Part II

Foundations

Vocabularies

$a \cdot b$ "a times b"
"a multiplied by b"
"a into b"

$\frac{a}{b}$ "a divided by b"
"a by b"
"a over b"

(a: numerator (Zähler), b: denominator (Nenner))

a^b "a raised to the b-th power"
"a to the b-th"
"a raised to the power of b"
"a to the power of b"
"a raised to b"
"a to the b"
"a raised by the exponent of b"

Vocabularies

$n!$ "n factorial"

$\binom{n}{k}$ "n choose k"

x_i "x subscript i"
"x sub i"
"x i"

$\log_b a$ "log to the base b of a"
"log a to the base b"

$$f : X \to Y, x \mapsto x^2$$

f is a function that maps from domain (Definitionsbereich) X to codomain (Zielmenge) Y. The set $\{y \in Y \mid \exists x \in X : f(x) = y\}$ is the image or the range of the function (Bildbereich/Wertebereich).

3 Goals

- Gain knowledge about efficient algorithms for important problems, i.e., learn how to solve certain types of problems efficiently.
- Learn how to analyze and judge the efficiency of algorithms.
- Learn how to design efficient algorithms.