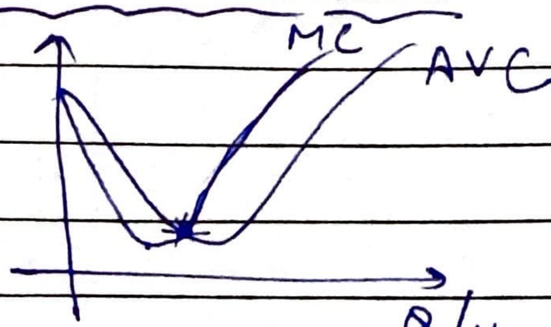
Week 11

4 Cost Curves - III

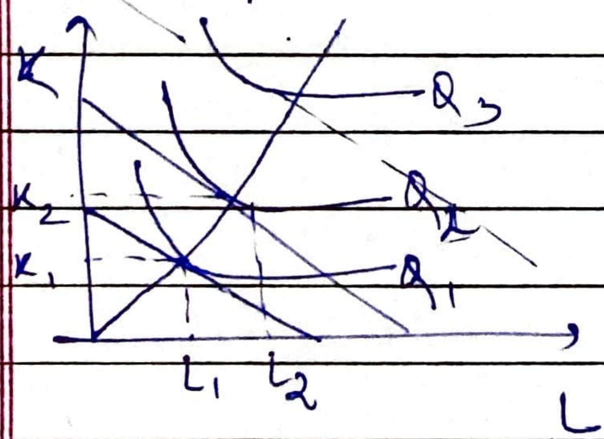
- 

$MC(0) = AVC(0)$

$Q = Q(P)$ market price of the item / per unit basis

$P = MC(Q)$

1. upward sloping part
2. the part lies above AVC curve

- 

$\boxed{SRTC_n \geq LRTC_n}$

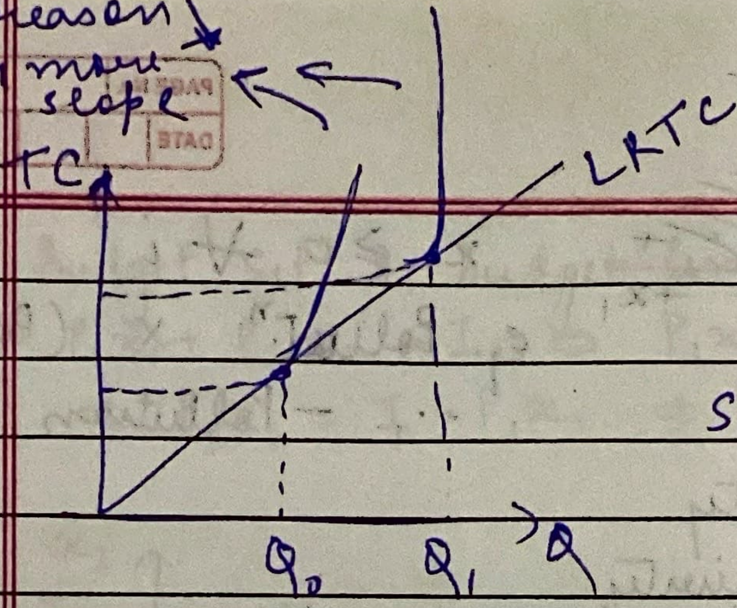
In short run, let's say K_2 is fixed

short run total cost $\left\{ \begin{array}{l} SRTC_1 > LRTC_1 \\ SRTC_2 = LRTC_2 \\ SRT3_3 > LRTC_3 \end{array} \right\}$ long run total cost

- short run cost is going to be higher than the corresponding long run costs.
- LRAC $\rightarrow$ constant

  LRTC $\rightarrow$ linear

the reason for more slope



$Q_1 > Q_0$

SRTC

↳ $FC_{Q_1} > FC_{Q_0}$

$MC_{Q_1} > MC_{Q_0}$

* In short run, the cost to produce 1 more unit capital is fixed so the variable part is coming from labour. $\Rightarrow \uparrow MC = \frac{w}{MPL\downarrow}$

$$Q_1 > Q_0 \Rightarrow MPL_1 > MPL_0$$

L2 Consumer Behaviour: Building Blocks & Budget Set

- building blocks ⇒ consumpⁿ possibility set, consumpⁿ feasibility set, preferences, behavioural assumption
- possibility $(x_1, \ldots, x_n) \rightsquigarrow \infty$ poss.

