16 December 2023 07:23 PM

Properties of Indifference Curve

① IC is downward sloping.

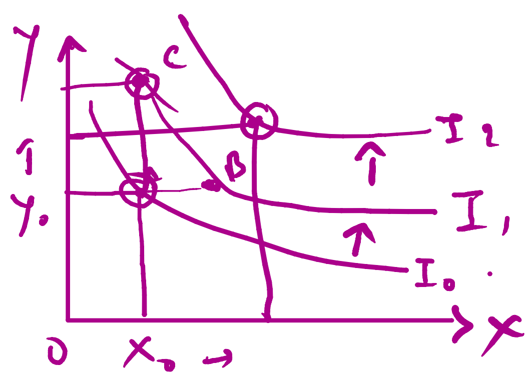
Slope of IC, $\frac{dY}{dx} = -\frac{MU_x}{MU_Y} < 0$

② IC is convex to the origin because of diminishing $MRS_{x,Y}$.

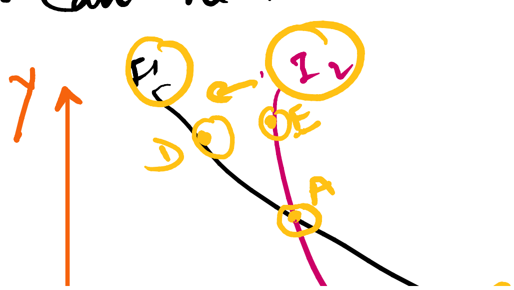
$$\boxed{MRS_{x,Y} = \frac{MU_x}{MU_Y}}$$

(absolute value of slope)

③ Higher the IC, higher is the level of satisfaction (i.e. utility).



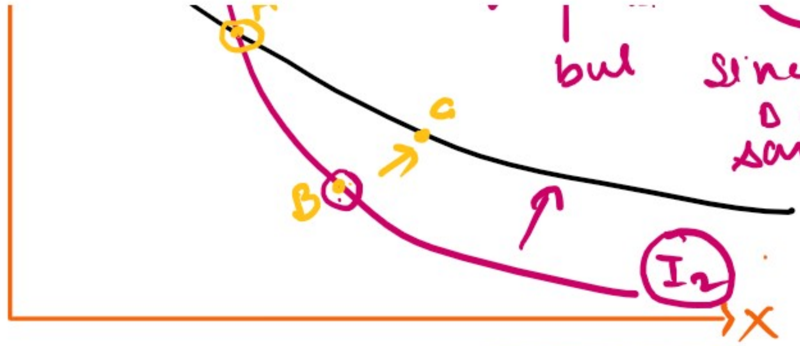
④ Two ICs can never intersect each other.



At pt A → $I_1 = I_2$ —①

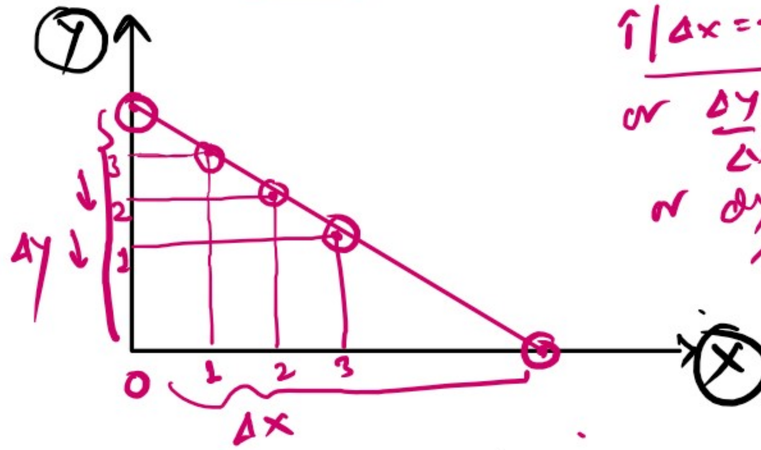
at pt B → $I_2 < I_1$ —②

but since A and



but since A and B are on same IC I_1 and I_2 contradicts each other

Special cases : (1) Perfect substitutes. ⇒ MRS is constant.



