MICROECONOMICS

(BCS 2002-8)

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(A) INDIFFERENCE CURVE ANALYSIS

LEARNING OBJECTIVES:

1. Describe the purpose, use, and properties of indifference curves
2. Understand how indifference curves differs from another.
3. Understand how to find the consumer equilibrium using indifference curves with a budget constraint
4. Limitations indifference curve analysis

TOPICS:

1. Consumer Behavior
2. Indifference Curve Analysis
3. Assumptions of Indifference Curve Analysis
4. Indifference Curve Schedule & Curve
5. Marginal Rate of Substitution
6. Indifference Curves Map
7. Properties of Indifference Curves
8. Budget Line & Consumer Equilibrium
9. Limitations Indifference Curve Model
10. Conclusion

(B) CONSUMER BEHAVIOR

CONSUMER BEHAVIOR is the study of individual customers, organizations, or groups' behavior while selecting, purchasing, using, and disposing of the goods, ideas, and services so they can meet their wants and needs. In simple terms, consumer behavior is the study of consumers' actions and reactions in the marketplace and the reason behind their actions.

The concepts of Utility and Indifference Curves are two main instruments for analyzing the consumer behavior in economic perspective.

Note: [The utility Analysis part of Consumer Behavior has been discussed under different topics of Lecture-5]

Definition:

1. The indifference curve approach was introduce by Hicks & Allen. As against the Cardinal Concept of Utility Analysis , it indirectly measures the utility by ranking different combinations goods ranked according to the preferences of buyer Ordinally
2. An indifference curve is a graph showing combination of two goods that give the consumer equal satisfaction and utility. Each point on an indifference curve indicates that a consumer is indifferent between the two and all points give him the same level of utility. In other words, the consumer would be indifferent to these different combinations.
3. Example of choice of goods which give consumers the same utility

(1) Rationality of Consumer :The Consumer is Rational & aims at maximizing his total Satisfaction.

(2) Ordinal Utility: Utility can be expressed Ordinally

i.e. Consumer is able to tell only Order of his Preferences.

(3) Limited Supply: Consumer is not Oversupplied with Goods in question.

(4) Transitivity of Choice: Means that if a Consumer prefers A to B & B to C, he must prefer A to C.

…. (C-3) Assumptions of Indifference Curve Analysis

5) Consistency of Choice: Means that if a Consumer prefers A to B in one period, he will not prefer B to A in another period or Treat them as Equal.

(6) Diminishing Marginal Rate of Substitution (MRS): As an individual substitute the product X for product Y. the MRS continuously declines due o less availability of In other words the consumer is less and less inclined to

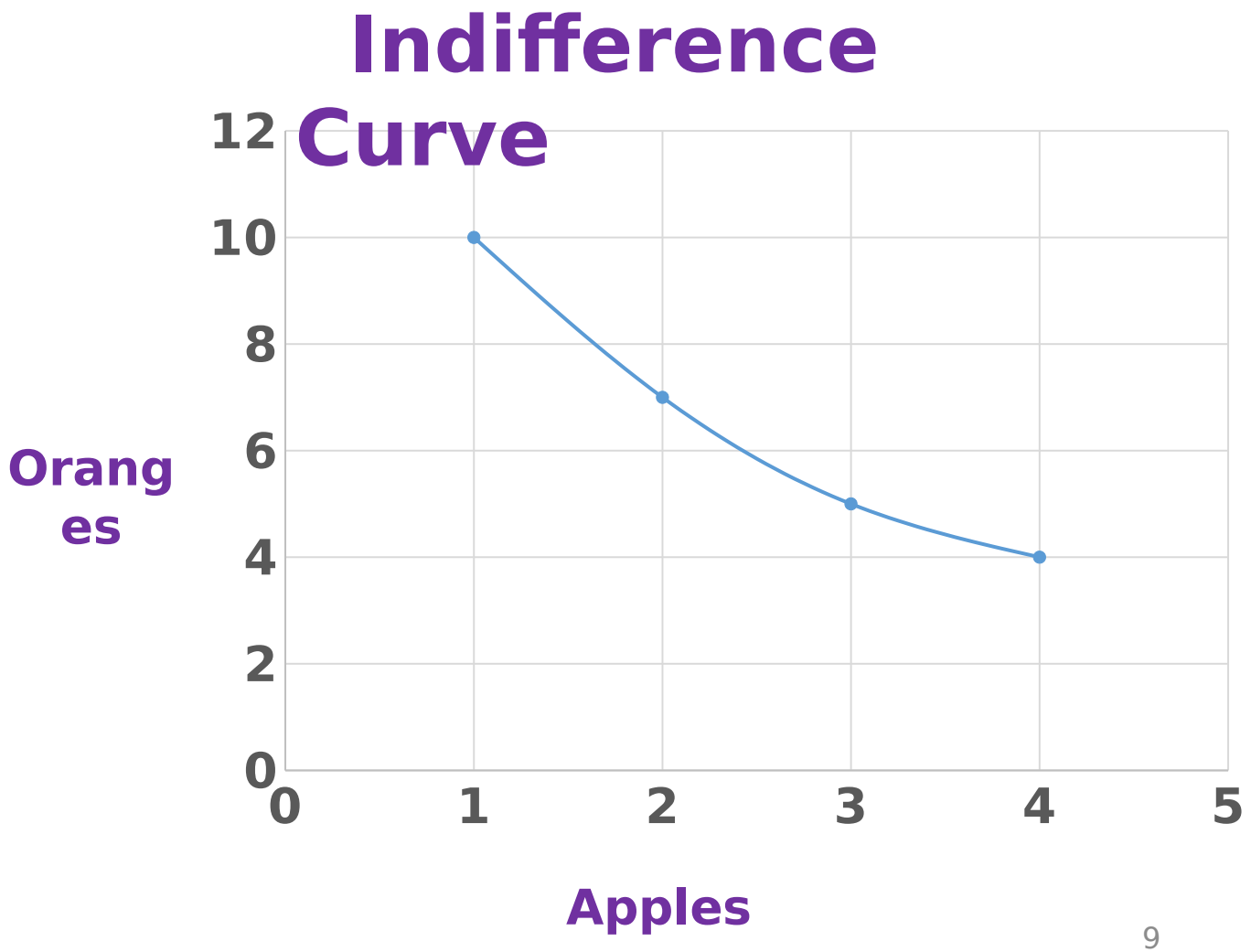
(C-4) Indifference Curve Schedule

An Indifference Curve Schedule refers to a Schedule that Indicates different Combinations of Two Commodities which yield Equal Satisfaction

(Graph - Next Slide)

Combination	Apples	Oranges
A	1 +	10
B	2 +	7
C	3 +	5
D	4 +	4

- **Indifference Curve (IC) is a Diagrammatic Representation of Indifference Schedule.**
- **IC It is a line that shows all possible Combinations of Two Goods between which a person is**



….(D-5) Indifference Curve

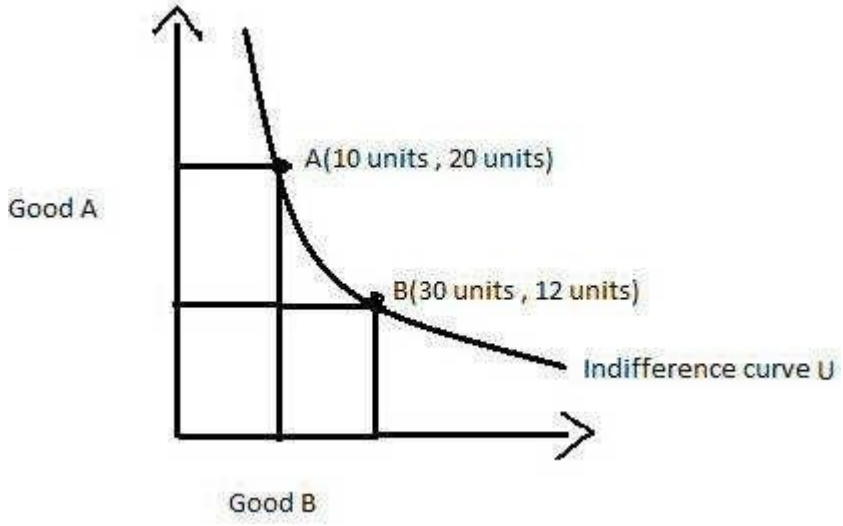
Indifference Curve-Further Description:

Graphically, the indifference curve is a downward sloping convex to the origin showing a combination of two goods that the consumer consumes

The graph shows the Utility Indifference Curve showing bundles of goods A and B.

To the consumer, bundle A and B are the same as both of them give him equal satisfaction.

