An Introduction to Microeconomics
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Lecture – 47
Indifference Set

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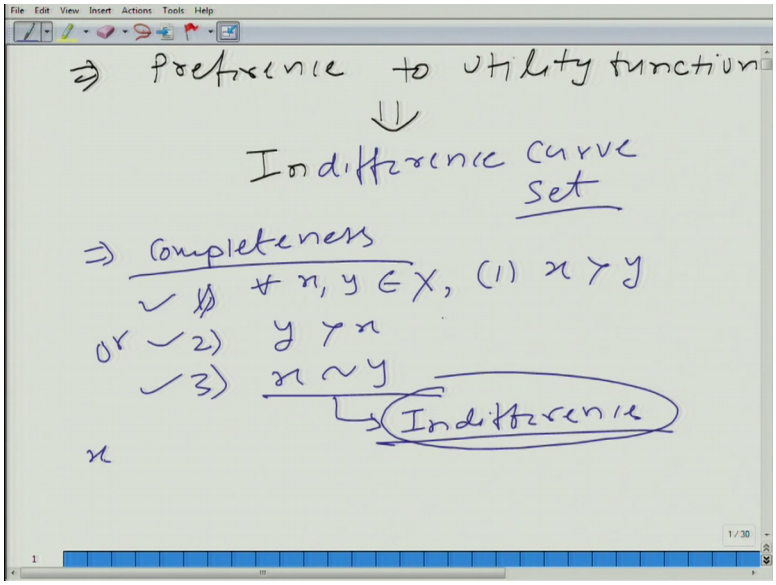

Now, we talked about from preferences to, preference to utility function and what we are going to do you can say either from preferences or from utility function we are going to talk about.

Student: Indifference curve.

Indifference curve or indifference set that is what we are going to talk about it. So, when we remember when we talked about completeness and then we learned about one of if your preference satisfies completeness then one of these three statement is true. And what are those statements? That if we pick any x y in the consumption set then we should be able to say, 1 x is strictly preferred over y or y is strictly preferred over x or you are indifferent between x and y.

So, here we are we have already learned about indifference at you are indifferent between these two bundles these two conjunction bundles. You do not distinguish between, of course so far we are not worried about monetary consideration or any other

thing, we are not talking about preferences over feasibility set, we are talking about preferences over consumption set. So, of course, we are not worried about affordability, we are not worried about availability, we are not worried about time constraint, we are talking about these things independent of our constraints. It is like that neither x you can also think in this way, neither x cost anything or y cost anything you are not worried about that at all. So, we have already talked about indifference.

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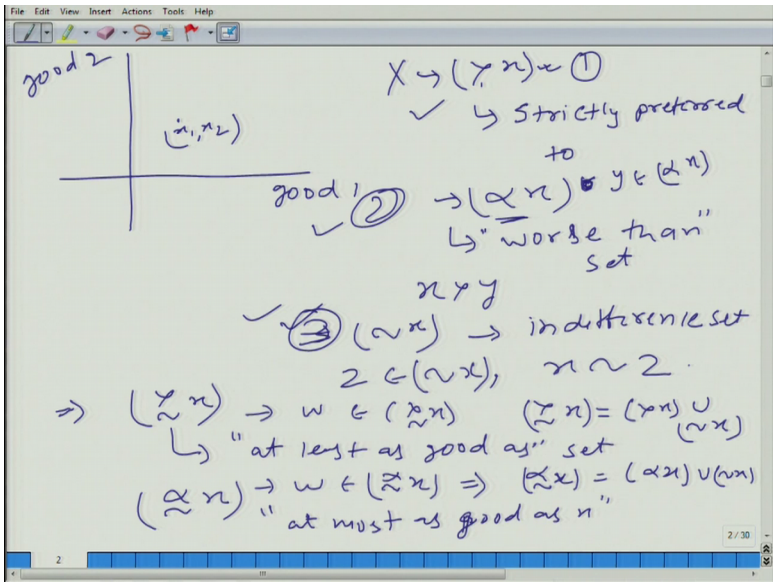

So, what we can do if we take x then let us say again come back to our two dimensional world and it is just for illustration and here we have good 1, here we have good 2 and x is x 1, x 2. This bundle will partition the consumption set into 3 mutually exclusive sets; and what do I mean when I say 3 mutually exclusive sets?

Student: They do not have any element in common.

They do not have any element in.

Student: Common.

Common and they also have other than this mutually exclusivity they have one more property.

Student: (Refer Time: 03:17).

That they completely.

Student: Cover.

Cover the entire consumption set. So, that is why it is a partition. So, what this is doing? This is partitioning x into 3 mutually exclusive set which completely cover the consumption set first I can talk about this a set. And what is this set mean? Where all the elements are.

Student: Both.

Are prefer, are strictly preferred to x. Take any element from this set and what would you get that element you would strictly prefer over x. So, this is called strictly preferred two set fine. And then second would be this symbol is nothing, but the reverse of this single symbol and what does this mean? This is worse then take any element in this set we can call it worse than set of course, this is not a very good name, but just to understand that if we take any element y, y that belongs to this set what would we get that y you prefer x strictly to in comparison to y. This is what you will get. And the third is of course, this is indifferent set. And here what will you get? Take any element z in this indifference set and what would you get; that you are indifferent between x and z, is it clear, fine.

Just quickly just we should also although not very relevant, but we can also do one more thing combine this set and this set, this is set number 1, this is set number 2 and this is set number 3. If we combine the elements of set 1 and 3. What would we get? Another set. When we combine the elements of two different sets what we get? We get another set, that is the union of the earlier two set. And what would be the property of that set?

