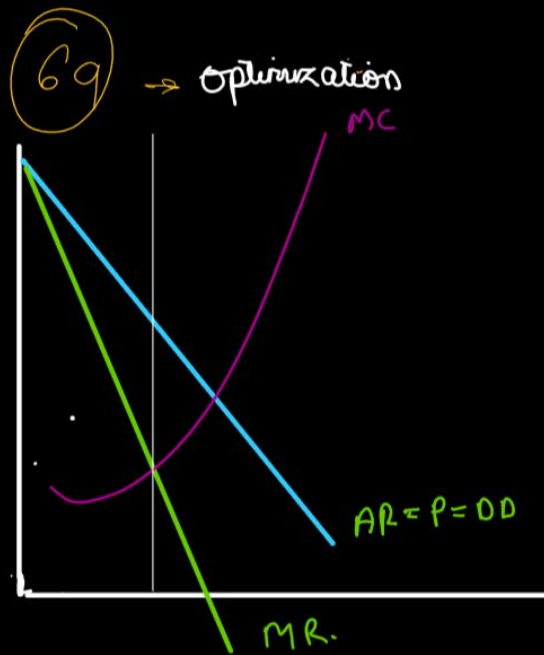




Shapes



Optimization under Monopoly



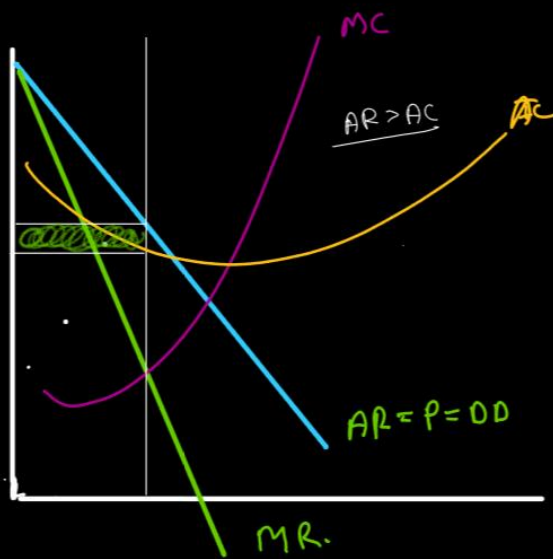
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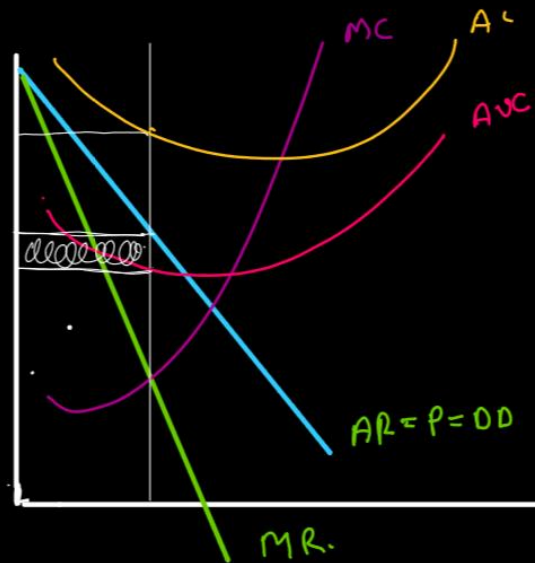
Shapes