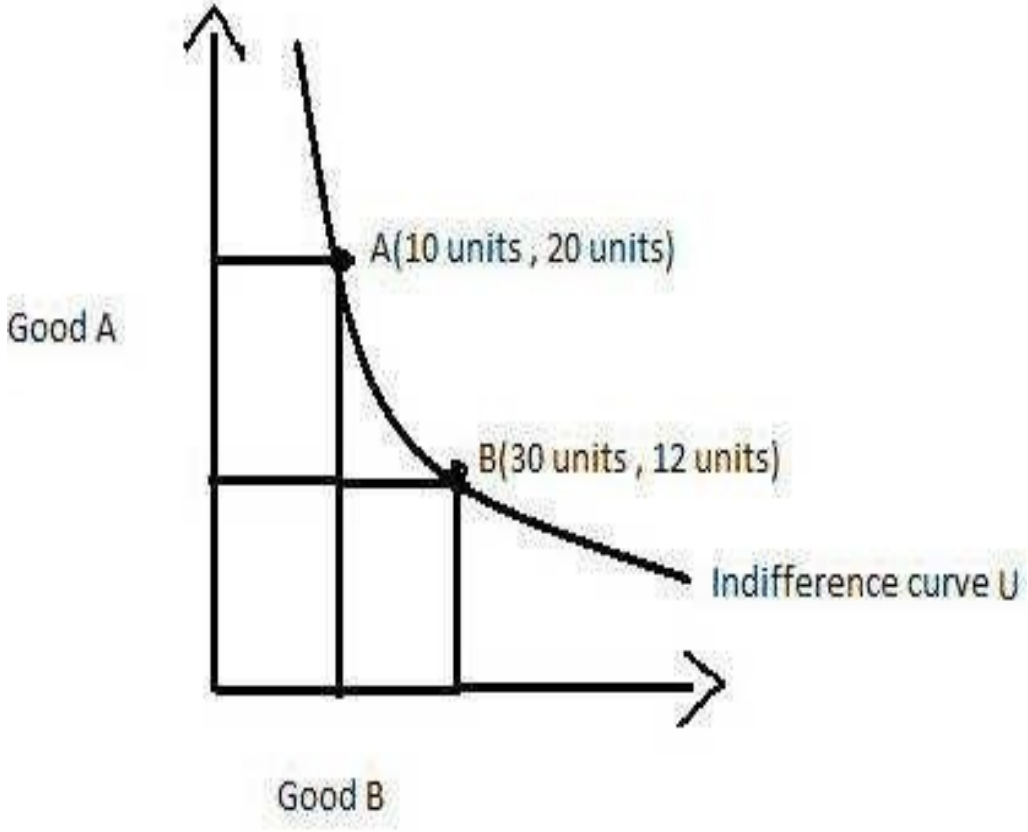
In other words, point A gives as much utility as point B to the individual. The consumer will be satisfied at any point along the curve assuming that other things are constant.



(E) Marginal Rate of Substitution

The Rate at which an Individual must give up "Good A" in order to obtain One More Unit of "Good B", while keeping their Overall Utility (Satisfaction) Constant. The *Marginal Rate of Substitution (*MRS) is Calculated between Two Goods placed on an Indifference Curve, which displays a Frontier of Equal Utility for Each Combination of "Good A" and "Good B"

MRS Keeps on Declining since Consumer has more & more units of one Good, he gives up Less Units of Other Good



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(E) Marginal Rate of Substitution

There are different ways to define the Marginal Rate of Substitution

Definition 1:

It is the maximum rate at which the consumer would be willing to substitute a little more of good x for a little less of good y in order to leave the consumer just indifferent between consuming the old basket or the new basket

Definition 2:

It is the negative of th slope of the indifference curve:

$$MRS_{x,y} = - \frac{dy}{dx}$$

,,,,(E) Diminishing Marginal Rate of Substitution

An indifference curve exhibits a Diminishing Marginal Rate of substitution:

1. **The more of good X you have, the more you are willing to give up to get a little of good y.**

2. **As result of (1) above the indifference curves:**
   - **Get flatter as we move out along the horizontal axis**
   - **Get steeper as we move up along the vertical axis.**

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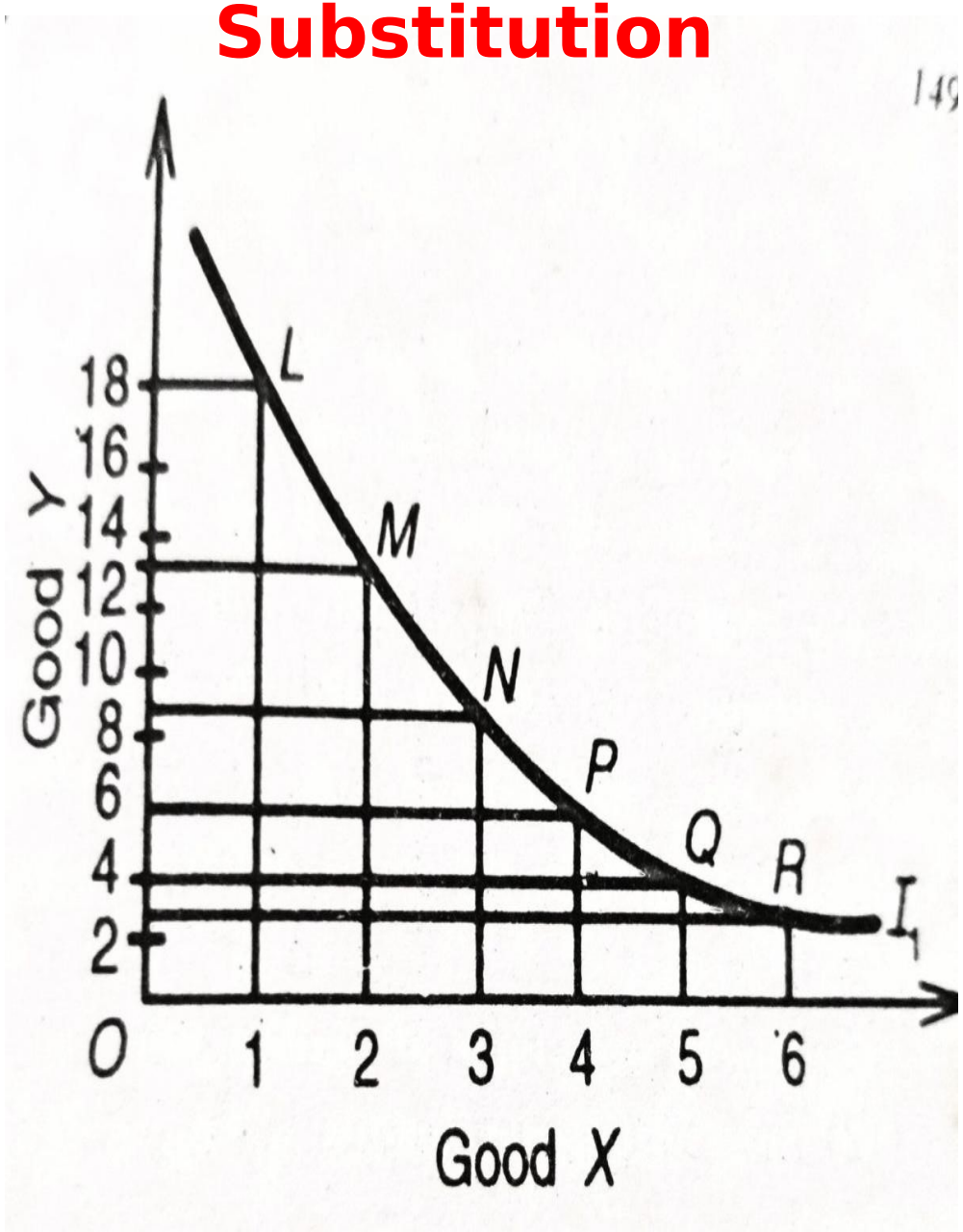
Example: The Diminishing Marginal Rate of Substitution



MARGINAL RATE OF SUBSUTUTION			
Combination	Good X	Good Y	MRS of X for Y
L	1	18	-
M	2	13	5:01
N	3	9	4:01
O	4	6	3:01
P	5	4	2:01
Q	6	3	1:01

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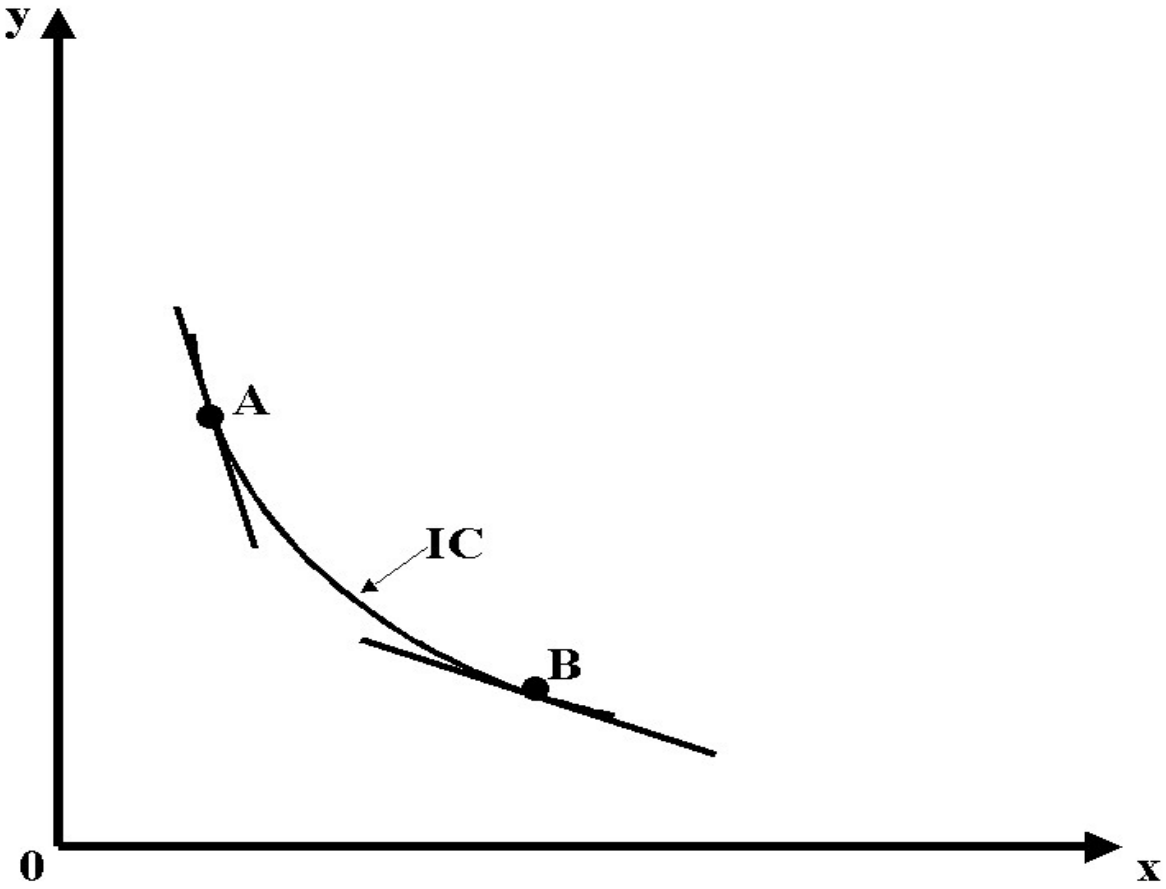
Example: The Diminishing Marginal Rate of Substitution



