An Introduction to Microeconomics
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Lecture – 19
Producer Surplus

Now, let us move to the Producer Surplus.

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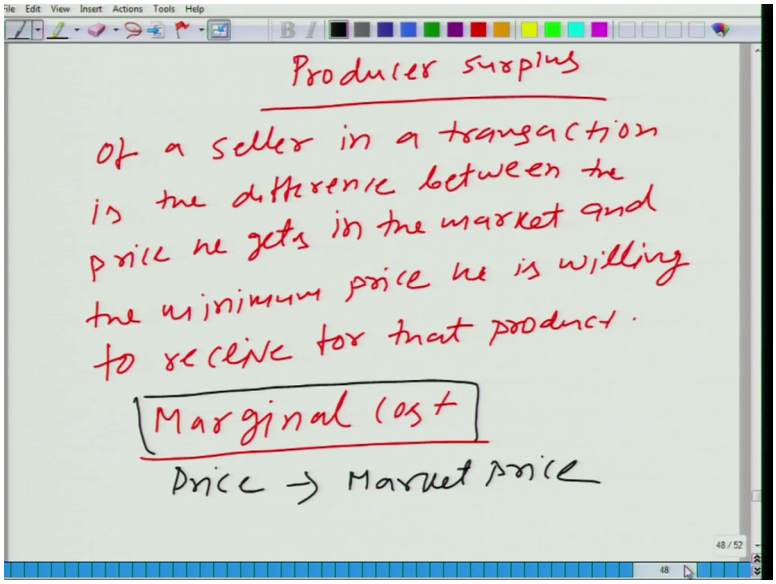

In a transaction is the difference between the price he gets in the market and the minimum price he is willing to receive for that product. So, producer surplus of a seller in a transaction is the difference between the price he gets in the market and the minimum price he is willing to receive for that product. What is, from where do we get this minimum price?

Student: Margin ma (Refer Time: 01:32).

It is his marginal cost, it is his marginal cost. Seller would not like to receive a price that is less than his marginal.

Student: Marginal.

Cost and price, what is the price he receives in the market? That is the market price. So, little bit you know little bit about cost, later on when we start talking about producers theory we will talk more about the cost, but just basic little bit about the cost.

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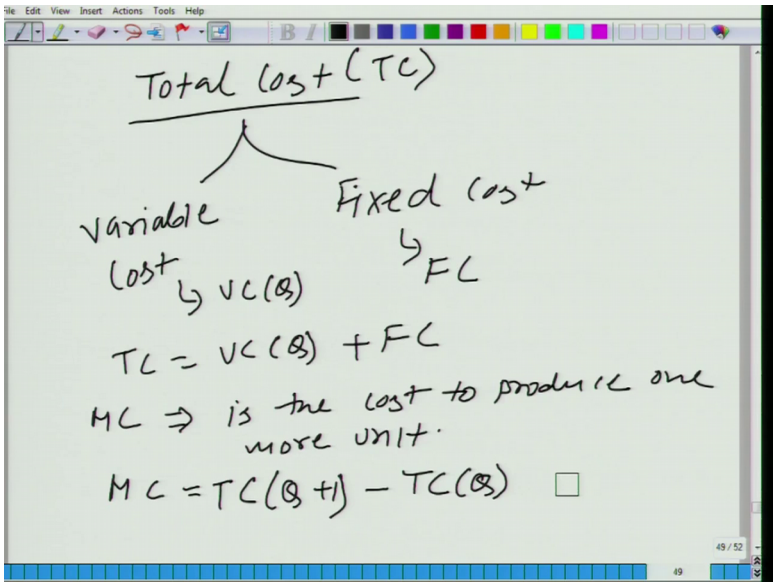

What we have is the total cost total cost is a cost that you incurred to produce let us say Q amount of the good time that is the total cost. We can divide it into two part fixed cost and variable cost. What is fixed cost? The component of the total cost that does not vary with the quantity produced by the farmer produced by the producer, why do we get the fixed cost.

