**An Introduction to Microeconomics**
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Lecture – 41
Preferences as a Mathematical Construct

We talked about three properties and those three properties were completeness, reflexivity and transitivity, and what did we say that if our preference satisfies these three properties then we can talk about our choice, our selection of a particular bundle of good in consistent fashion. And I had also given you an example if preference does not satisfy a particular property transitivity, then in a way you will be losing money that I had shown you. So, before we begin new thing I want to satisfy that a mathematical, I want to describe a simple mathematical construct that what is preference.

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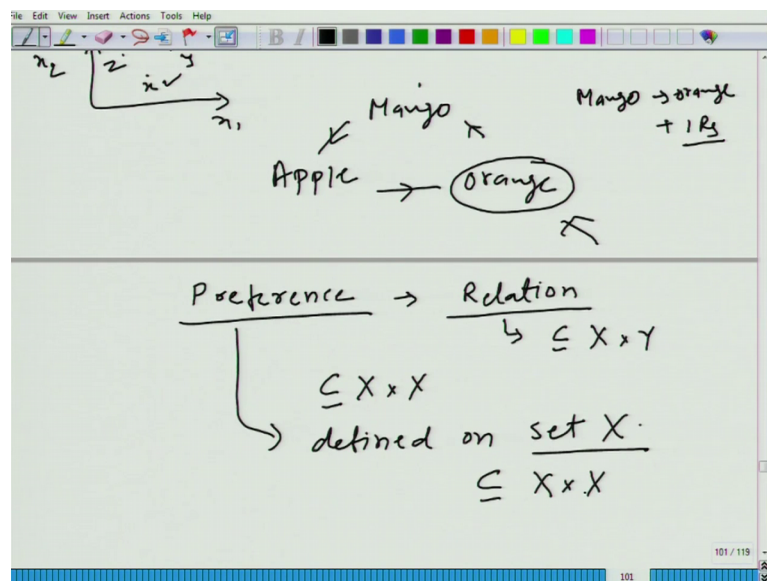
We talked about it in economic sense. let us talk about it in mathematical sense. For just few minutes can we call preferences a kind of relation. what is the relation by the way, if you do not know about it, it would not hamper your understanding of next topic, but if you understand this it is fine. Relation is nothing, but a subset of Cartesian product. What is Cartesian product.

Student: X

X multiplied by 1; where X and Y are two different sets. Here what we are doing? We are picking two elements from conjunction set. These two elements represent two different.

Student: Consumption bundle.

Consumption bundle and. So, I can say that we are talking about a very particular kind of relation that is defined on X multiplied by X, or in other word this preference is defined on set X, and what does it mean? Defined on set X means this is a subset of X multiplied by X. Relations are very simple like Mohan is a brother of Sohan. So, its a relationship, Mohan is related to Sohan or Romeo loves Juliet, its a relationship ok.

So, we are trying to represent those relationship using mathematical notation. So, here we are talking about preferences in terms of particular mathematical relation. What kind of relation that a set, an element of a set is related to the same element or the another element of the.

Student: Same set.

Same set. We are not changing the set. So, consumption set is remaining, the same fine, and we talked about 3, that this particular relation should satisfy three different properties; completeness, reflexivity and transitivity.

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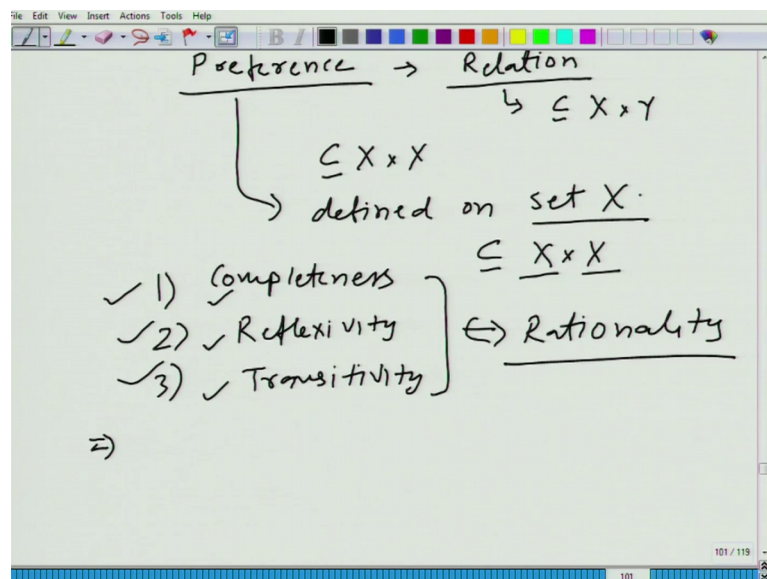
So, we say just a definition that I am going to use. We say when a preference relation satisfies these three relations, then we call this preference relation rational, when a preference relation or of course, we are talking about, or any relation which satisfies these three accents, then we call that relation.

Student: Rational.

Rational. So, to satisfy rationality in economics when I say that mister X has rational preferences or in short mister X is rational, what do we mean that mister X preference satisfies completeness, reflexivity and transitivity accent, these leads to rationality. Let me ask you, forget about economics for a moment, when we talk about rationality in day to day life, what do we mean when we say that mister X is rational.

Student: Every decision we take is for our benefit.

I am not I think, for.

Student: Our benefit.

For. you are talking about yourself. So, you are rational when you take if all the decision for your own benefit I would say that term would be people would say that you are a selfish person not a rational.

Student: Sir he is logical.

Student: He is logical

Someone who is logical then he is called.

Student: Rational.

Rational someone who is sensible someone uses reasoning to reach to a decision or someone who has sound judgment then we call that person rational in our day to day life, but in economics what we are saying mister X is rational if his preferences satisfy completeness, reflexivity and transitivity properties. So, are these two the same thing or they are different.