

Two equals one plus one.

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The equilibrium quantity Q^* occurs where the supply and demand curves cross.

At the equilibrium quantity Q^* ,
 $MC(Q^*) = MB(Q^*)$.

$V = \{\text{attack, retreat, surrender}\}$.

$A = \{n : n \text{ is an even number and } n < 100\}$.

$\{1, 2, 3\} = \{3, 2, 1\}$.

singleton: $\{\text{Christmas pudding}\}$
 $\neq \text{Christmas pudding}$.

tuple when the order matters
 $(1, 2, 3) \neq (3, 2, 1)$.

(Christmas pudding, £5).

2 items - "pair"

3 items - triple

n items - n -tuple

If a is an element of the set A , we write $a \in A$. If not, we write $a \notin A$.

Special sets:

* the empty set $\emptyset = \{\}$.

* whole numbers, also called natural numbers, $\mathbb{N} = \{0, 1, 2, 3, \dots\}$.

* integers, $\mathbb{Z} = \{\dots, -1, 0, 1, 2, \dots\}$
from "Zahlen" in German.

* rational number, $\mathbb{Q} = \{\frac{p}{q} : p \in \mathbb{Z}, q \in \mathbb{N}, q \neq 0\}$.

* real numbers, \mathbb{R} , includes $\sqrt{2}$, π .

* non-negative real numbers \mathbb{R}_+
 $= \{x \in \mathbb{R} : x \geq 0\}$. $\mathbb{R}_{++} = \{x \in \mathbb{R} : x > 0\}$.

* intervals: $[a, b] = \{x \in \mathbb{R} : a \leq x \leq b\}$
 $[a, b) = \{\dots a \leq x < b\}$.

Subsets: $A \subseteq B$

$A = B$ if $A \subseteq B$ and $B \subseteq A$.

Cartesian products: $\{1, 2\} \times \{a, b\}$
 $= \{(1, a), (1, b), (2, a), (2, b)\}$.

"the" definitions:

- might not exist, eg: $\sqrt{-1}$.
- might not be unique, eg: $\sqrt{4} = 2?$
- otherwise, "well-defined". eg Let $x = |t|$.

Functions $f: A \rightarrow B$
domain \nearrow \nwarrow co-domain

For example $f(x) = x^2$ is a function
 $f: \mathbb{R} \rightarrow \mathbb{R}$.

Range(f) = $\{f(a) : a \in A\}$.
image of a