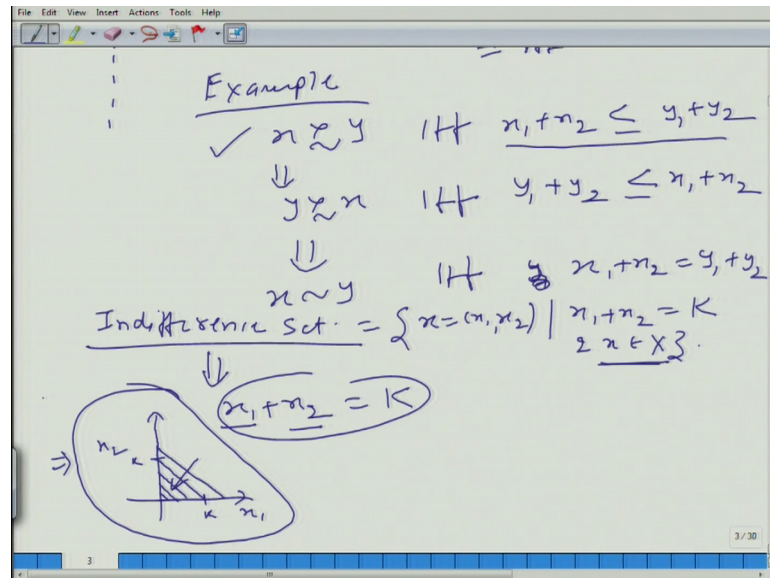**An Introduction to Microeconomics**
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Lecture – 48
Indifference Curve

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So, what we are getting or let us say by if we abuse this notation little bit what we can say that indifference set is given by x 1 plus x 2 is equal to k. All the bundles which if we add the quantity of good 1 and good 2 we get k would be on the same indifference curve. If we change the value of k we will get a different indifference curve, is it clear. Now, what we are saying that rather than describing it using set we can use graph to describe it. So, what we are saying, what do we mean by a indifference curve?

Student: Curve utility.

Curve passing through.

Student: The all the consumption.

All the consumption bundle such that they all give same level of satisfaction or same level of utility or same level of happiness to a particular consumer. And we can draw it

here, here is x 1, here is x 2. So, x 1 plus x 2 again it is a straight line and when x 2 is equal to 0 it means we are on the horizontal axis, in that case x 1 has to be equal to k.

Student: k.

Fine; and then when x 1 is equal to 0 we are on vertical axis and then we get x 2 is equal to k. And we know for a straight line this is an equation of a straight line, we know that we can draw a line a straight line using only to two points, knowing only two points on this straight line. Will just, and this is the, this is one of the indifference curve for this person. Now, tell me one thing do you think it is sufficient to draw just, one indifference curve will it give you the idea of this person preferences this persons preference.

Student: Yes sir.

One in this case it is may, but that is not always true. So, what do we need? We need at least a family of indifference curve rather than drawing just one we should draw few more of course, number of indifference curve required would depend on the different person. But typically what we do if there is regularity in the pattern what we do that we draw at least 3 4 indifference curve if there is regularity in the pattern. And then a family of such indifference curve here we can rather than calling it indifference curve we can call it indifference line also, but typically it is not always a line.

So, we call it indifference curve and now we take a family of indifference curve when your when someone's preference exhibit some regular pattern and then a family of indifference curve would be called indifference map fine. And then you change the value of k, you will get this, this, this.

Student: Sir, indifference curve is a utility function.

Indifference curve is not.

Student: I mean the it (Refer Time: 03:39) the.

What it represents is that all the bundles, all the consumption bundle on the same indifference curve.

Student: Has.

Give the same level of utility it does not represent the utility function. But when you have a family of indifference curve now it indicates utility, it indicates what you want you do not need utility basically you need preference, you need to describe preference. So, now, if you have a family a large, some you know some indifference curve you are able to describe the preference of this particular person.

So, you are able to describe his utility and so you are able to describe his preference or other way fine. But do you think it is sufficient? Rather than if I do not tell you this I just tell you this, do you think it is sufficient rather than giving you x 1 plus x 2 is equal to k. I give you these diagram. Do you think by looking at this diagram you will be able to express the, you will be able to describe the preference of this particular person.

Student: (Refer Time: 04:48).

One more thing we need because we do not know the direction of its increase and decrease. So, sometime you should put an arrow that it is decreasing or it is increasing in this particular direction. Now you fully know, is it clear? So, now, we have learned about indifference curve and indifference map. Now, let me ask you can we have for per let us take an individual can his two indifference curves intersect each other. So, what I am saying do you think it is a possibility of course, the theorem is more general than what I am describing because I am describing here only in two-dimension, its true for n dimension.