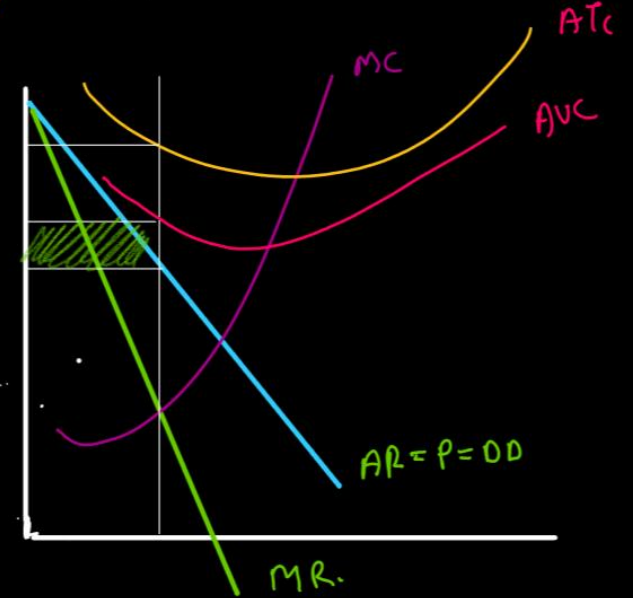
72 Super profit $AR > AC$



73 loss but no shut down



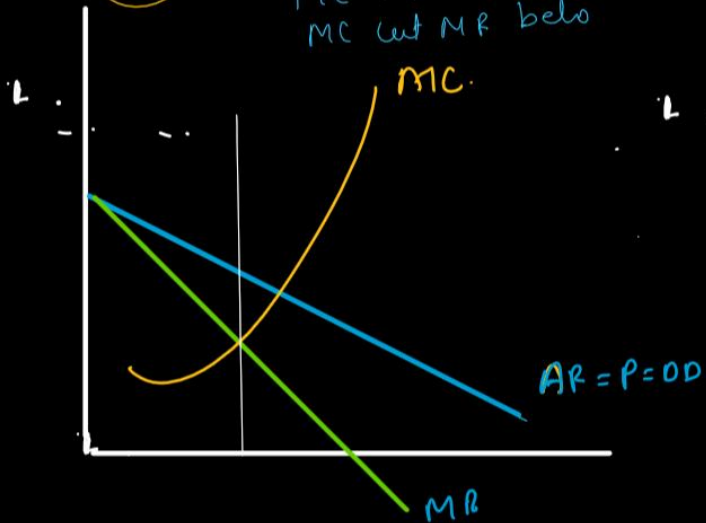
74 loss & shut down.



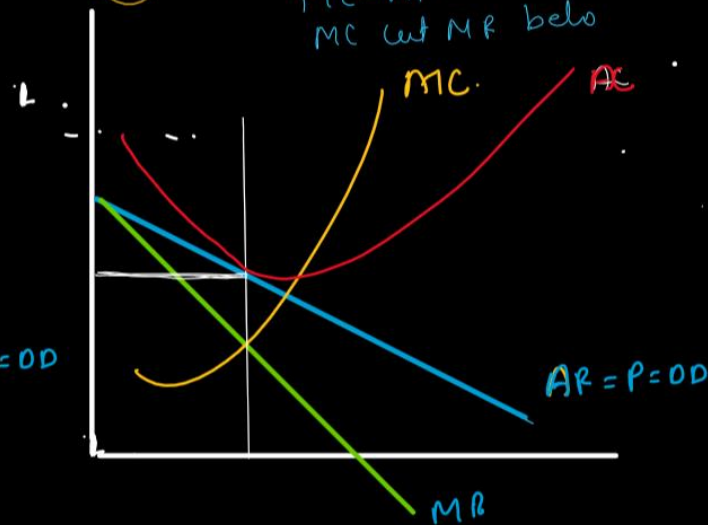


→ Optimization under Monopolistic Comp

75 → Optimization
 $MC = MR$
 MC cut MR belo

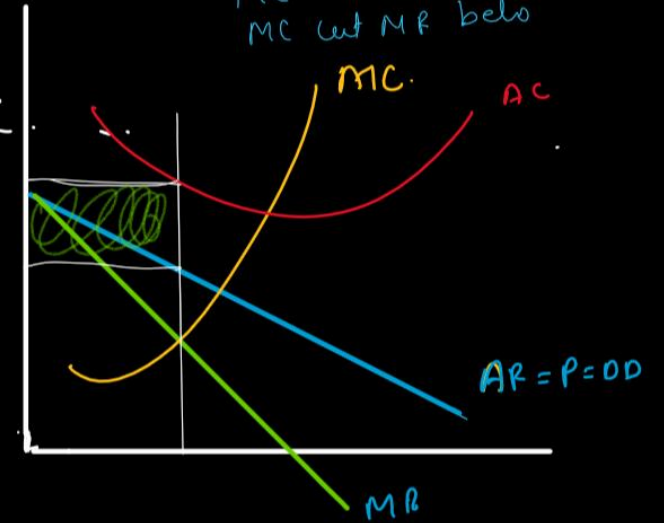


76 Normal profit [$AR = AC$]
 $MC = MR$
 MC cut MR belo



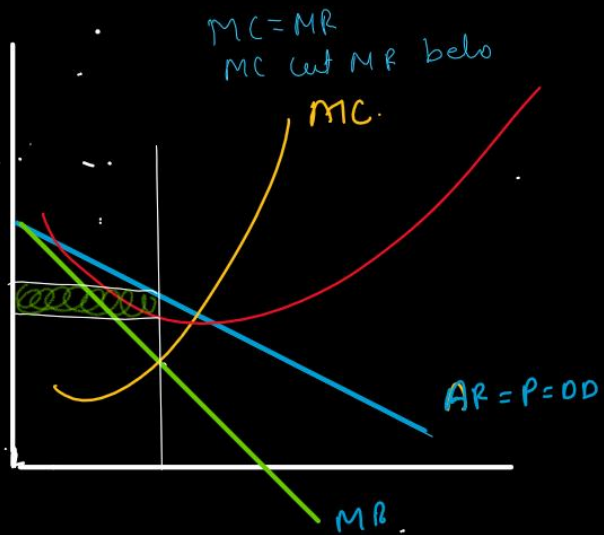
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77 loss. $AR < AC$
 $MC = MR$
 MC cut MR belo

