

[Frequently Asked Questions]

[Concept of Convexity/Concavity]

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Lecture No. & Title:	Lecture – 3

Concept of Convexity/ Concavity

Frequently Asked Questions (FAQ)

1. What do you mean by convex set?

Ans. A set $X \subset \mathbb{R}^n$ is convex if for every pair of points x_1 and $x_2 \in X$ and any $\lambda \in [0, 1]$, the point $x = \lambda x_1 + (1 - \lambda)x_2$ also belongs to the set X.

2. What do you mean by level set?

Ans. A level set of the function $y = f(x_1, x_2, ..., x_n)$ is the set $L = \{(x_1, x_2, ..., x_n) \in \mathbb{R}^n : f(x_1, x_2, ..., x_n) = c\}$

for some real number c.

3. What is importance of level sets?

- > Ans. The level set determines the shape of the function.
- 4. What terminology is used for level sets in Consumer Theory?
- > Ans. It is known as Indifference curves.

5. Define better set.

Ans. The better set of a point $(x_{10}, x_{20}, ..., x_{n0})$ is

 $B(x_{10}, x_{20}, \ldots, x_{n0}) = \{(x_{10}, x_{20}, \ldots, x_{n0}) : f(x_1, x_2, \ldots, x_n) \ge f(x_{10}, x_{20}, \ldots, x_{n0})\}.$

6. What do you mean by quasiconcave function?

> Ans. A function f with domain $X \subset \mathbb{R}^n$ is quasiconcave, if every point in X,

the better set B of that point is a convex set.

7. Comment on utility of second-order derivatives.

> Ans. Curvature of a function is described by the second-order derivatives.