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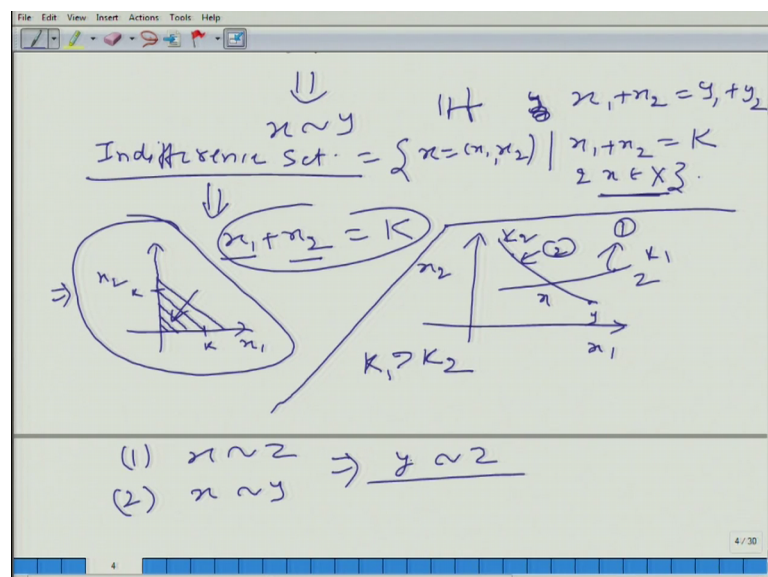
Here we have x axis good for good 1, here it is for good 2 and let us have two diagram. Do you think it is possible to have something like this? Why?

Student: Because that implies that at one point x 1.

So, let us say here we have x let us not put 1, just x, here we have y and here we have here we have z.

Student: Because sir, these are two different curves.

Ha?

Student: But 1 has higher utility then the other. So, like if we take three points 1 of 2 on the x and z.

Hm.

Student: And 1 over there. So, a point which is above that cannot have utility less than that want to say that.

So, basically you are right. So, what we are doing here is that let us say we are talking about that these two curve are different, these two curve they are not representing the same level of utility same level of satisfaction they are representing different level of satisfaction. So, what we can say without loss of any generality that let us say that it represent k 1 level of utility and this represent k 2 level of utility and without loss of any generality k 1 is greater than k 2. It does not matter when you take k 2 is greater than k 1. What we are saying is that k 1 cannot be equal to k 2 because we are talking about two indifference curve.

So, now what is happening, let us look at on let us say this is indifference curve 2 and this is indifference curve 1. Let us look at indifference curve 1, what we get that this person is indifferent between x and z. Now, let us look at the indifference curve 2. This person is indifferent between x and y, because x is on both of these indifference curve. So, can we say can you prove it of course, you know just by looking at it can you prove it that now because of this x this person is indifferent between x and.
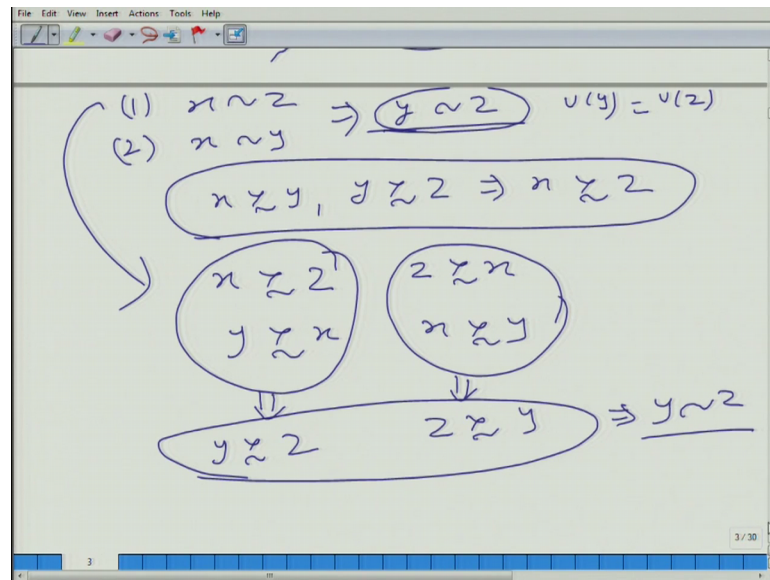
Student: y.

y indifferent between y and.

Student: z.

z. Can you prove it?

Student: Transitivity.

Transitivity, but transitivity z does not say anything about transitive what does transitivity say.

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That when x is at least as preferred as y and y is at least as preferred as z then x has to be at least as preferred as z. This is the transitivity axiom.

Student: Both.

Yes. So, that is what I am just going to show you for one example. How do we get this? This implies that x is at least as preferred as z and z is at least preferred as x. Both of these are true. Then we get this person is indifferent between x and z. Similarly what we get here is let me write here little differently, this person is indifferent between y, y is at least as good as x and x is at least as good as y. Now, combine these two what will you get? That this person prefers y; at least as much as.

Student: z.

z. And from here what we get? This person prefers z at least as much as y and when we combine these two what do we get this person is indifferent between y and z. So, from here we can reach to this person is indifferent between y and z. So, what does it mean? That in that case utility associated with y and utility associated with z should be equal, but what we have assumed that k 1 is greater than k 2; that is not feasible.

So, why we are getting this sort of result? Because what we have assumed is wrong. So, using contradiction we prove that two indifference curve representing different level of utility cannot intersect each other, it is clear.