Let us think about someone think about a company producing chewing gum that company will have a CEO does not matter whether the company produces 5 chewing gum or fifty thousand chewing gums the company will have probably one CFO also. So, these would be or let us say it will have a building also where the chewing gum is produced whether you produce 5 chewing gum or 50 chewing gum or 500 chewing gum does not matter. You need a place to produce it and to the certain large extent that you do not need to increase the size of the place as long as you do not need to change by change as long as your cost does not change the component of course, that does not change if you increase or decrease the quantity that component is called fixed cost it is independent of Q.

Student: (Refer Time: 03:44) sir.

And variable cost is a function of.

Student: Q.

Q if you produce more you will have higher variable cost. So, this is we can say variable cost is a function of Q and this is fixed cost small digression and now marginal cost as I said earlier let me remind you again its quite important concept - MC is the cost to produce one more unit at least that is how we are starting. So, what we can say that MC is total cost, if this is represented by total cost marginal cost is nothing, but total cost of producing Q plus 1 unit minus total cost of producing Q unit. We can write it like this also.

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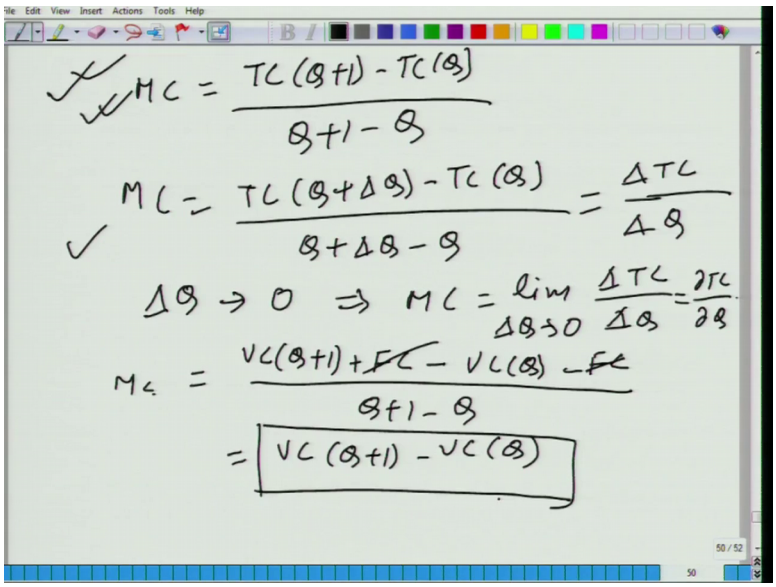

And more as I said earlier in words I am telling you today mathematically that rather than thinking about change in terms of one unit we can also think about terms in a.

Student: Q (Refer Time: 05:27).

Small smaller units and that smaller unit is let us say delta Q. So, what we can say the better definition would be marginal cost is nothing, but Q plus delta Q where delta Q is the very small entity and this is Q plus delta Q divided by Q. And this we can write as delta C or delta TC if you want and this is delta Q and if you know calculus we will use the concept of limit and if you do not know calculus do not worry about it you can ignore

the part what we can do is that we can take delta Q tending to 0. So, what do we get then MC is equal to limit delta Q tending to 0 delta TC delta Q and this is nothing, but the.

Student: Partial.

Partial derivative of total cost with respect to Q fine. So, that is why these two definitions are indicate the same concept. This one is more precise, but this is used when we are describing words because this is more convenient to think the changes in terms of one unit rather than thinking in terms of change in infinitesimal unit very very small unit and that also change is going to 0, at least tending to 0. So, that is why in words will keep on using this concept. And also you should notice that we are talking about marginal cost let us write this total cost in terms of fixed cost as well as variable cost.

Student: Variable cost.

So, what we get here the total cost we can write it as variable cost for Q plus 1 unit plus fixed cost. Remember fixed cost does not depend on number of units. So, we will just write as fixed cost and what we will get here total cost for Q unit and that again will be divided.

