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Paper-1
Topic: Marginal Rate Of Substitution
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Marginal Rate Of Substitution

The concept of marginal rate of substitution is an important tool of indifference curve analysis of demand. Marginal rate of substitution of x for y (MRSxy) represents the amount of y which the consumer has to give up for the gain of an additional unit of x so that his level of satisfaction remains the same.

TABLE 1.3

Combination	*Good x*	*Good y*	MRS_{xy}
A	1	12	—
B	2	8	4 : 1
C	3	5	3 : 1
D	4	3	2 : 1
E	5	2	1 : 1

In table 1.3, when the consumer moves from combination A to combination B on his indifference schedule he forgoes 4 units of y for the additional one unit gain in x. Hence, the marginal rate of substitution of x for y is 4. Likewise, when the consumer moves from B to C , and C to D, and then from D to E in his indifference schedule, the marginal rate of substitution of x for y is 3 , 2 and 1 respectively. As the consumer proceeds to have additional units of x , he is willing to give away less and less units of y so that MRSxy falls from 4:1 to 1:1 in the Eth combination.

The negative of the slope of an indifference curve at any one point is called the Marginal rate of substitution of the two commodities (MRSxy) . In other words, the MRSxy is in fact the slope of the curve at the point on the indifference curve. Thus,

Slope of Indifference curve= - ∆Y/∆X = MRSxy

It means that the MRSxy is the ratio of change in good Y to given change in X.

