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Thursday, September 3, 2020 6:32 PM

3. IC

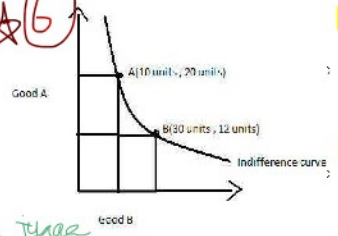
CONSUMER EQUILIBRIUM – INDIFFERENCE CURVE ANALYSIS

Also known as **Ordinal Approach**

satisfaction can not be measured in numbers

→ Indifference Curve (IC):

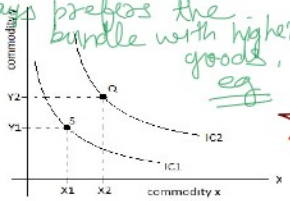
- IC is a curve showing combination of two commodities which give **equal level of satisfaction** to consumers.
- In IC analysis, we do **not** express utility in terms of cardinal numbers (e.g. 1, 2, 3). Instead, we compare utility as "**equal, less or more**" in different situations.
- Each point on IC offers **same level of satisfaction** to the consumers. That's why this curve is known as **INDIFFERENCE CURVE.**

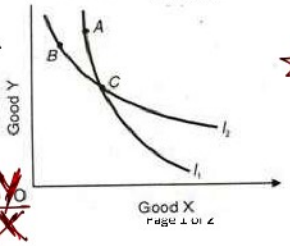


→ Monotonic Preferences: Consumer's preferences are called monotonic when between any two bundles; one bundle has more of one good and no less of other good.

→ Features of Indifference Curve (IC):

1. IC is **convex to origin** (because **MRS tends to decline**).
2. The slope of indifference curve shows **MRS**
3. Higher IC indicates higher level of satisfaction.
4. ICs **don't intersect** each other.
5. IC **never touches x-axis or y-axis**.





MRS shows the amount of Good Y that the consumer is willing to give up for one unit of Good X.

It is measured as "**per unit loss /per unit gain**".

$$MRS = \frac{\Delta Y}{\Delta X}$$

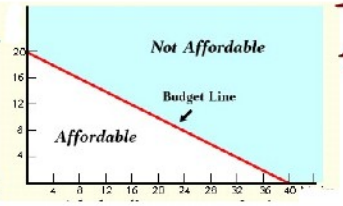
Marginal Rate of Substitution

- Budget line:
  - It refers to **attainable combination** of set of two goods, given the income of the consumer. — achievable/affordable
  - It is also known as **Price Line.**
  - Slope of budget line is P_X / P_Y.
  - Change in Budget Line: There can be **parallel shift** (leftwards or rightwards) **due to change in income** of the consumer or **change in prices** of goods.

Price of X / Price of Y

downward

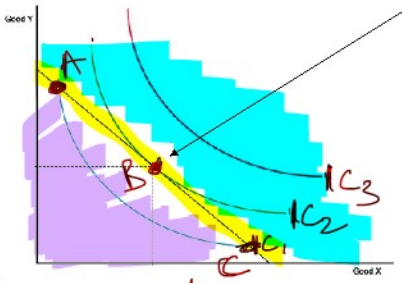
upward



See (7)

- Consumer Equilibrium (CE):
  - It is a **situation where a consumer is spending his income in such a way that he is getting maximum satisfaction.**
  - CE is achieved when **Budget line is tangent to IC.**
  - CE is achieved when **$MRS_{XY} = P_X / P_Y$**

Consumer Equilibrium



Budget line Equation —

$$\text{Income} = P_X \cdot U_X + P_Y \cdot U_Y$$

Price of X

Unit of X

Money spent on Good-X

Money spent on Y

NOTES

Very important

(1) • Utility analysis (Cardinal Analysis) assumes that satisfaction can become negative if goods are consumed on and on.

VS

Indifference curve analysis (ordinal Analysis) assumes that there is Monotonic Preference.

