An Introduction to Microeconomics
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Lecture - 62
An Example with Quasi Linear Preferences

Now, I am going to give you another problem where we will use mathematical, some mathematical concept that we have learned to solve, that one is also difficult.

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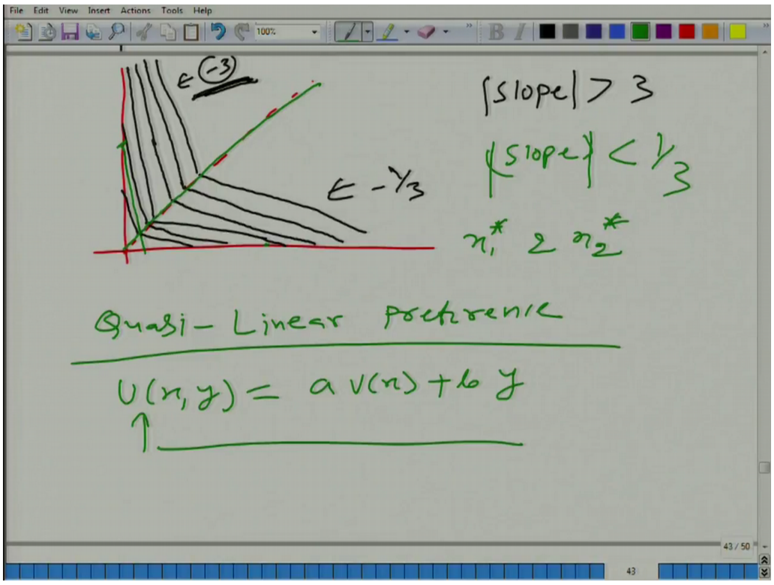

Now, we are talk, going to talk about something called quasi linear preferences, let us say in 2 good world preference is called quasi linear if utility function representing this preference can be written as all and b by. What it means is that utility function is linear in one of the arguments, are not linear in the other argument then we say the utility function the utility function represents quasi linear preference fine, is it clear.

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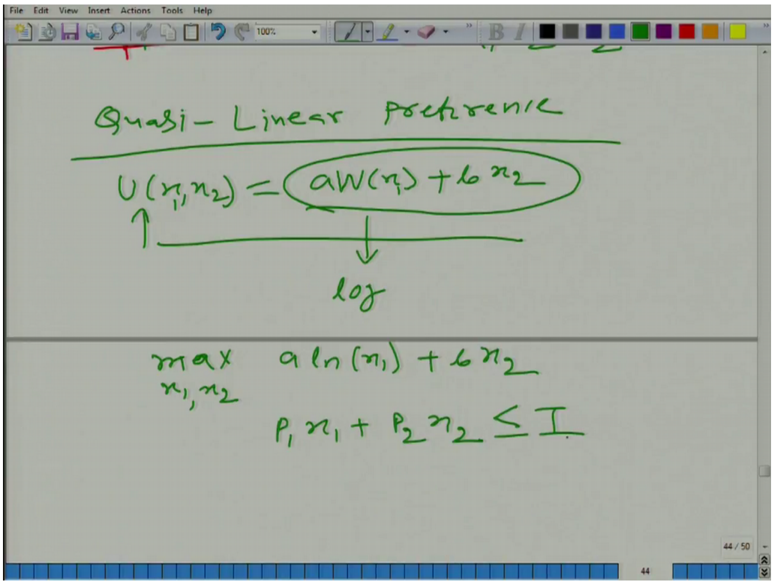

So, now let us take a problem where, what we have is maximise a lets instead of vx just for simplicity let us take log, a log x plus by or if we are using x 1 sorry .

Student: (Refer Time: 01:34).

V is a function it is not it is not same v as the earlier one, if it is may confusing you take it as w that it is a function of x, what I mean to say an individual is said to be having quasi linear preference if the utility for function representing his preferences can be written in this particular form and what is this particular form that it is linear in y and also this is addictively separable in x and y. That x and y are not appearing as in a multiplicative term, they are addictively separable then the preference is called quasi linear preference fine is it clear.

So, let say its x 1 and it is x 2 and here we have maximise this is the last example we are talking about and then we will move to next topic x 1, x 2 a l n x 1 this is natural log ln is natural log and let say b x 2 fine and the budget is p 1, p 1, x 1 p 2, x 2 and it should be less than or equal to r. How will you proceed, indifference curve draw indifference curve how would it look like of course, you can solve it using indifference curve later on we will see that, but right now I want to give you flavour of mathematical techniques. So, let us solve it using the concept of marginal rate of substitution the concept that we have learned earlier ok.