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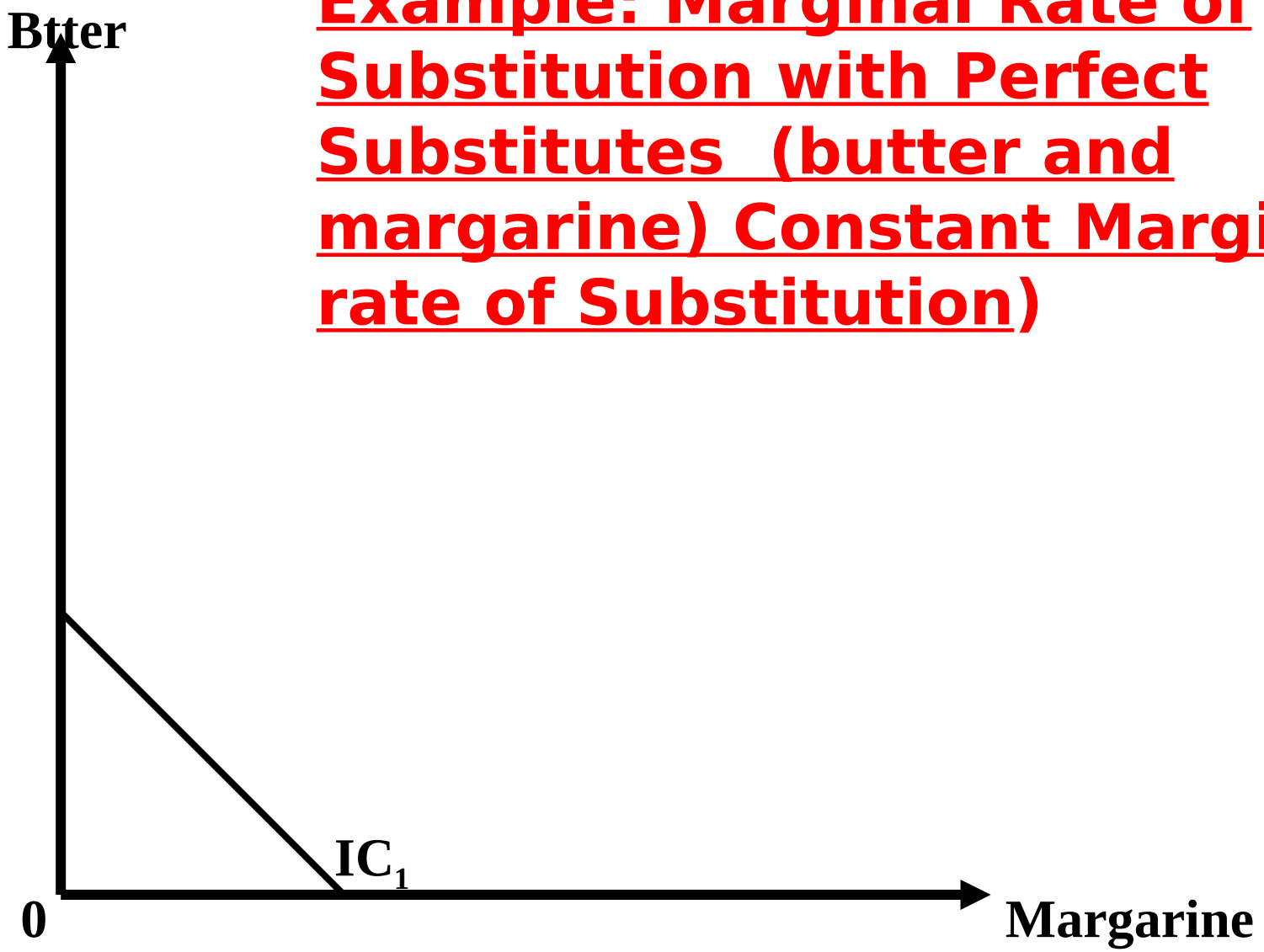
Example: Marginal Rate of Substitution with Perfect Substitutes (butter and margarine) Constant Marginal rate of Substitution)



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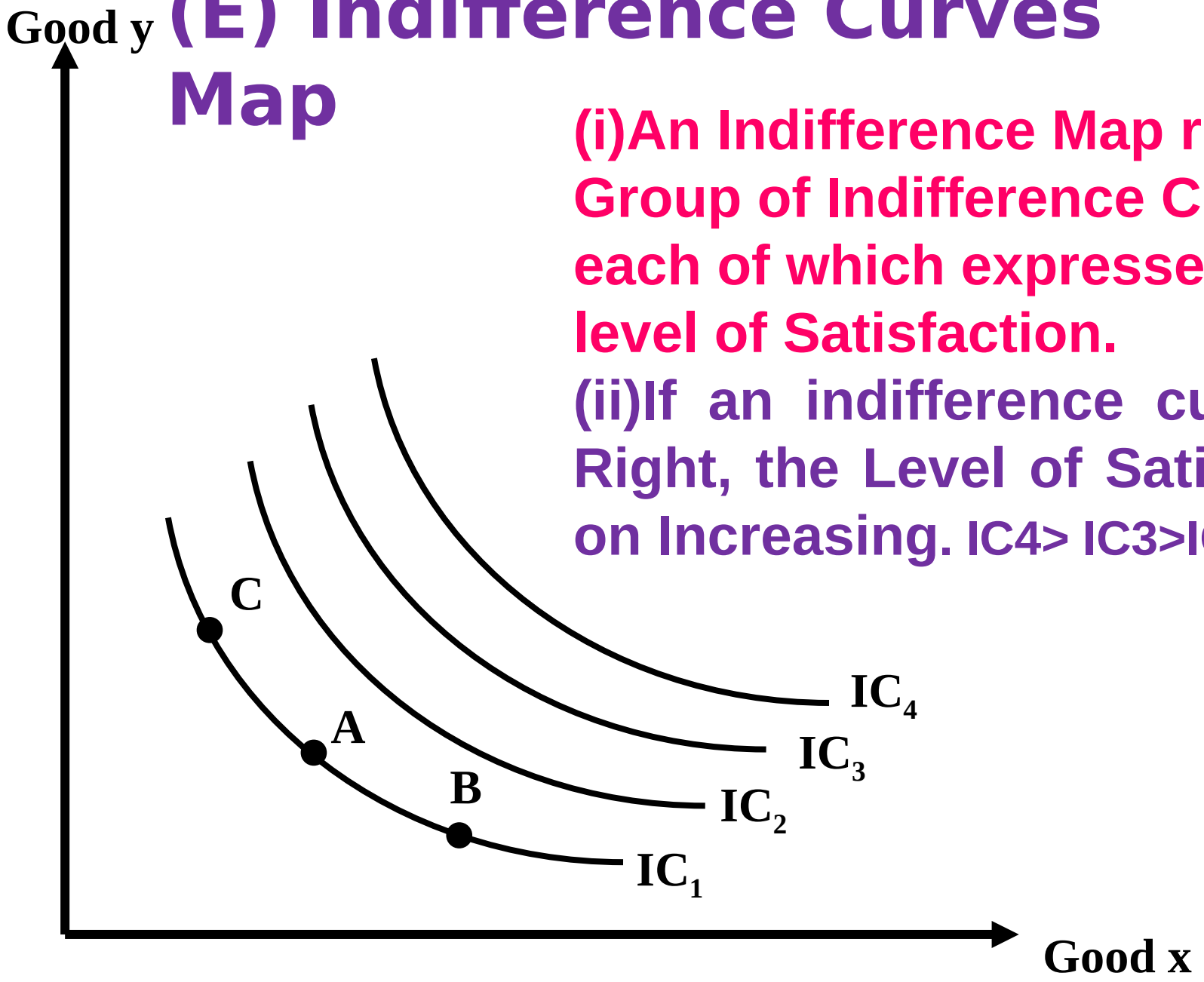
(E) Indifference Curves Map



(i)An Indifference Map represents a Group of Indifference Curves each of which expresses a given level of Satisfaction.

