Two Applications to Economics: Consumers' Surplus and Income Distribution

Suppose you could purchase a product for less than you were willing to pay. The "savings" between what you actually had to pay and what you were willing to pay would be a benefit to you. If we added up this difference for all of that product during a particular time period, the total savings would be called **consumer's surplus** for that product.
The consumers' surplus is a measure of the benefit that consumers get from an economy where competition keeps prices low.

More precise Definition of Consumers' Surplus

A demand function represents the relationship between the price of an item and the quantity sold at that price. Typically, as price rises, demand falls. In other words, there is an inverse relationship between price and quantity.

The demand curve gives the price that consumers are willing to pay, and the **market price is what they do pay**. If the market price is below the demand curve, the consumers are getting the benefit. In this case, the amount by which the demand curve is above the market price measures this benefit or "surplus" to consumers. We add up all these benefits using integration to get consumers' surplus.

(Consumers' Surplus)= $\int_0^A [d(x)-d(A)]dx$

Example: #6

Producers' Surplus:
If a producer can sell a product for more than he absolutely must to be able to stay in business, he is receiving a benefit. Producers' Surplus measures this benefit.

Supply function

(Producers' Surplus)= $\int_0^A [s(A)-s(x)]dx$

Example:#10

The demand at which supply and demand curves cross is called the **market demand**
Example: #14

No matter where you live, some people make more money than others. Economists use what is known as the Lorenz Curve to measure the "gap" between the rich and the poor. This curve represents the proportion of total income that is earned by the Particular proportions of the population.

We may compare the Lorenz Curve with two extreme cases of income distribution.

1. Absolute equality of income—Everyone earns exactly the same income

2. Absolute inequality of income—Nobody earns any income except one person

To measure how the actual distribution differs from absolute equality we find the area between the actual distribution and the line of absolute equality y=x. Since this area is at most .5, we multiply by 2 to get an answer between 0 and 1, where 0 means absolute equality and 1 would be absolute inequality.

Gini Index= $2\int_0^1 [x - L(x)]dx$

Example: #20