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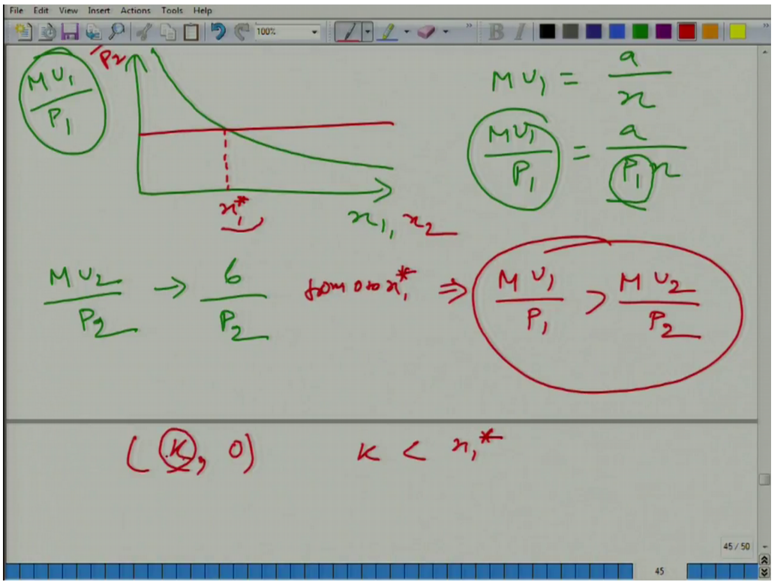

So, what we can see here. Let say here we have amount of x 1 and what we should put here is m u 1 divided by p 1 and what is this m u 1 divided by p 1 the gain in utility if you spend 1 rupee on x 1. So, to do this what we need we need to get m u 1 and what is m u 1 a by x and m u 1 by p 1 will be a by p 1 x is not it. So, how will it look like p 1 is of course, given to you, you do not have any control over p 1 it is parameter that does not change in short period you can change it as modular you can play with it by you can study the effect of change in p 1 on this entity, but typically in its given to you ok.

So, how would it look like 1 by x graph something like this fine and how about let us calculate mu 2 divide by p 2, again this is for good 2 and what do we get how much is mu 2 b b divided by p 2. So, how will it look like it is the same straight line horizontal line.

So, what we are doing is here we are drawing first with respect to mu 1, p 1 with respect to x 1 and then m u 2, let me use the different colour m u 2 divided by p 2 and this is this is with respect to x 2 and deliberately I have put it on the same graph. So, what it means is that up to this level lets I am calling in it x 1 star why it will become clear immediately from 0 to x 1 star, m u 1 p 1 is greater than m u 2 p 2, no matter what is the level of the second good it is independent of the second good fine.

What does it mean? What does this equation mean what will be your interpretation for this equation.

Student: He would buy more of first good.

More of first good he will buy only the first good up to this level, unless this level is achieved we will not buy the second good because let say right now he has k comma 0 and k is less than x 1 star. So, it makes sense for him to spend one more rupee on good 1 rather than on good 2. So, he will keep on buying good 1 you can think you can stretch it little further you can say he is starting from 0 comma 0.

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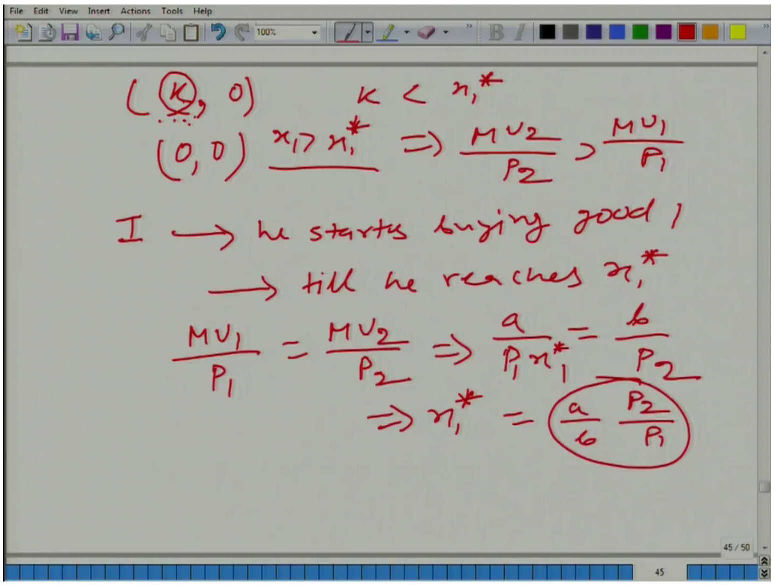

And of course, first unit he should buy of good 1 why? Because mu one divided by p 1 is greater than m u 2 divided by p 2 and he will keep on buying good 1 until he reaches the level of x 1 star and once it reaches the level of x 1 star and he is still has some money left because there is a possibility income is again a parameter, income is given to him there is a possibility that given his income is not able to buy x 1 star of good 1. If he is not able to buy x 1 star of good 1 in that case is optimal level of consumption would be the maximum amount of good 1 he can buy and 0 amount of good 2 is it clear.