(ii)If an indifference curve Shifts to Right, the Level of Satisfaction goes on Increasing. IC4> IC3>IC2)IC1

…E. PROPERTIES OF INDIFFERENCE CURVES

1. Indifference curves never cross
2. The farther out an indifference curve lies (i.e. farther is from the origin) – the higher the level of total utility it indicates
3. Indifference curves slope downward
4. Indifference curves have a convex shape

...E. INDIFFERENCE CURVES NEVER CROSS

- Suppose a consumer is indifferent between A and C

- Suppose that B is preferred to A.

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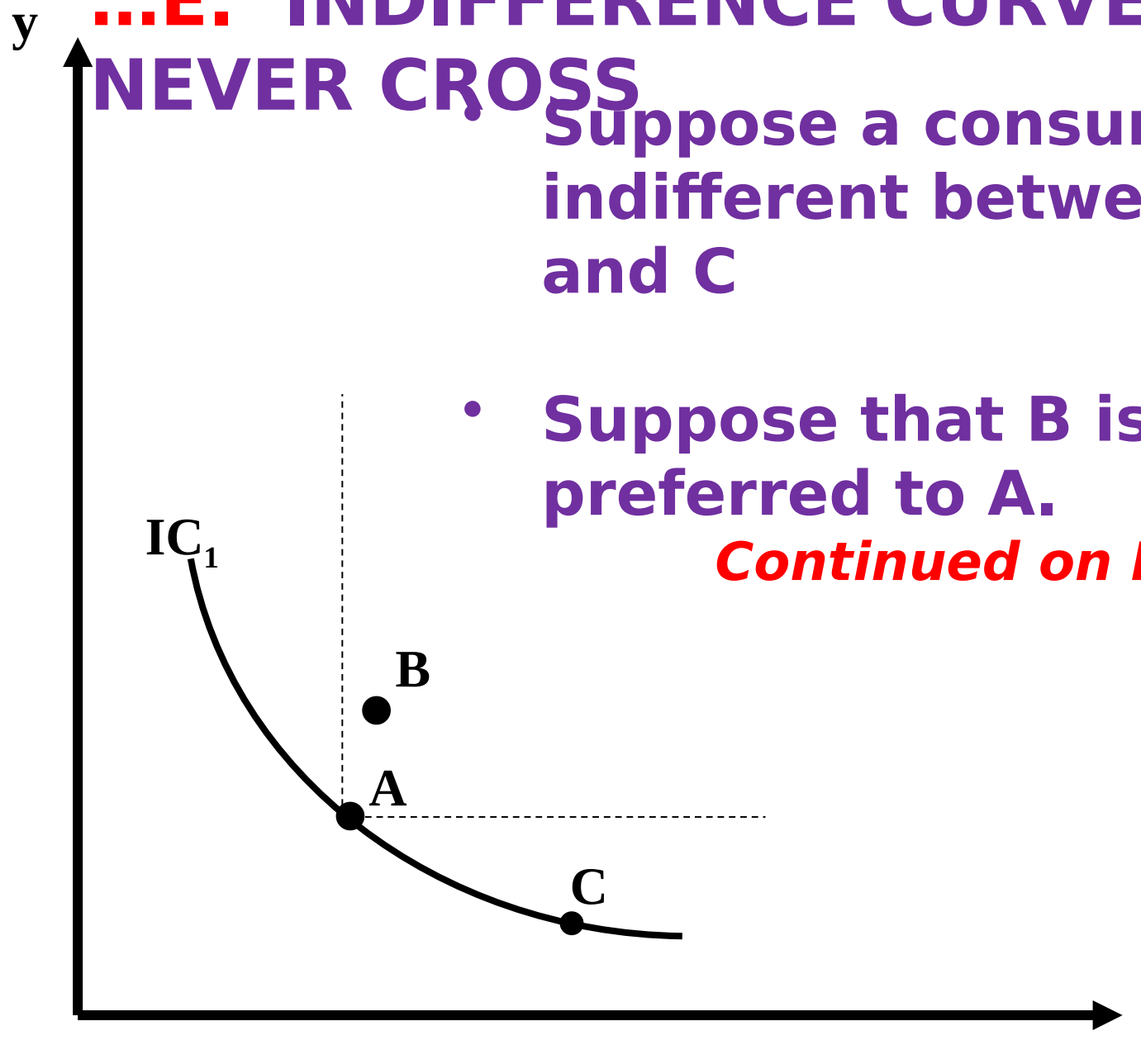
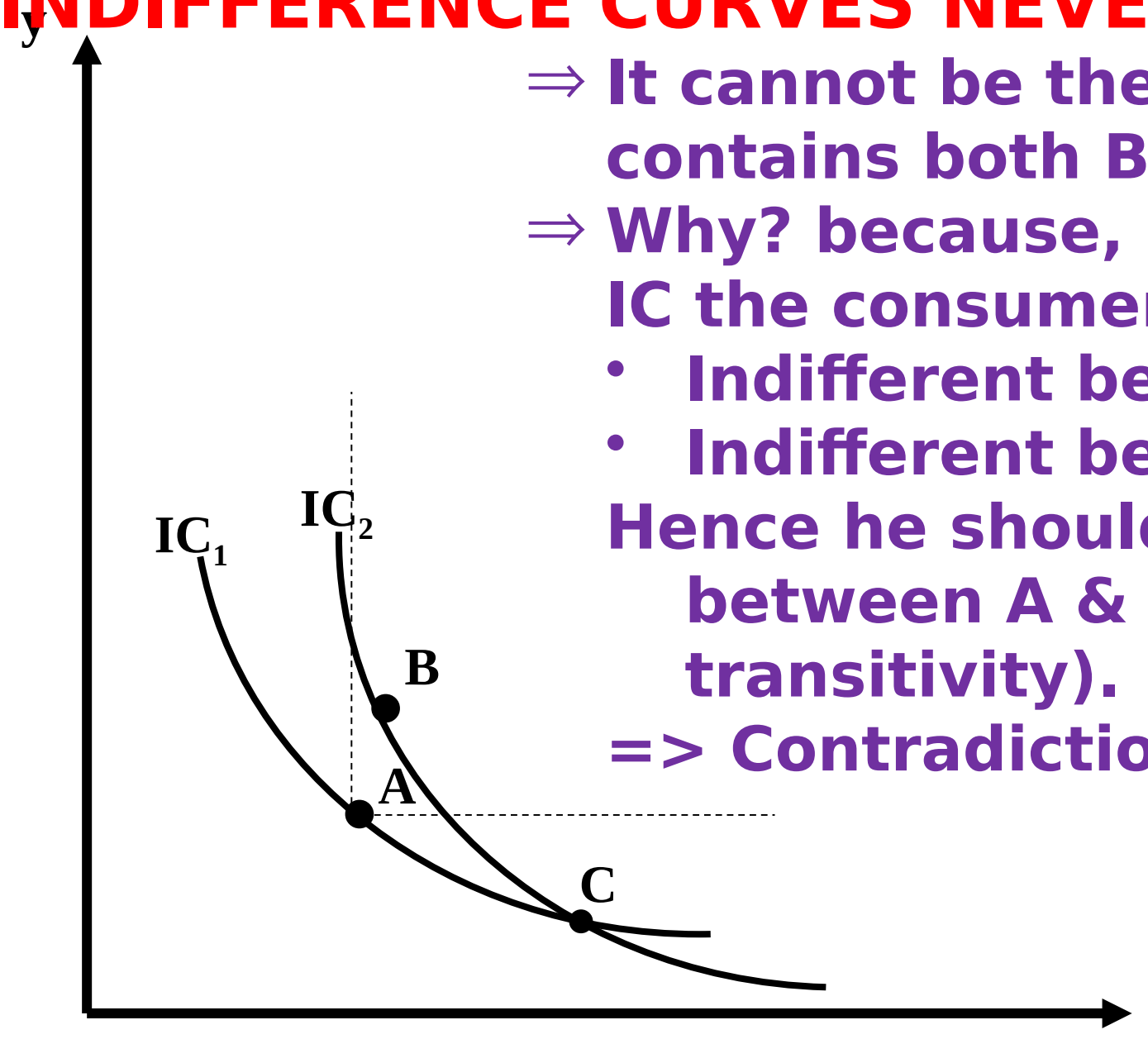


…E. INDIFFERENCE CURVES NEVER CROSS



⇒ It cannot be the case that an IC contains both B and C

⇒ Why? because, by definition of IC the consumer is:

- Indifferent between A & C
- Indifferent between B & C

Hence he should be indifferent between A & B (by transitivity).

=> Contradiction.