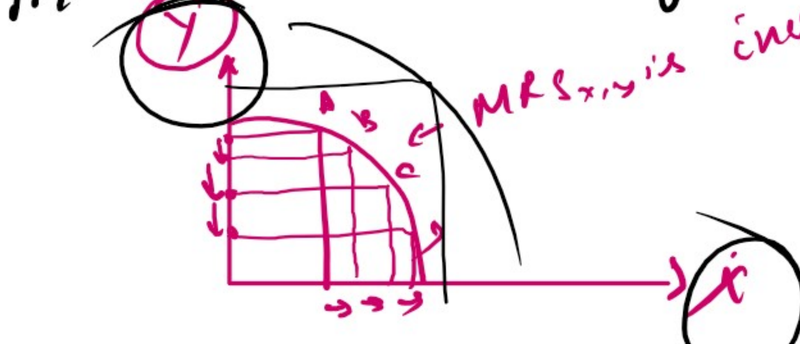
$\uparrow \boxed{\Delta x = -\Delta y \downarrow}$

or $\frac{\Delta y}{\Delta x} = -1$

or $dy/dx = -1$

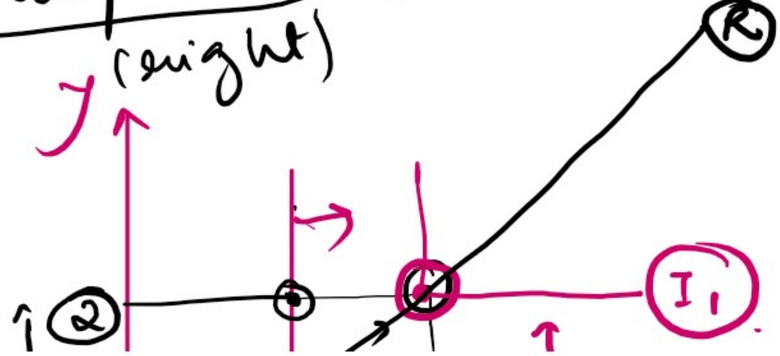
(slope of IC.)

(2) when IC is concave to the origin $MRS_{x,y}$ is increasing.



$MRS_{x,y}$ is increasing.

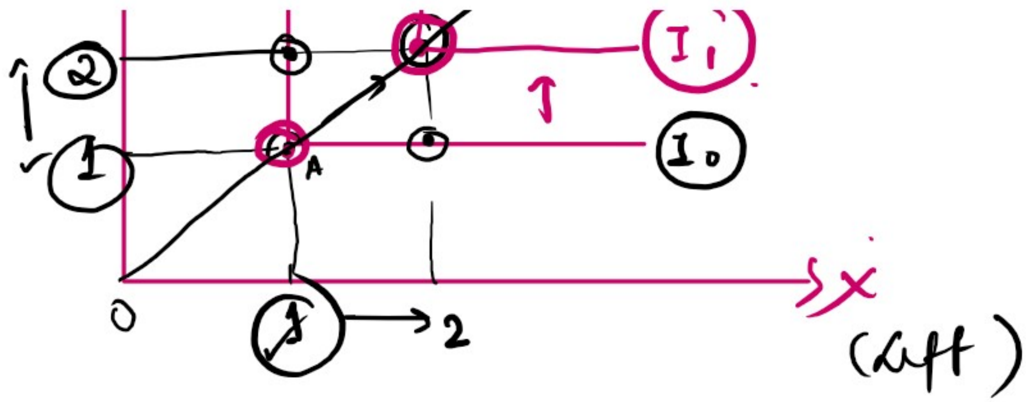
(3) Perfect compliments (IC is L-shaped) (right)



$MRS = 0$

or $MRS \to \infty$

so MRS is constant.