But he second condition, second situation is that he has let us say he has already bought x 1 star amount of good 1 and he still has some money left, now what is happening that in after beyond this beyond x 1, greater than x 1 star m u 2 divided by p 2 is always greater than m u 1 divided by p 1. So, it means that once he reaches to the level of x 1 star he would no longer buy any more of good 1 and he will start buying good 2. So, what is happening here this is a very nice situation, if you understand it that he has income what he do he starts buying good 1 and he keeps on buying good 1 till he reaches, till he reaches x 1 star and how can we get the x 1 star we have any way to figure out x 1 star. How that at this level its m u 1 divided by p 1 is equal to m u 2 divided by p 2 and we have value for both of these entities and how much is m u 1 divided by p 1, a by p 1 x and m u 2 divided by p 2 is b by p 2. So, it is independent of y.

So, x one this gives us x 1 star and x 1 star is a divided by b p 2 divided by p 1. So, unless he accumulates this amount of good 1 he will not buy good 2 and to by this much of good 1, how much income does he need?

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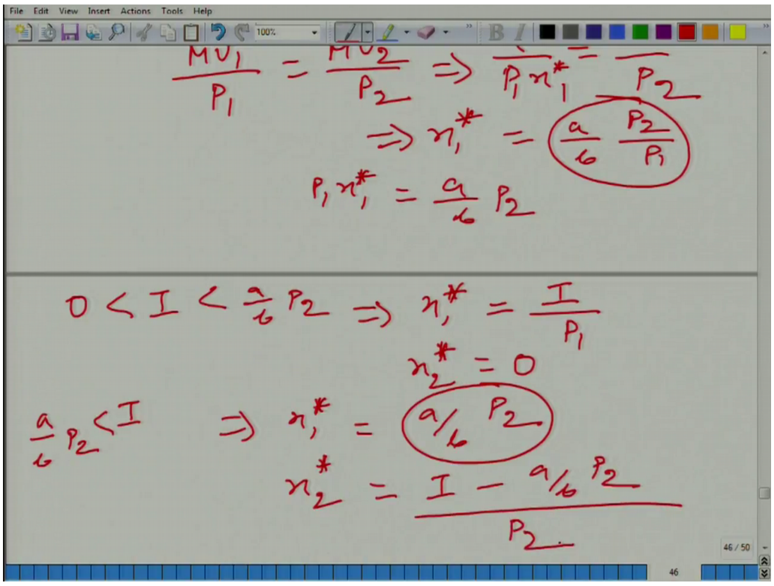

P 1 x 1 star and that is a by b p 2. So, what we are saying that if income is less than a by b p 2 and of course, greater than 0 then he will buy in this case x 1 star is going to be equal to I buy p 1 because he will buy only good 1 and x 2 star is going to be equal to 0 fine is it clear.

What if he has, what if it is more than a by b p 2 what happens in this case, x 1 star is going to be equal to a by b p 2 and how about x 2 star because this much is going to buy good 1. So, it is going to be I minus divided by p 2.

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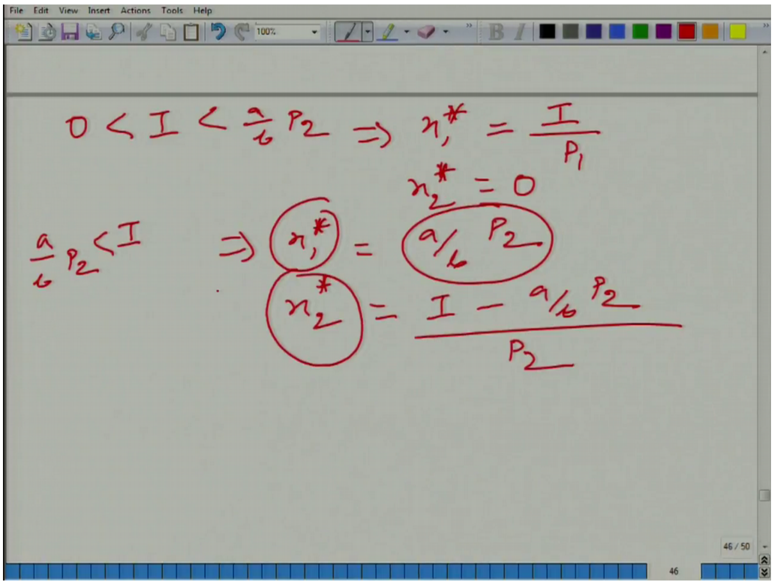

So, can you say anything can you make any comment about this scenario that x 1 is kind of a necessary good, you know this person does not consume any of good 2 unless he has sufficient amount of good one, fine that is the situation described by this particular kind of utility function is it clear.