Part II

Foundations

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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).

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Vocabularies

```
a · b "a times b"
    "a multiplied by b"
    "a into b"
    "a divided by b"
    "a by b"
    "a over b"
    (a: numerator (Zähler), b: denominator (Nenner))
    a<sup>b</sup> "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 to the b"
    "a raised to b"
    "a raised to b"
    "a raised by the exponent of b"
```

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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.