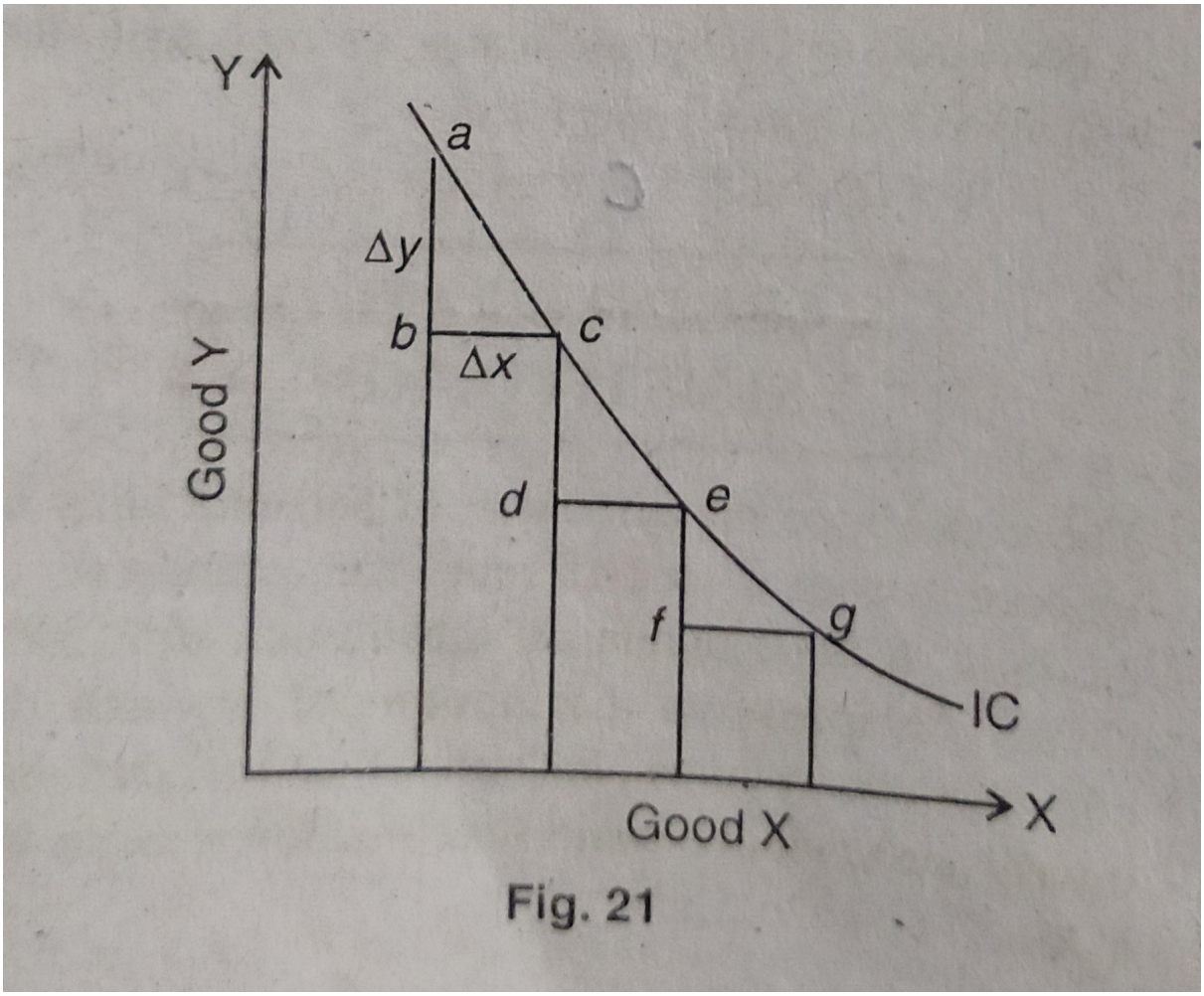


Fig. 21

In the figure 21 there are three triangles on the IC curve . The vertical sides ab , cd, and ef represents ∆y and the horizontal sides bc , de and fg signify ∆X.

At point c, MRSxy= ab/bc

At point e, MRSxy= cd/de

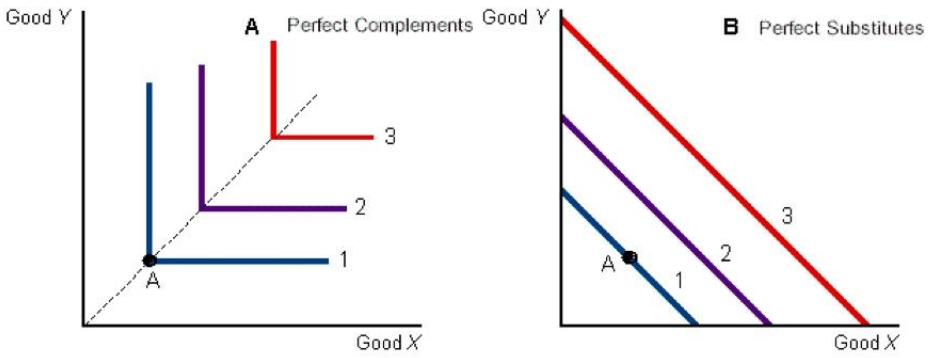
At point g, MRSxy= ef/fg.

This also shows that as the consumer moves downwards along the curve, he possesses additional units of x , and gives up lesser and lesser units of y , i.e; the MRSxy diminishes.

Note:

- If the MRSxy is diminishing , the indifference curve must be convex to the origin.
- If MRSxy is constant, the indifference curve will be straight line sloping downwards to the right.
- If MRSxy is indifference curve will be concave to the origin.
- In case of perfect complementaries trees the MRSxy is zero and the indifference curve will be L shaped.

Graphs :