↓ more real

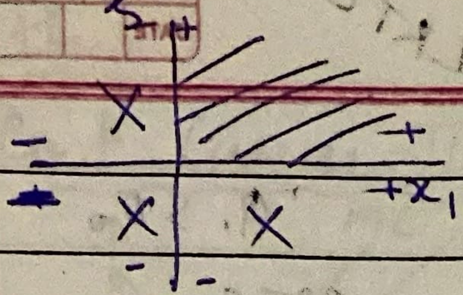
feasibility $(x_1 \ldots x_5) \Rightarrow$ feasible

preferences ⇒ Tea is better than Coffee or Tea ~ Coffee.

- Consumption Possibility Set

Bundles ⇒ $x = (x_1 \ldots x_n)$ $x \in X$

1. Non-negative orthant



$x_i \geq 0 \ \forall i$

Eg. Pollutⁿ x (Bad)

∴ − Pollution (good)

2. Convexity

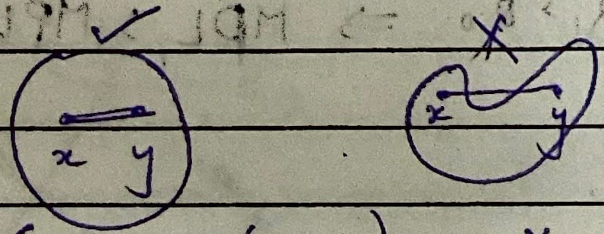
(i) Additivity

$(x_{11}, x_{21}) \in X \to x^1 \in X$ ∴ $x^1 + x^2 \in X$

$(x_{12}, x_{22}) \in X \to x^2 \in X$

(ii) Divisibility

$x^1 \in X$ ∴ $\alpha x^1 \in X$ where $\alpha \in [0,1]$



↳ $\lambda x + (1-\lambda) y \in X$ where $\lambda \in [0,1]$

Consumption Feasibility Set

→ Legal constraint

→ Geographical constraint

→ Financial Constraint (Monetary Equivalent)

− 2 goods are enough → other good includes everything else,

convenient, good to understand tradeoff.

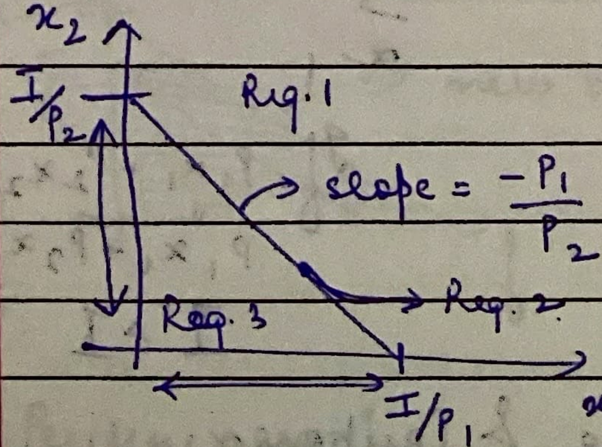
$$\boxed{P_1 x_1 + P_2 x_2 \leq I}$$

- Budget set & budget line

$P_1x_1 + P_2x_2 \le I \Rightarrow P_1x_1 + P_2x_2 = I$

$\Rightarrow P_2x_2 = I - P_1x_1 \Rightarrow \boxed{x_2 = \frac{I}{P_2} - \frac{P_1}{P_2}x_1}$