…E. INDIFFERENCE CURVES MAP

2. The farther out an indifference curve lies – the farther is from the origin – the higher the level of total utility it indicates

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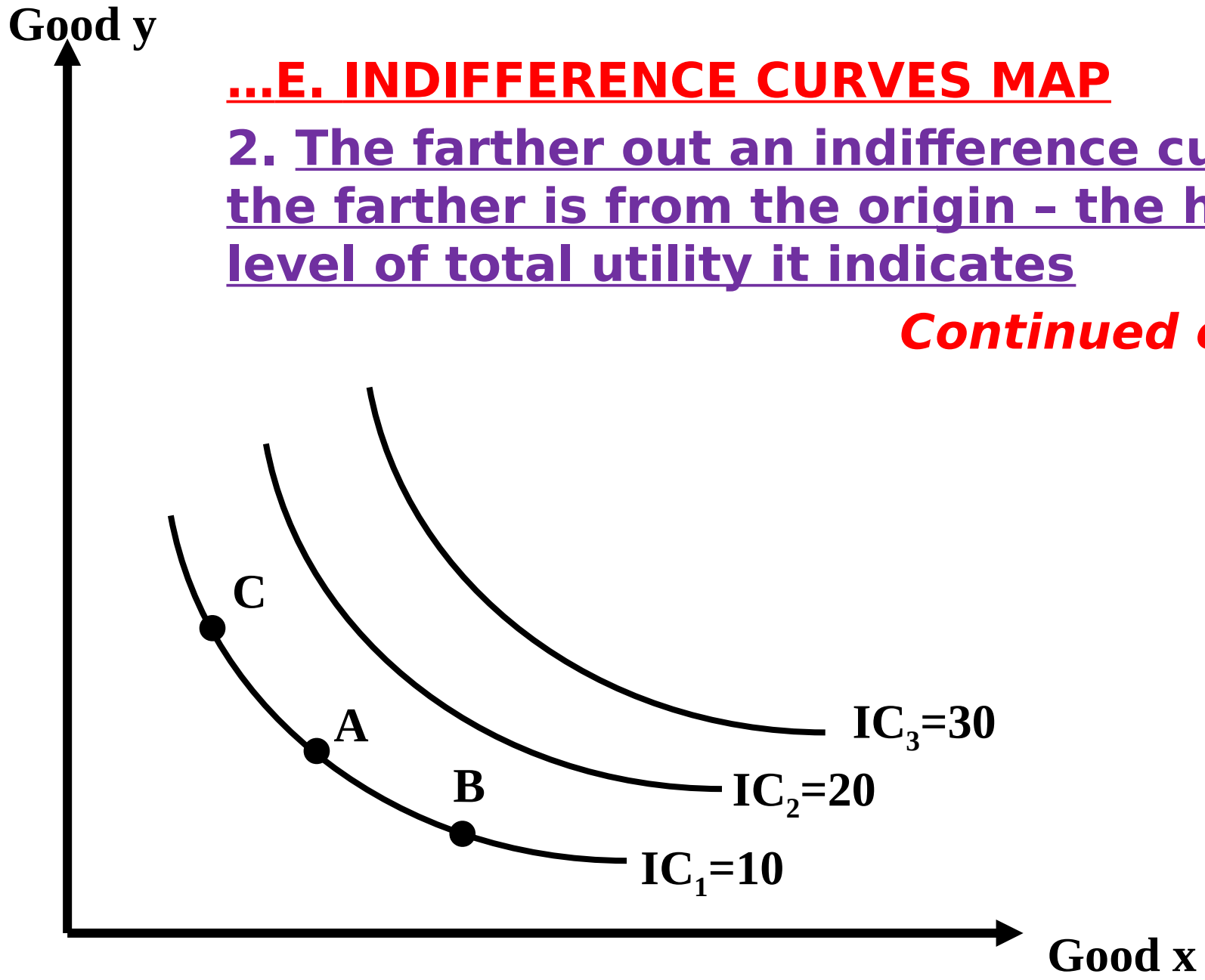
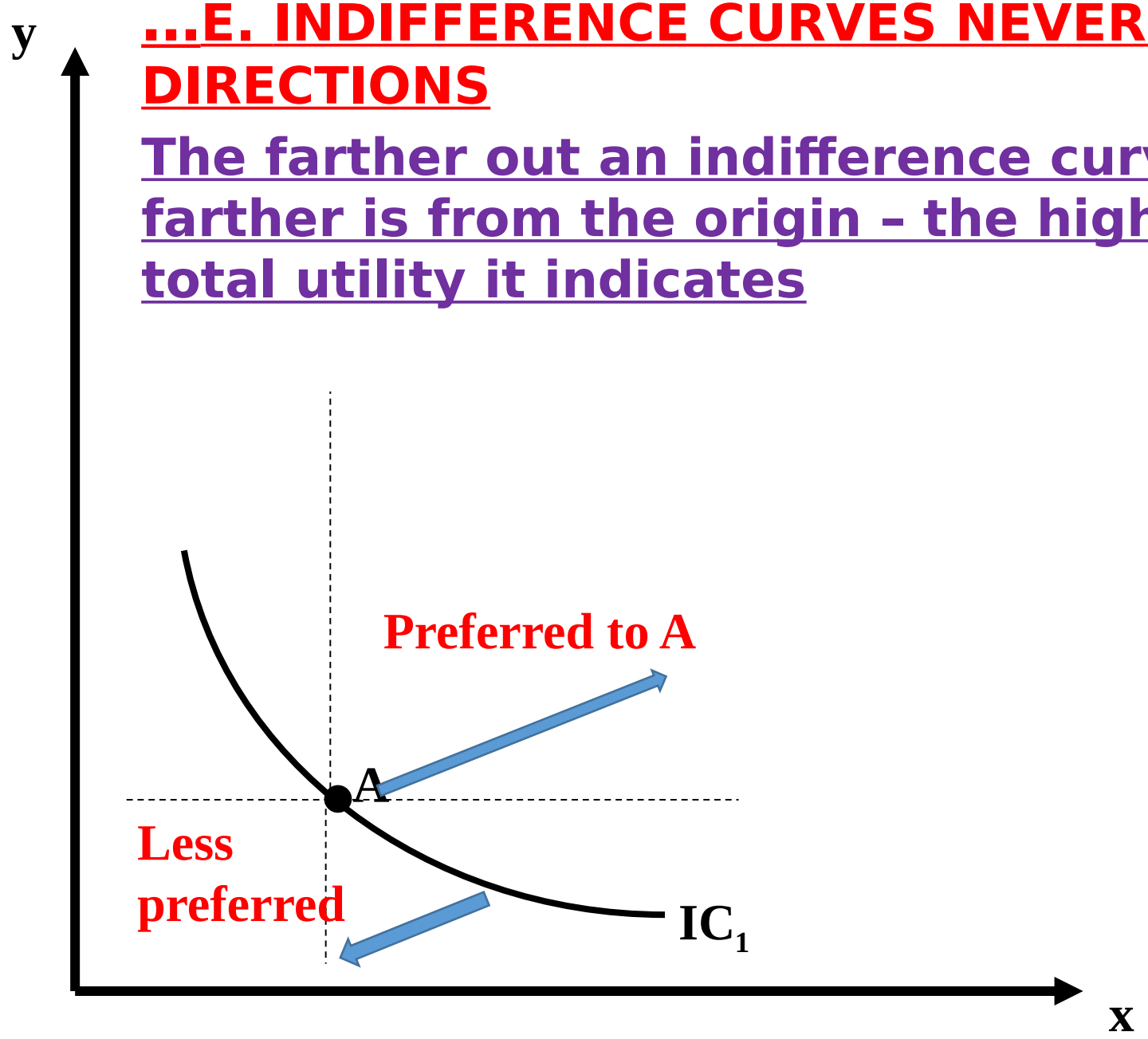
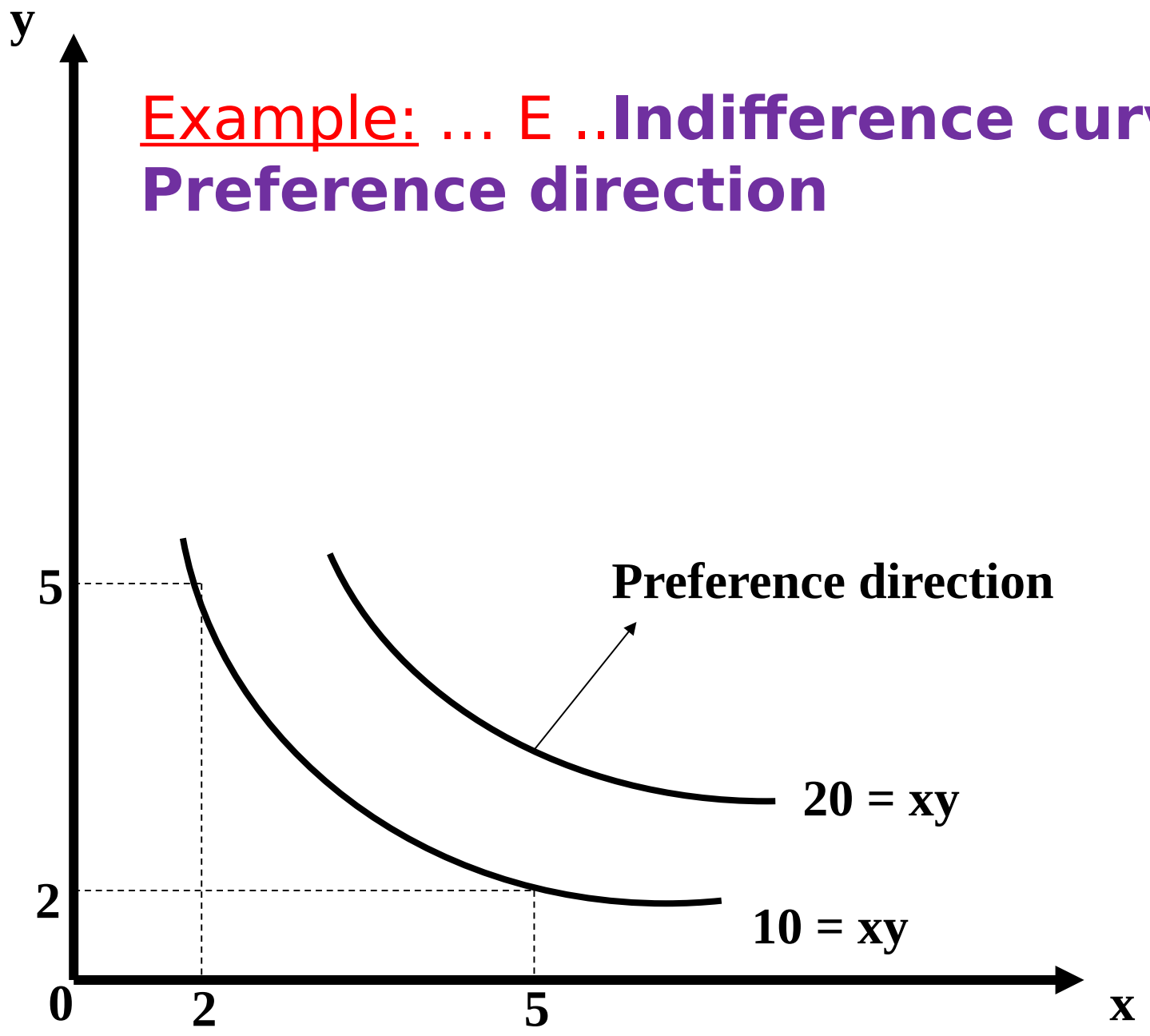