Student: (Refer Time: 07:47).

Into two component variable cost for Q unit and fixed cost for Q units that is again going to be the same as earlier divided by Q plus 1 minus Q. So, this will get canceled and what you have basically is VC Q plus 1 minus VC Q. So, what we can say that marginal cost is nothing, but equal to variable cost producing one more unit.

So, now the concepts that the graphs that we used what we can let us say that the marginal cost is gradually increasing.

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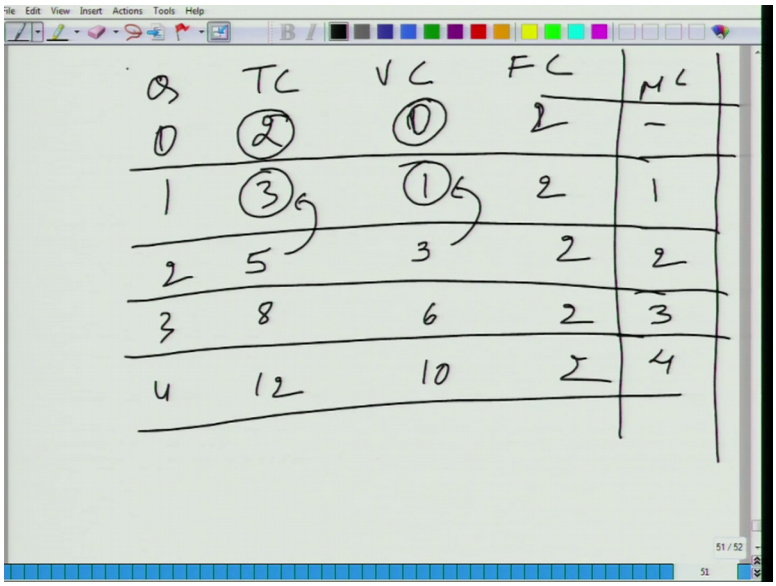

To produce first unit you need to spend 1 rupee, to produce second unit from first to second unit 2 rupees. Let me here the quantity, total cost and variable cost. So, from 0 to 1 total cost is and here we have fixed cost 0 total cost is let say 2 rupee variable cost is 1 rupees, fixed cost is 1 rupee sorry; variable cost is 0 and the fixed cost is 2 because we are not producing anything is going to be equal to 0.

Student: 0.

While you are still because even though you are not producing anything, but you have that building you have to pay the rent for the building you will get into more details about it little later when we start talking about producer theory.

Now, from 0 to 1 what you have is let say fixed cost would remain same, it will be always be equal 2 as it is fixed cost and variable cost is let us say now you have 1, here you have 3, here you have 6, here you have 10, again made up number. What will be your total cost? 3, 5, 8 and 12 and here we can write the marginal cost. Here there will be no marginal cost what is the marginal cost here to produce the 1 unit.

Student: 1.

1. How can we calculate the marginal cost either we substract this 2 from 3 or we substract this 0 from 1. In both cases we will get one similarly how we can get from here we subtract 3 from 5 or 1 from 3 to get 2 and similarly here we get 2 here we get 4 fine.

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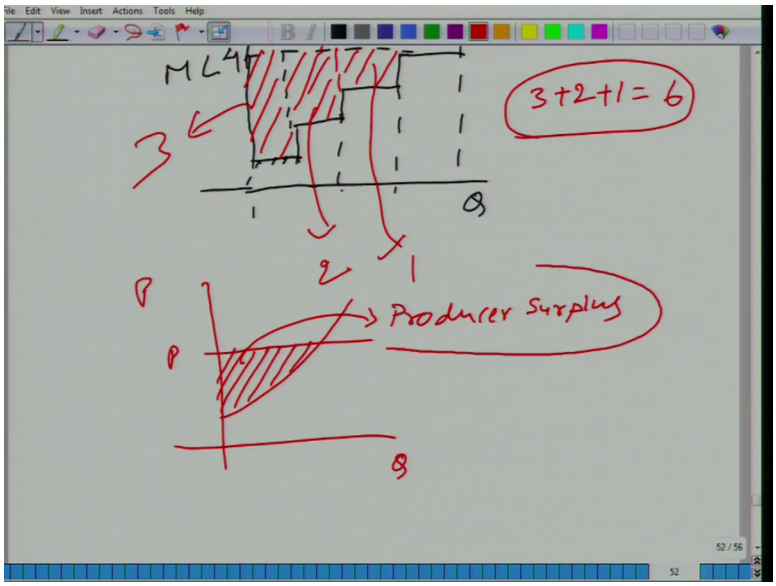