$y = c - mx$



① → $P_1x_1 + P_2x_2 \ge I$

② → $P_1x_1 + P_2x_2 = I$

③ → $P_1x_1 + P_2x_2 \le I$

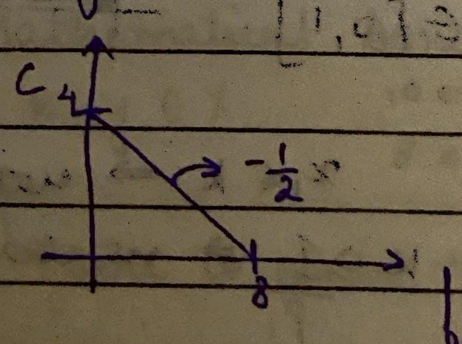
② → Budget Line ③ → Budget Set

L3 More on Budget Sets

Eg. Robinson Crusoe on Island

$1f + 2c \le 8$ hr $\Rightarrow f + 2c = 8$

$c = \frac{8 - f}{2} = 4 - \frac{f}{2}$



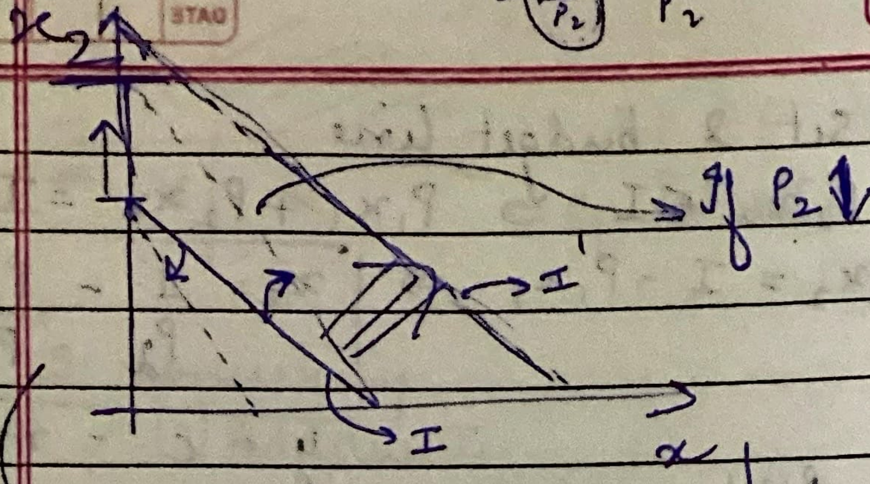
Vertical Intercept = $\left(0, \frac{I}{P_2}\right)$