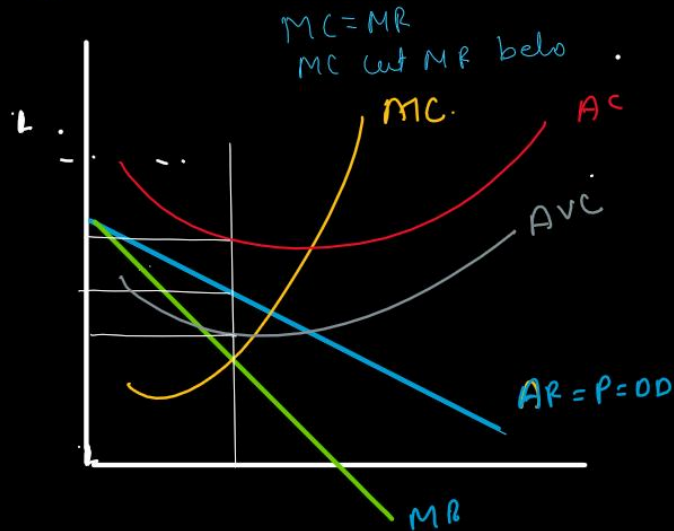




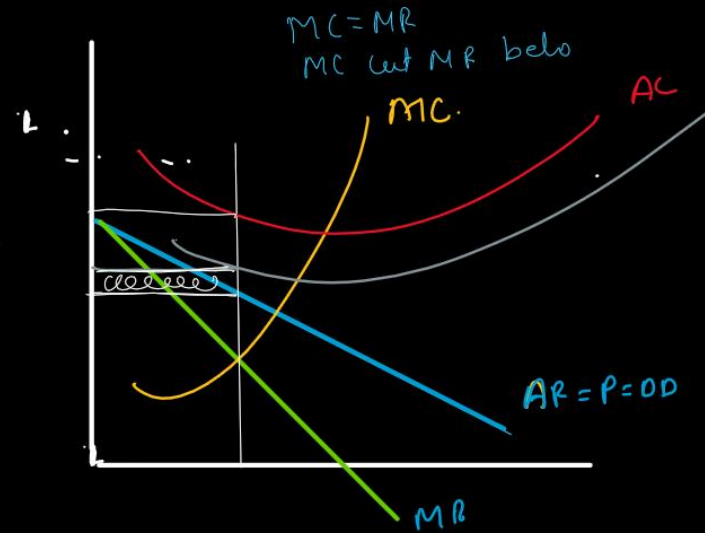
78 Super profit $AR > AC$



79 loss but no shut down



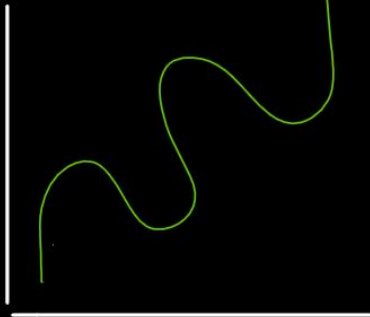
80 loss & shut down.





Business cycles type-

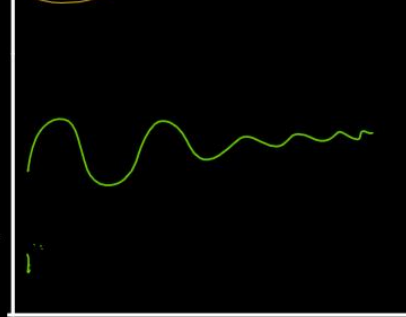
81



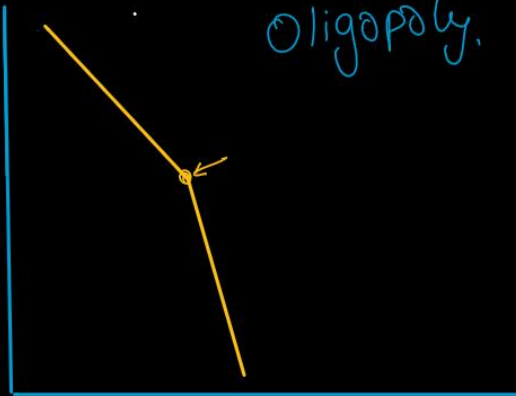
82



83



Oligopoly.



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