…E. INDIFFERENCE CURVES NEVER CROSPREFERCE DIRECTIONS

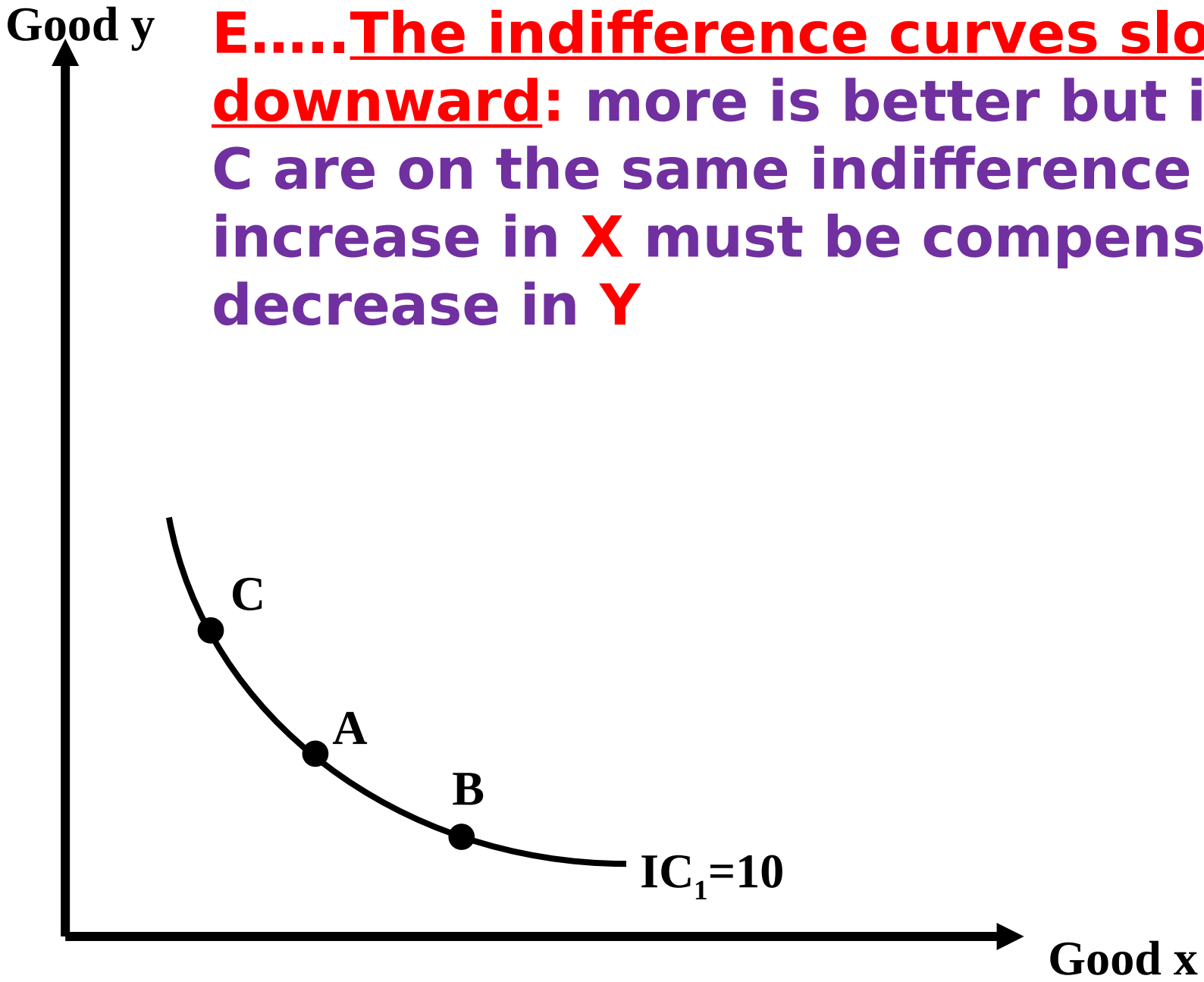
The farther out an indifference curve lies – the farther is from the origin – the higher the level of total utility it indicates



Example: … E ..Indifference curve-Preference direction

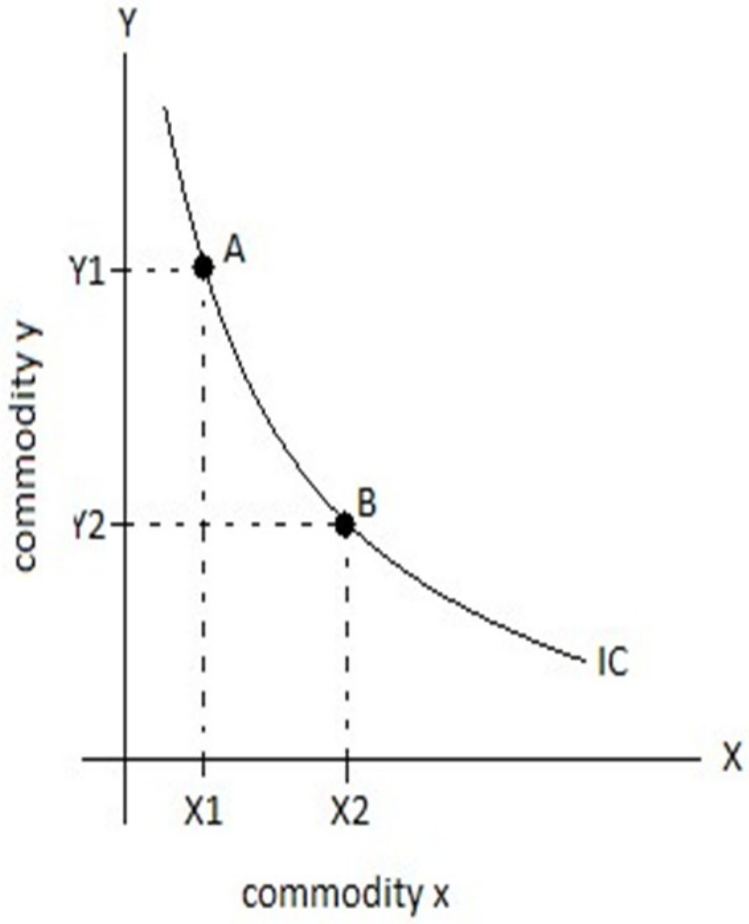


E…..<u>The indifference curves slope downward</u>: more is better but if A, B and C are on the same indifference curve, an increase in X must be compensated by a decrease in Y



… E. Indifference Curves are convex to origin

1. **Indifference Curves are convex to the point of Origin due to diminishing the marginal rate of substitution of commodities. This implies that as the consumer gets more and more of X he is ready to sacrifice less and less of Y.**
2. ***(i)* steeper slope at A, flatter slope at B; (*ii)* average bundles are preferred to the extremes**



F. BUDGET LINE

Definition: **Budget line is a line which shows all combinations of two goods that a consumer can afford with a given income and given prices of commodities. It is also known as price line, consumption possibility line, and line of attainable combinations.**

1. **The budget line always by definition has a negative slope.**
2. **It indicates a continuous market rate of exchange in individual combinations leading to constant slope of the budget line.**
3. **With the increase in income it moves upwards above the previous line and vice versa**
4. **With the decrease of price (s) it moves upwards above the previous line and vice versa**

(Further explained in next Three Slides)

F…. BUDGET LINE -EXAMPLE

- Suppose a consumer has an income of Rs.50000/, and it will be used to buy commodities X and Y.
- To derive maximum utility from the said income, only the A,B,C,D,E & F options are available.