Horizontal Intercept = $\left(\frac{I}{P_1}, 0\right)$

$$\boxed{\frac{x_1}{I/P_1} + \frac{x_2}{I/P_2} = 1}$$

$$p_1x_1 + p_2x_2 = I$$

$$x_2 = \frac{I}{p_2} - \frac{p_1}{p_2}x_1$$



$P_1 \uparrow$

$$\frac{x_1}{I/p_1} + \frac{x_2}{I/p_2} = 1$$

If $p_1x_1 + p_2x_2 = I$

$p_1x_1 + p_2x_2 = I'$

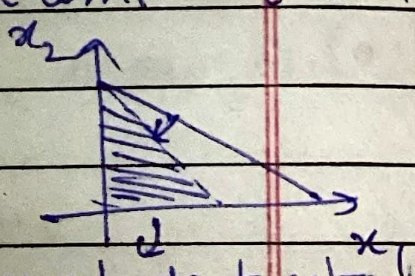
$I' > I$

- Tax, Rationing & Coupons

$p_1x_1 + p_2x_2 = I$

tax → on purchase of good amt I → t amt

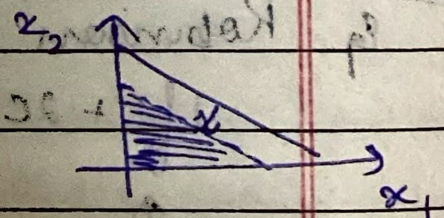
$$(p_1 + t)x_1 + p_2x_2 = I$$



tax → I

$p_1x_1 + p_2x_2 = (1-\alpha)I$

$\alpha \in [0,1]$



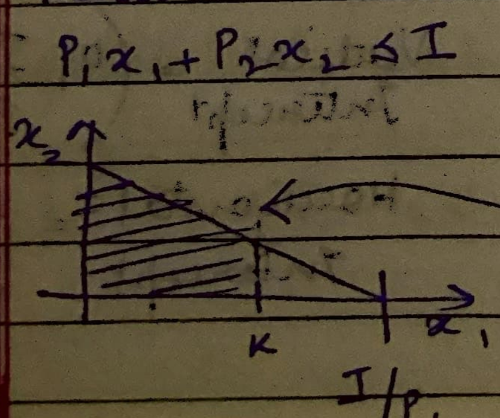
Ration

$p_1x_1 + p_2x_2 \leq I$

$x_1 \leq K$ ⇒ ration

$K \geq \frac{I}{p_1}$ ⇒ no changes

$K \leq \frac{I}{p_1}$

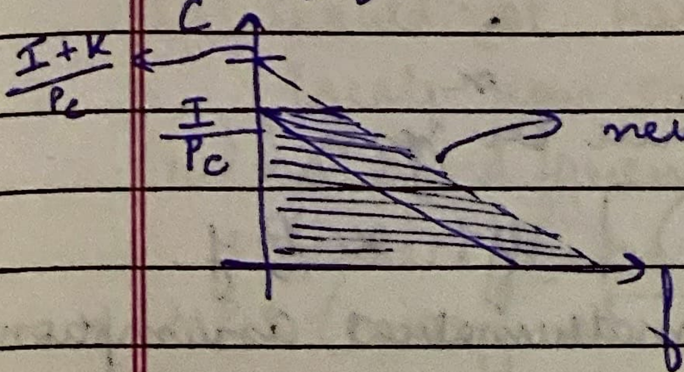


$\sim$ indifferent
$\succ$ preferred
$\succsim$ atleast as good as

Coupons. → to purchase food only.

$P_1x_1 + P_2x_2 \leq I$

$P_fx_f + P_cx_c \leq I + K$ → K→food



new budget set

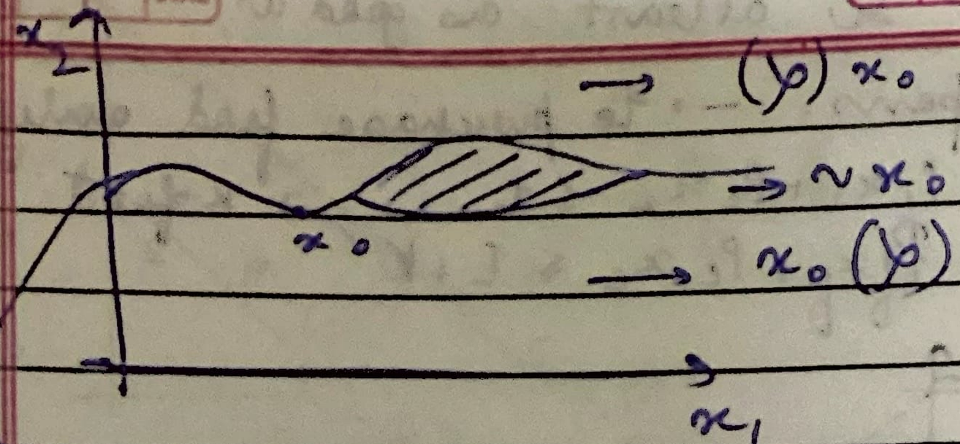
4/4 Preferences-I

- Rationality Assumptions → Completeness & Transitivity.
- Completeness ⇒ X $\forall\, x, y \in X$
  you should be able to decide: (i) $x \succsim y$ (ii) $y \succsim x$ (iii) $x \sim y$
- Transitivity ⇒ $x \succsim y$ & $y \succsim z \Rightarrow x \succsim z$
- There will be always finite no. of bundles in set X.
- Mathematical Assumptions → Continuity

$x, y \in X$ $10 \leftarrow x$ 10 to 8

$8 \leftarrow y$ $10 > 8 \rightarrow x \succsim y$

↳ able to order them in 1 dimension.



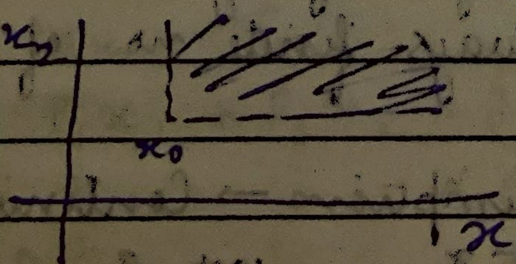
Indifference curve or zone

- $\boxed{U(x) \geq U(y)}$ iff. $x \succsim y$.
- If rationality & mathematical assumptions are satisfied, then, preference rela^n can have utility representa^n.