Concept of Budget Line:

X Y

P_x x units + y units P_y

$$TE = P_x \cdot x + P_y \cdot y$$

Let M be the income of the consumer then the budget constraint is

$$\boxed{M \geq P_x \cdot x + P_y \cdot y}$$

And the budget Equation is

$$\boxed{M = P_x \cdot x + P_y \cdot y}$$

Defn: locus of different points which shows alternative combinations of purchase of two commodities X and y at per unit price P_x and P_y respectively, such that the income of the consumer (M) is same or constant.

$$\boxed{M = P_x \cdot x + P_y \cdot y}$$

Slope of Budget Line:

Let us differentiate the budget equation with r to x.

$$\frac{dm}{dx} = P_x + P_y \cdot \frac{dy}{dx}$$

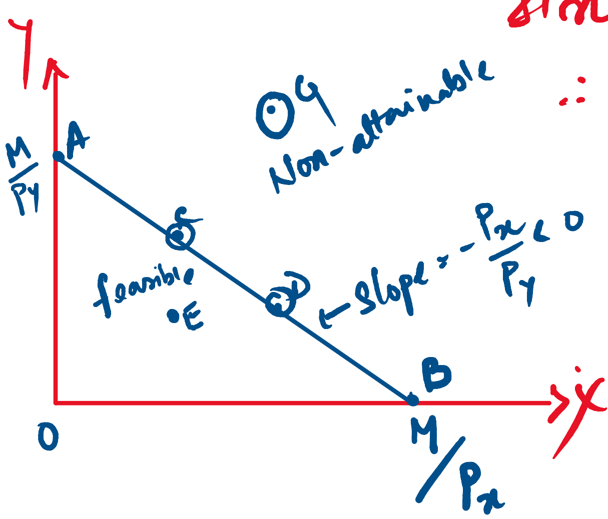
Since m is const along Budget line

$\therefore dm/dx = 0$

$$0 = P_x + P_y \frac{dy}{dx}$$

$$dy/dx = -P_x/P_y < 0$$

$\therefore$ Budget line is a downward sloping straight line because P_x & P_y are const.



Budget eqn: $P_x \cdot x + P_y \cdot y = m$

if $x = 0$ then $y = M/P_y$

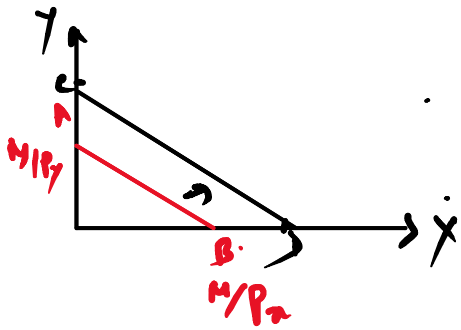
and if $Y = 0$ then $X = M/P_x$

and if $y = 0$ then $x = M/P_x$

Changes in Budget Line:

① Let us increase income (keeping P_x and P_y const)

when M_0 is initial income & AB increase the income to M_1



then the y and x intercept will shift up and right respectively such that the budget line CD is parallel and on right side of AB.

Slope remains constant ie slope of CD $= \frac{-P_x}{P_y} < 0$

Case 2

P_x increases while P_y and M remains constant

$$M = P_x \cdot x + P_y \cdot y$$

slope(AB) $= -P_x/P_y < 0$

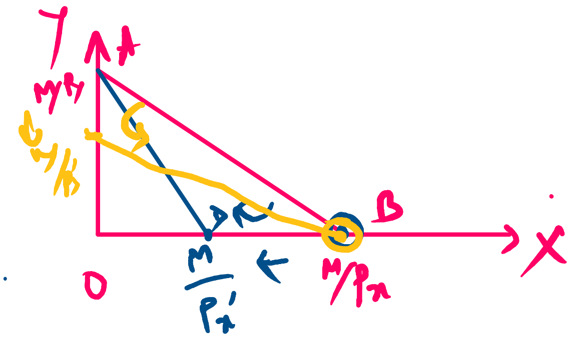
Since price of x increases to P_x'

then slope of AD $= \frac{-P_x'}{P_y}$ is greater (steeper) than AB.

Y

('Shapes')

that AB.



AB will rotate/swing clockwise to the position AD.

HW (1) What will happen to the shape of Budget line if

(a) P_x decreases

(b) P_y decreases

(c) If (M, P_x, P_y) are doubled.