Micro

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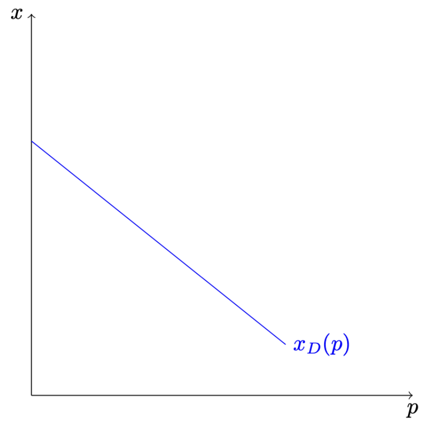
Academiejaar 2023-2024

Contents

1 Demand

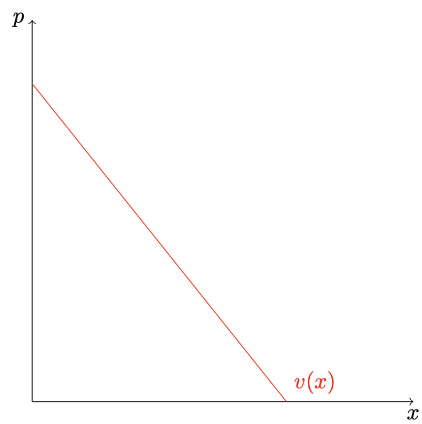
Theorem 1.1: Demand function

- The demand function $x_D(p)$ illustrates the demand for a certain good at a certain price, see the following illustration:



The demand function is decreasing: $p \uparrow \Rightarrow x_D(p) \downarrow$

- The inverse demand function $v(x)$ illustrates the consumers willingness to pay for a good, see the following illustration:



An agent will be willing to buy more as long as $v(x) > p$.

Theorem 1.2: Utility function

The utility function illustrates the total monetary value of total consumption:

$$u(x) = \int_0^x v(s)ds$$

We can also refer to $v(x)$ as the agent's **marginal utility function**, since

$$u'(x) = v(x).$$

Since we required $v(x)$ to be decreasing in x, this means that $u(x)$ is concave:

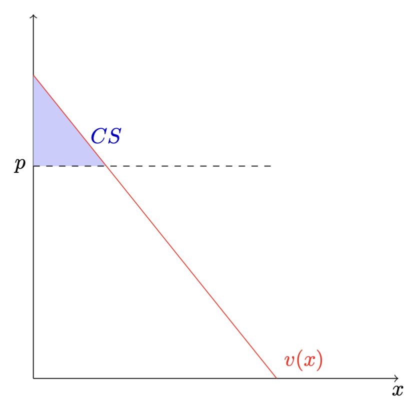
$$u''(x) = v'(x) < 0.$$

Theorem 1.3: Cosumer surplus

The consumer surplus CS is the consumer's utility net of the monetary cost of consumption:

$$CS = u(x) - px = \int_0^x v(s)ds - \int_0^x pds = \int_0^x (v(s) - p)\, ds$$

Graphically, the consumer surplus is definedned as the area that lies below the inverse demand function, but above the price line:



When deciding to buy a good, an agent is maximizing consumer surplus, i.e., the net benefit of consumption:

$$\max_x \; CS = \max_x \; u(x) - px$$