(2) IC schedule

Marginal Rate of ↑ substitution

option	Good A	Good B	$MRS = \frac{\text{loss}}{\text{gain}} = \frac{\Delta Y}{\Delta X}$

(2)

option	Good A	Good B	MRS = Loss/Gain = ΔY/ΔX
A	10	100	—
B	20 (+10)	50 (−50)	50/10 = 5
C	30 (+10)	20 (−30)	30/10 = 3
D	40 (+10)	10 (−10)	10/10 = 1

MRS decreases. So, IC is convex.

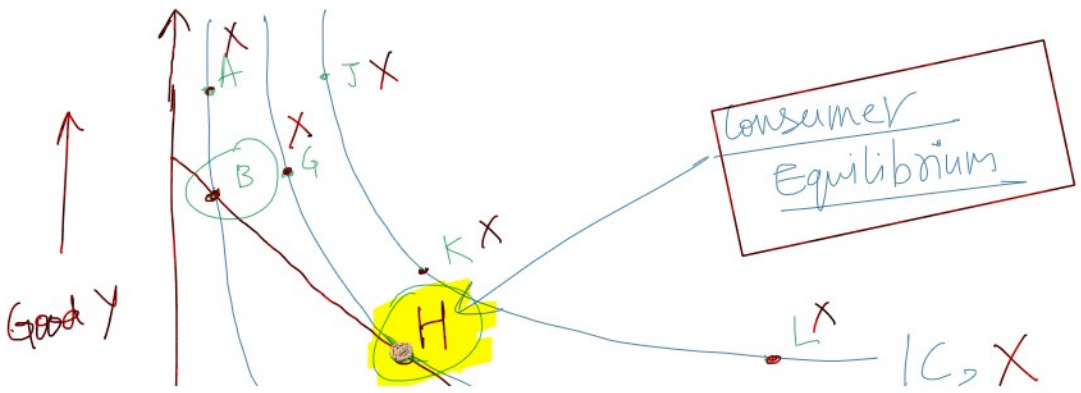
If MRS would be increased, IC would be CONCAVE.

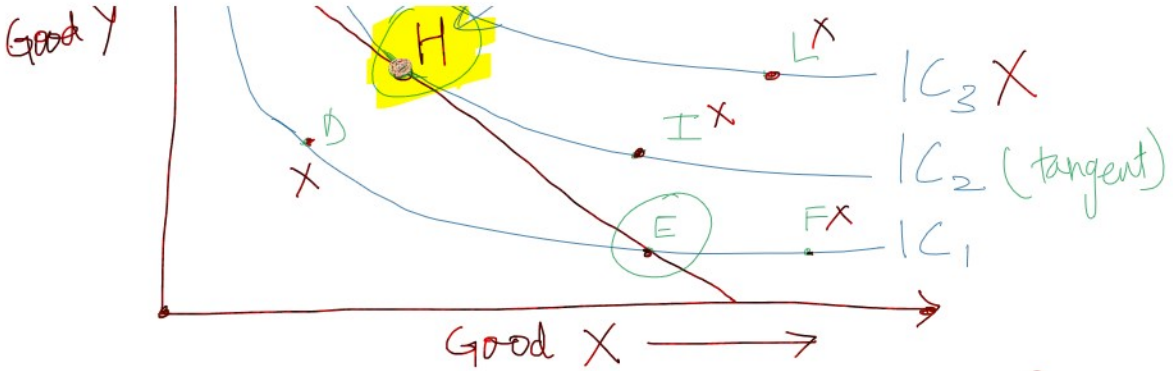
If MRS would be constant, IC would be STRAIGHT LINE.

Question (3) IC schedule

option	(Good X) A	(Good Y) B	MRS = Loss/Gain = ΔY/ΔX (Marginal Rate of Substitution)
1	10 (+5)	600 (−200)	—
2	15 (+10)	400 (−100)	200/5 = 40
3	25 (+20)	300 (−50)	100/10 = 10
4	40 (+20)	250 (−30)	50/15 = 3.3
5	60	220	30/20 = 1.5
6	100	215	5/40 = 0.12

(4)





Slope of IC = Slope of Budget line

$MRS = \frac{P_X}{P_Y}$

★ (5)

set = schedule (table)

Q Income = ₹ 1000
Chocolate (Good X) = ₹ 100
Ice Cream (Good Y) = ₹ 50
Make Budget line equation.

