Assumptions about how preference relations works.

a. **Completeness. b. Reflexive. c. Transitive. d. Non-Satiety(more is better)**

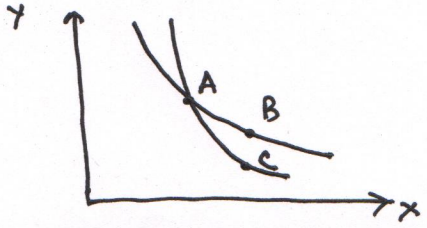
Strict convexity strictly means that average is preferred to extreme.

Utility function: U= U(X,Y).utilitu function reflects the ordering of bundles by the consumer.Utility function is not unique. It is unique upto a positive monotonic transformation. $U = U(x, y)$

Indifference curve: Locus of all combination of two goods along which consumer is indifferent.

Properties of Indifference curve.

a.No two indifference curve can intersect each other.



b. Indifference curve is downward sloping from left to right.

$$U = U(x, y) = \text{constant}.$$

$$dU = U_x \cdot dx + U_y \cdot dy = 0.$$

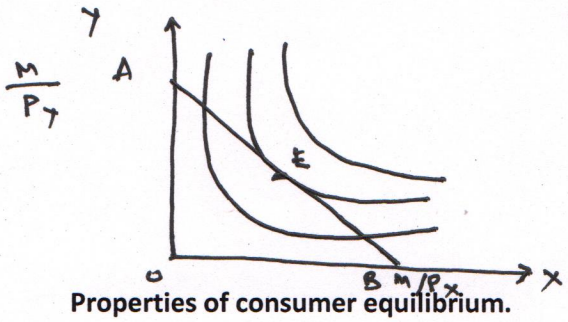
$$\therefore \frac{dy}{dx} = -\frac{U_x}{U_y} \qquad U_x > 0 \; ; \; U_y > 0.$$

c.Indifferenc curve is convex to the origin. Strict convexity axiom.

d.Indifference curves away from origin indicate higher level of utility.

MRS. $= \frac{U_x}{U_y}$

Equilibrium of the consumer.



Equilibrium condition :

$$\frac{U_x}{U_y} = \frac{P_x}{P_y}.$$

Properties of consumer equilibrium.

a. Consumer's equilibrium is unique. The demand function is a single valued function.

b. Demand functions are homogeneous of degree in prices and income.

Equilibrium condition derivation by Lagrangian multiplier method.