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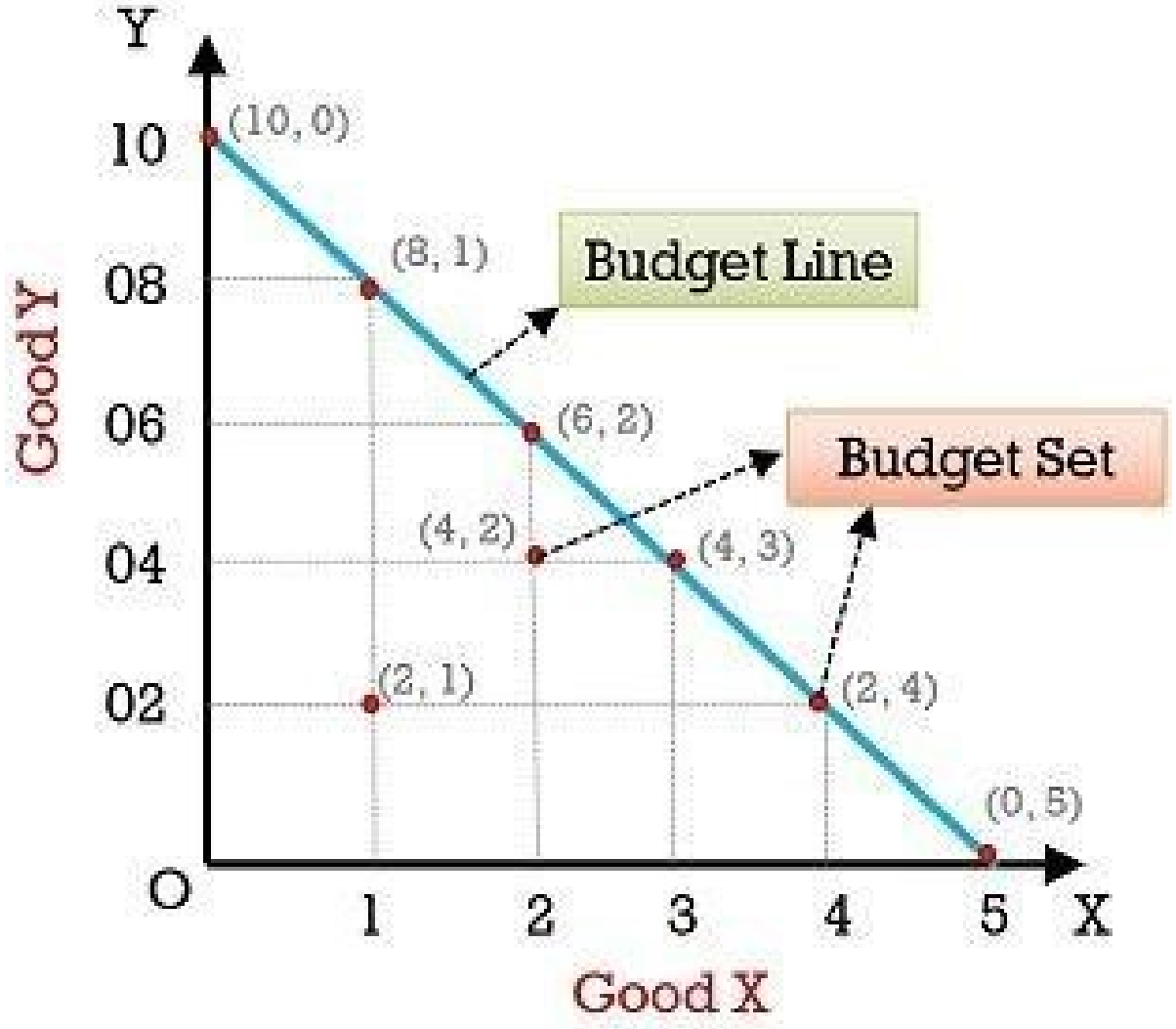
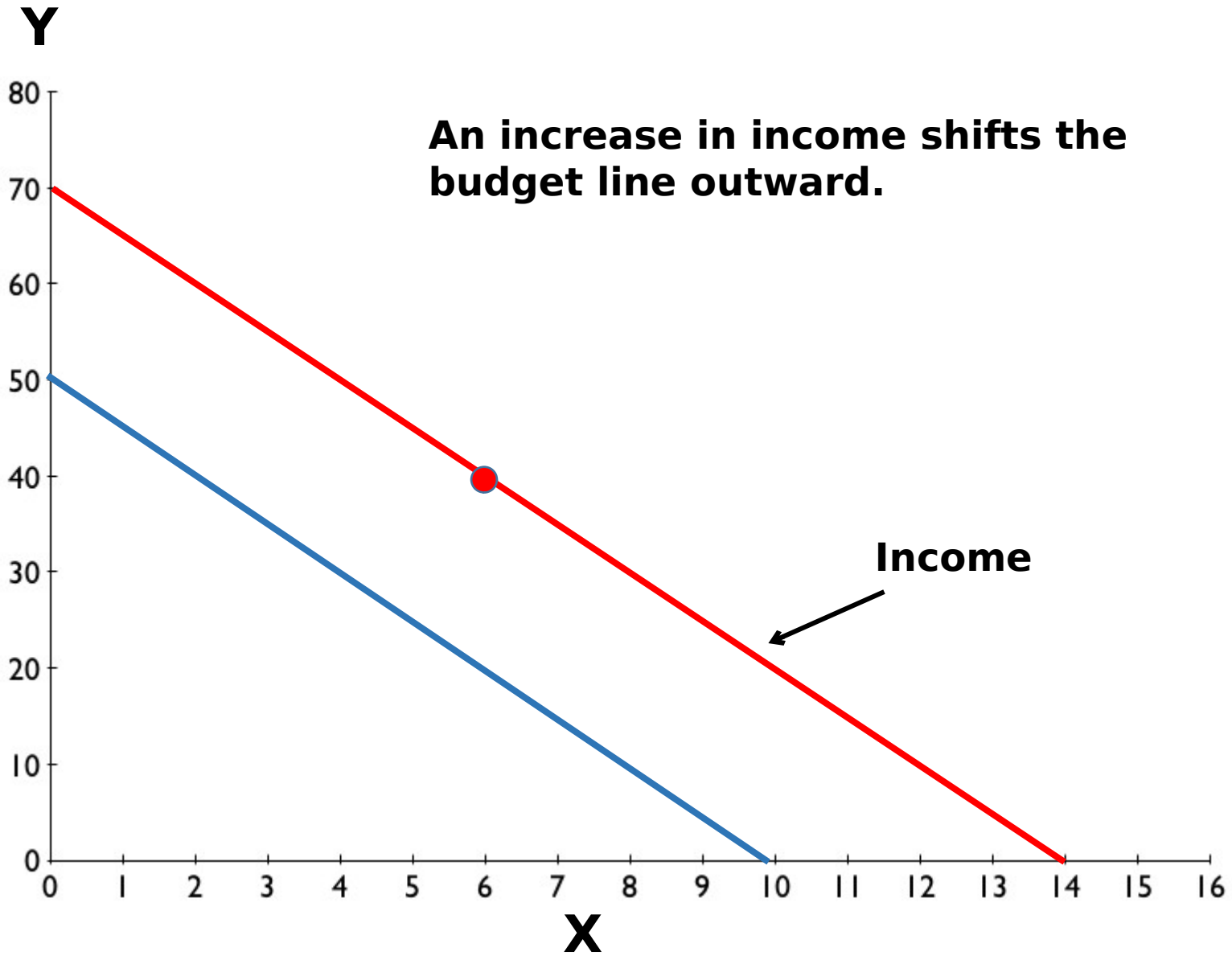
BUDGET ALLOCATION (000)			
Combination	Good X (Rs 1000 each)	Good Y (Rs 5000 each)	Income Allocation –in 000)
A	0	10	(10×0)+(5×10)=50
B	1	8	(10×1)+(5×8)=50
C	2	6	(10×2)+(5×6)=50
D	3	4	(10×3)+(5×4)=50
E	4	2	(10×4)+(5×2)=50
F	5	0	(10×5)+(5×0)=50

