

(5)

Notes on ICNS 100

Chapter 3: 3.2 Applications and Linear Functions

1. Law of Demand: For each price level of a product, there is a corresponding quantity of that product that consumers will demand (that is, purchase) during some time period. Usually, the higher the price, the smaller is the quantity demanded; as the price falls, the quantity demanded increases. Thus, a demand curve typically falls from left to right.
2. Law of Supply: In response to various prices, there is a corresponding quantity of product that producers are willing to supply to the market during some time period. Usually, the higher the price per unit, the larger is the quantity that producers are willing to supply; as the price falls, so will the quantity supplied. Therefore, a supply curve usually rises from left to right.
3. A function f is a linear function if and only if $f(x)$ can be written in the form $f(x) = ax + b$, where a and b are constants and $a \neq 0$.

Example Find $f(x)$ if f is a linear function that has the given properties.

(a) slope = -2 and $f\left(\frac{2}{5}\right) = -7$

(b) $f(-2) = -1$ and $f(-4) = -3$

Example Suppose consumers will demand 40 units of a product when the price is \$12.75 per unit and 25 units when the price is \$18.75 each. Find the demand equation, assuming that it is linear. Find the price per unit when 37 units are demanded.

Example Suppose a manufacturer of shoes will place on the market 50 (thousand pairs) when the price is 35 (dollars per pair) and 35 when the price is 30. Find the supply equation, assuming that price p and quantity q are linearly related.

Example A new television depreciates \$120 per year, and it is worth \$340 after four years. Find a function that describes the value of this television, if x is the age of the television in years.

Assignment: Do Problems 3.2: 4, 8, 10, 16, 20, 26.