Now, we can draw marginal cost versus quantity how would it look like.

Student: Increasing.

1, 2 something like this it will look like its increasing. Now, let us say market price is 4, 4 rupees, how many units will be transacted in the market upto 4 units because marginal cost is equal to 4 for the fourth unit. So, upto 4 unit will be transacted in the market. What will be gain from that selling the first unit? If you are selling the first unit what how much is going to be the gain.

Student: 2.

Student: 2.

2, how?

Student: 1.

When you sell it in the market, market price is 4 rupees. How much is your cost?

Student: (Refer Time: 12:04).

1 rupee, how much is going to be the gain?

Student: 3.

3, here it is going to be equal to 3 when you sell the second unit how much did it cost you to fabricate this extra unit.

Student: 2.

2, how much are you going to get paid in the market? 4.

Student: 4.

So, your gain is.

Student: 2.

2, and this is 2, and then 1.

Student: 1.

And then 0. So, how much will be the total surplus for you 3 plus 2 plus 1.

Student: 6.

6. So, one thing that I did not mention earlier let us go back to the demand curve.

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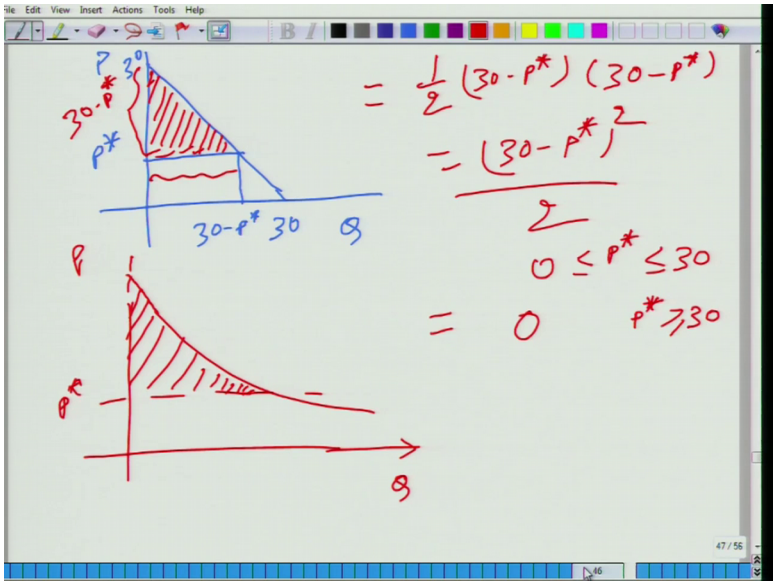

I have been drawing notice that I have been drawing whenever I am saying demand curve what I am drawing, I am drawing the marginal value with respect to quantity. In

the in the beginning I had already shown that marginal value with respect to quantity is basically inverse of demand curve, but when we draw the two curves are the same that is why I have been using these things interchangeably. Similarly in case of the supply curve what I have drawn the marginal cost versus quantity, but this also gives the graph also gives the supply curve you understand. So, do not get confused between these two, that we have already established in the last class.

So, in other word when we have a continuous supply curve how would it look like, some upward sloping curve and how can we give the producer surplus, we will take the market equilibrium price and this area gives you producer surplus.