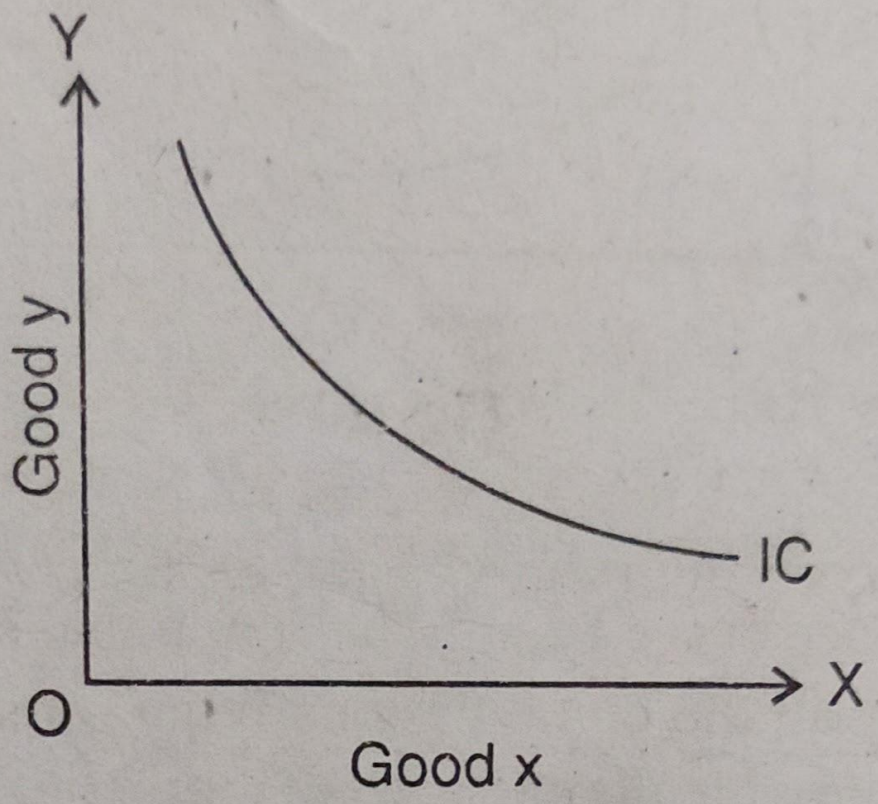


Fig. *Convex indifference curve*

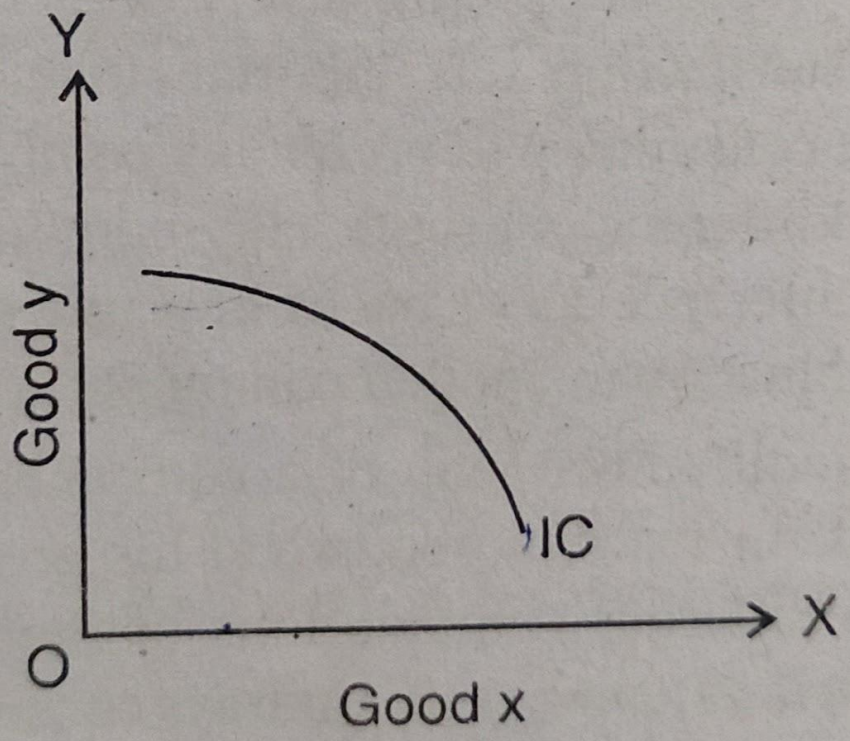


Fig. *Convance indifferent curve*