Student: More prefer..

The property of this set would be that you take any element let us say here W belonging to. And what is this? Again let me just write it. This is nothing but.

Student: Scarcely these types of four diameters.

Intersection of these two set. And what we can call this set? At least as good as set or at least as preferred as set, so at least as good as set fine and similarly we can combine 2 and 3 what will we get?

Student: That more steps.

When we take any element W in this the new set this is at most as good as x. And of course, how do we get this? So, I cannot emphasize enough role of mathematics in economics, you know math is extensively used to understand the economic concept in economic fashion. I am not saying that if you do not use math you would not be able to learn economics of course, you would be able to learn economics, but learning would not be economical in the sense that to describe the same thing that you can describe in once with small mathematical notations you will have to write half page or one page or two pages long description to be precise. And so what mathematics does? It brings conciseness and precision to the economic theory and that is why we are using mathematics extensively and it helps us avoid all the confusion what we mean when we say something in economics.

So, it is part of the economics learning that you learn mathematics, basic of mathematics. So, we have done the partition and that is really nice what we got from preferences to indifference curve. Why I am saying, why I am ignoring all other sets? Why I am ignoring all other set up? Why I am not giving not describing preferences in terms of a strictly preferred to set or worse than set. Why I am saying that your whole preferences can be described in terms of indifference set. Because what you can do, let us say what we did we just picked x, we can pick y, we can pick z, we can pick and so on. And with x we will get one indifference set, with y we will get another indifference set, with z we will get another indifference set and the whole consumption set can be described as the union of these in different sets, is it clear; and so on.

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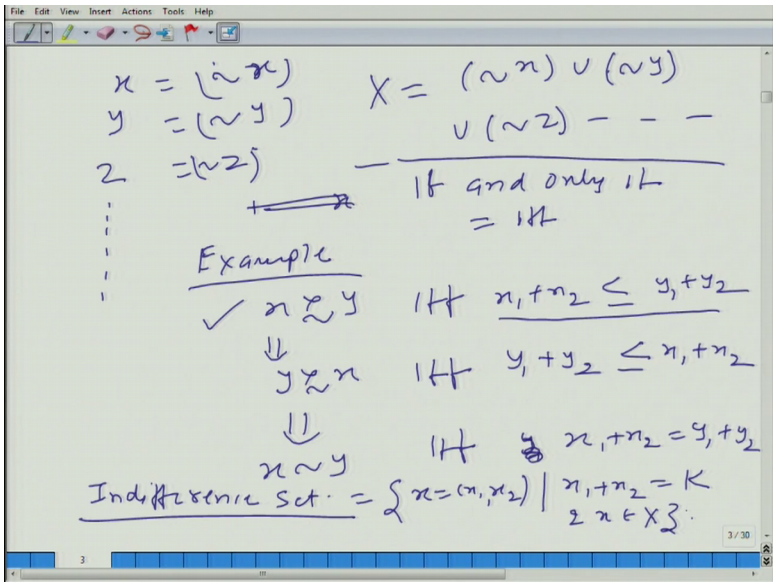

And this is very nice mathematics is very nice, its concise, its precise, but it is hard to understand also it would be really nice if we can express these concepts graphically, graph is lot easier to understand. But the problem with graphs is that we cannot have graphs if our consumption set is more than three dimensional, at most we go can go up to three good world and that is what we will do. But I already told you that most of the time two good world is good enough for our problem. So, let us learn the same thing using graph.

Let us go back to the example that I gave you earlier I talked about a preference of a person well who had some different sort of preference what we said that, he prefers x, he says that x is at least as good as y for him if x i, summation of x i or in this case because we are talking about two dimensional world it is just.

Student: x 1 plus x 2.

x 1 plus x 2 is less than or equal to y 1 plus y 2. Now, what we can do, from here we can figure out let us look at it, we can figure out that y is at least as preferred to x if y 1 plus y 2 is less than or equal to x 1 plus x 2 fine, and if we combine these two if both of these two are true then what do we get? A person is indifferent between x and y, if y 1 and of course, of course, let me write it first that if x 1 plus x 2 is equal to y 1 plus y 2, is it clear.

Now, let me also say that if for that person if this statement is true then x is at least as preferred as y. So, what we are basically talking about not just if, but if and only if, and if and only if is written as if in short. So, let me put one more f fine. So, what we are saying, it can be described the indifference curve in this particular problem what would be the indifference curve or indifference at forget about, I have not talked about curve yet. So, let us talk about indifference set. Can we describe the indifference set in this particular case? How can we describe? What can we say about indifference curve? Fine, it would be more basic property of this set.

You remember, how do we describe a set if you try to remember what you have learned in class 9th and 10th because I believe set is these days they introduced set theory in class 9th, 10th. So, how do you describe a set?

Student: It is a collection of.

Collection of, that is the description of set, that it is a collection of objects, any random collection of objects would be a set. But the two way we describe it, write it, one is that we enumerate all the elements of that set or second we give a property that is satisfied by all the elements of that set. There are two ways to. So, can we give any property for this set? x 1 plus x 2 is equal to constant, we can say, we can write here that in difference set is made of x which is equal to x 1 comma x 2, such that x 1 plus x 2 is equal to constant k it can be anything in any number any real number and x belongs to the consumption set, fine, is it clear.

Student: Yes.

This part is also important because if you do not, what would happen let us say k is equal to five then you may take x 1 is equal to 8 and x 2 is equal to minus 3. But that is not in the consumption set, so we will not talk about that particular bundle fine.