Ans Equation
let number of chocolates be x
" " " ice-creams be y.

$100x + 50y = 1000$

Verify 1) $100(1) + 50(18) = 1000$

2) $100(10) + (50)(6) = 1000$

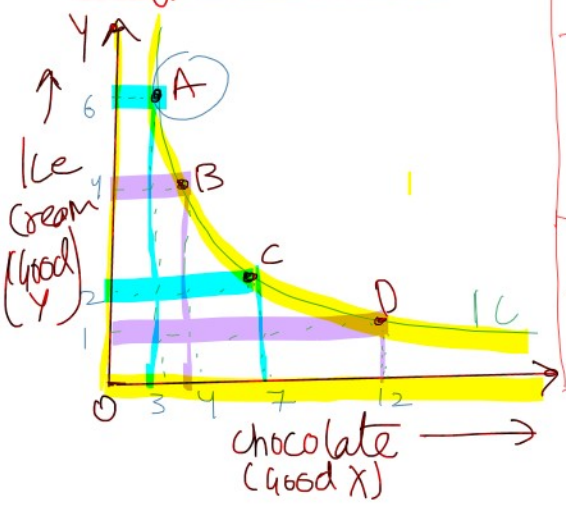
>1

2) $100(10) + (50)(6) = 1000$

3)

★6

Indifference Curve



	chocolate	Ice-Cream
A	3	6
B	4	4
C	7	2
D	12	1

satisfaction is equal

These are not satisfaction. These are units of goods

★7

(a)

Pocket Money = ₹1,000 &

chocolate = 100/piece ⇒ $P_X = 100$

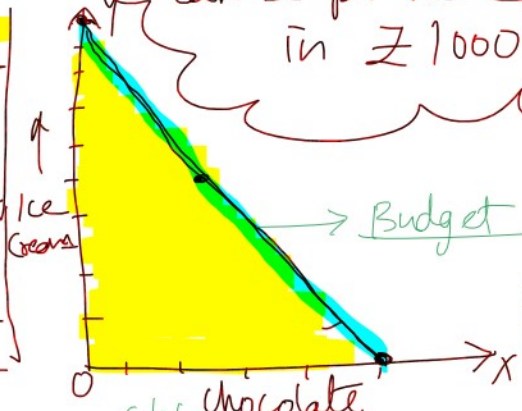
Ice cream = 50/piece ⇒ $P_Y = 50$

Schedule

option	chocolate	Ice-Cream
A	10	0
B	0	20
C	5	10
D	7	6
E	1	18
F	2	16
G	3	14

Budget Set

How many units of chocolate and Ice Cream can be purchased in ₹1000

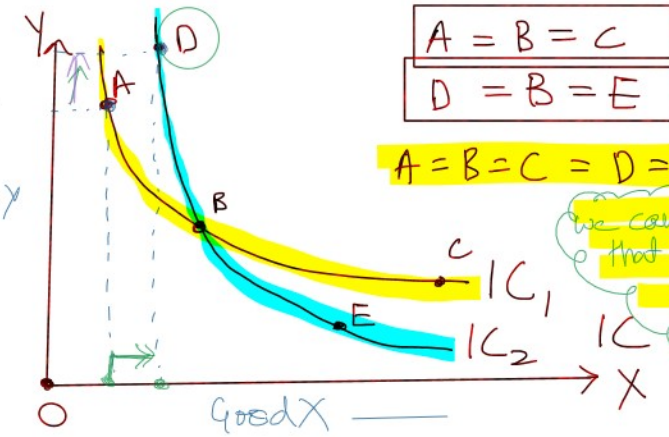


slope = $\frac{100}{50} = 2$

Budget graphs

★8

★ 8



$A = B = C$ ✓

$D = B = E$ ✓

$A = B = C = D = E$ → Contradiction

We can say that D is better than A

Our assumption was wrong

Two Ic can never intersect each other.