…..F.BUDGET ALLOCATION of Rs.50000

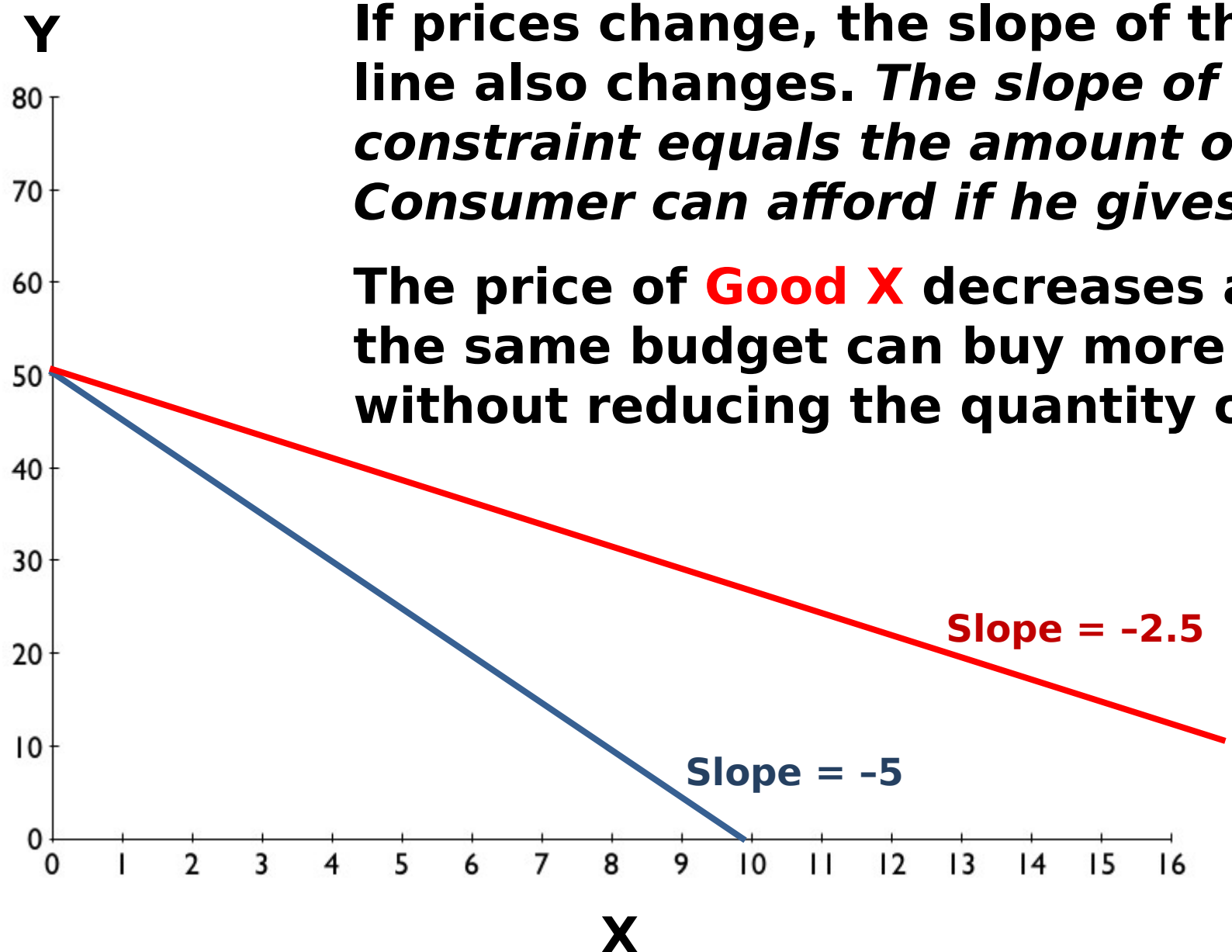
The required budget line is obtained by plotting the Rs. 50000/ budget against the following graph. In the graph, the X-axis represents commodity X, and Y-axis represents commodity Y.



…. F. BUDGET LINE: Increase in Income



…F. The Budget Line-Decrease in Price of Goo X



If prices change, the slope of the budget line also changes. *The slope of the budget constraint equals the amount of Y Consumer can afford if he gives up One X*

The price of Good X decreases and now the same budget can buy more of X without reducing the quantity of Good Y

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(G) CONSUMER EQUIBLIRIUM- Maximization of Utility

1. As already discussed indifference curve depicts all the combinations of two goods that provide the consumer with equal satisfaction.
2. Subject to given income and market prices of two goods, the consumer's equilibrium refers to a situation in which they achieve maximum satisfaction and feel no need to change their position.
3. When the Budget line is tangent to the indifference curve, a consumer will be in equilibrium, and attain maximum utility from the combination of two bundle of

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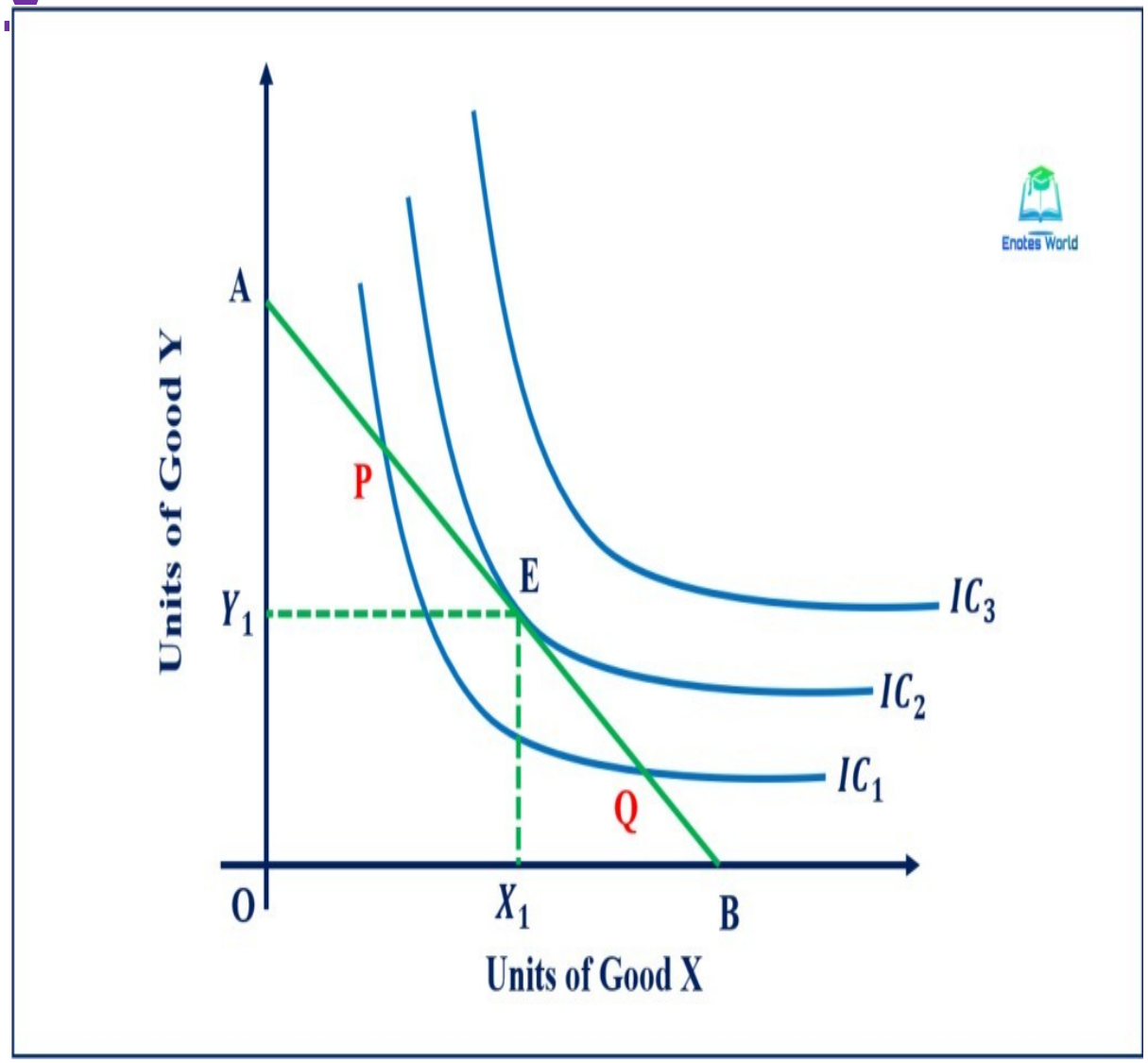
…(G) CONSUMER EQUIBLIRIUM- Maximization of Utility

- **Given the indifference map of the consumer and his budget line, the equilibrium is defined by the point of tangency of the budget line with the highest possible indifference curve (point E in the fig.)**
- **At the point of tangency the slope of the budget line (Px/Py) and MRSxy= MUx/MUy are equal. The first order condition is fulfilled by the point of tangency of the two relevant curves. The second order condition is implied by the convex shape of the indifference curves.**



…(G) CONSUMER EQUIBLIRIUM- Maximization of Utility

A consumer is in equilibrium when he maximizes his utility with his given income and the market prices. Two conditions must be fulfilled for the consumer to be in equilibrium. Movement on either side will shift him to lower Indifference curve. *(See figure on previous slide No:33)*

1) $MRS_{xy} = MUx/Muy = P_x/Py$. It means MRS be equal to the ratio of commodity prices. This is a necessary but not sufficient condition for equilibrium.

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H. Limitations of the Indifference Curve Model

Indifference Curve Analysis is the major Analytical tool of Economics fir analyzing the rationale of Consumer Behavior in making choice among alternative goods. However it has some limitations . Some important limitations ae listed below:

1. **Consumers are presumed to be rational actors, consistently seeking to maximize their utility; disregarding emotional, cultural, and social influences that often impact real-life decisions.**
2. **Consumers are assumed to have complete and perfect information about the goods they are choosing from. But in reality consumers often make decisions under uncertainty and with incomplete information, affecting their choices and preferences**

CONINUED NEXT SLIDE…..

… H. Limitations of the Indifference Curve Model

4. Goods are considered divisible into infinitely small units, allowing consumers to choose any quantity. This assumption ignores the fact that many goods are indivisible (e.g., cars, houses) and that this indivisibility can significantly affect consumer choices.
5. Measuring utility is inherently subjective and difficult to empirically verify limit. This put a limit on the model's practical application in predicting real-world consumer behavior
6. The model is manageable only with two goods (or two bundle of Goods). Thus while the model, is helpful in understanding general trends in consumer behavior but lacks predictive accuracy when it comes to specific market scenarios due to its over-simplifying assumptions.

CONCLUSION

Indifference curve model is a valuable tool for understanding some basic aspects of consumer choice, but its limitations and assumptions have to be fully understood. Its utility lies in providing a basic rationale about consumer preferences, rather than offering precise predictions about consumer behavior.