$\to g \circ U(x) \geq g \circ U(y)$

L5 Preferences - II

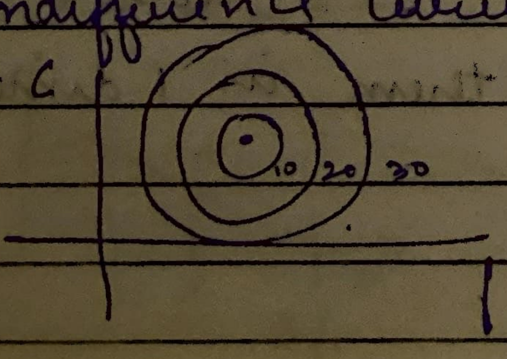
- Psychological Assumptions:
- Non-Satiation



more is better

local non-satia^n & monotonicity.

- Indifference Curve & Map.



$U(f,c) = -[(f-2)^2 + (c-2)^2]$

$0 \to (2,2)$ max

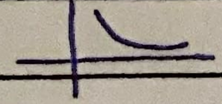
-10

-20

$-30 \ldots$

- Some rules of indifference curves –

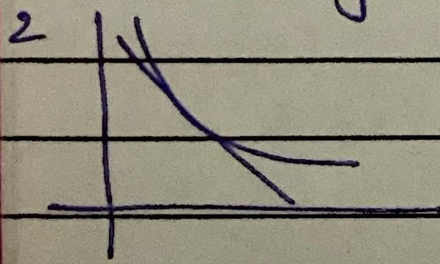
(i) should be downward slopping (montonicity)



(ii) should not have any thick zone (local non satiation)

(iii) no 2 indifference curves should intersect {transitivity & monotonicity}

- MRS (marginal rate of substitu^n)

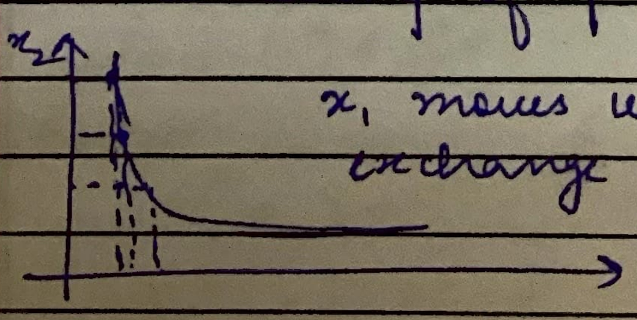


slope gives your mental exchange rate.

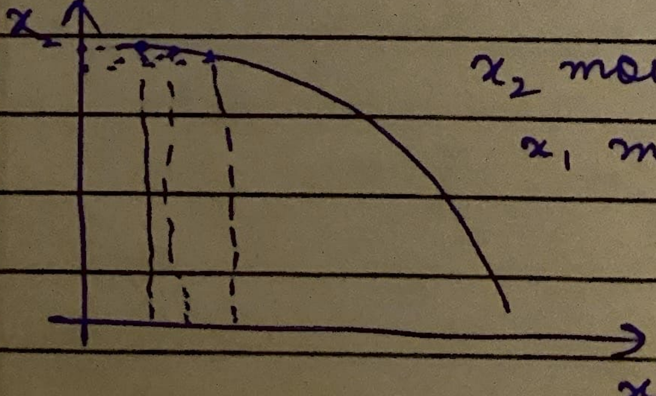
$$\boxed{\frac{dx_2}{dx_1} = -\frac{MU_1}{MU_2}}$$

$$MRTS = \frac{dx_2}{dx_1} = \frac{-MP_1}{MP_2} = \frac{-MPL}{MPK}$$

- 2 → Convexity of preferences



x_1 moves very little in exchange of plenty of x_2



x_2 moves by 1 unit but x_1 moves by >1 unit.

- a balance bundle is preferred over extreme bundles.