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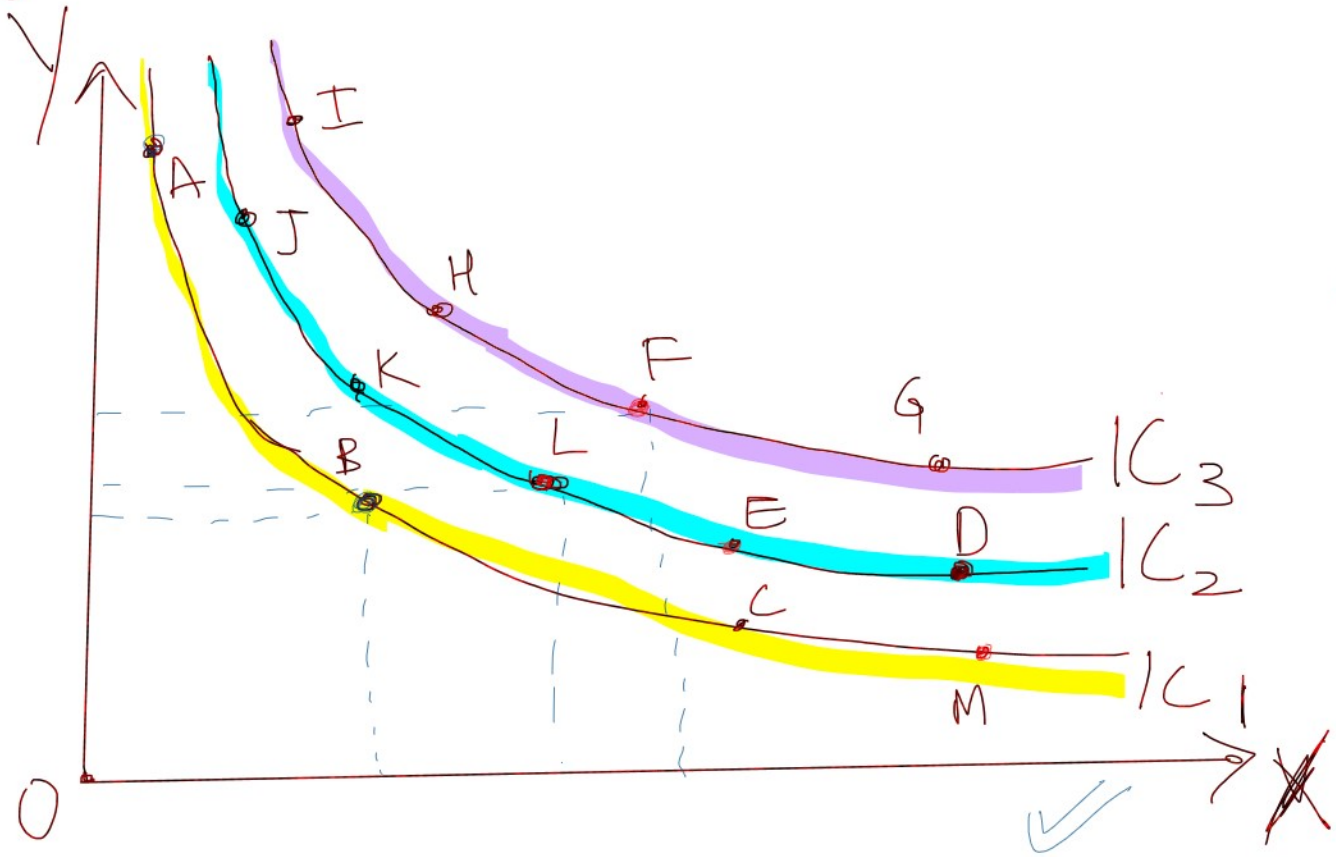

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