

## Summary: Lecture 7

Summary for the chapters 9.1 and 9.2. [1]

### NP-Completeness

#### Lanugage $L$

$L = \{x : (x, y) \in R \text{ for some } y\}$

$L$  gets an input  $x$  and finds a  $y$  with  $((x, y) \in R$  and the relation  $R \subseteq \Sigma^* \times \Sigma^*$ .

#### NP

Class of lanugages decided by nonderteministic Turing machines in polynomial time.

#### Polynomially decidable:

- $R$  is polynomially decidable if there is da deterministic Turing machine deciding the lanugage  $L$  in polynomial time
- the relation  $R$  (not the language  $L$ ) is polynomially decidable

#### Polynomially balanced:

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TODO

Questions:

### Typical problems in NP

#### Title

Content

TODO

Questions:

### 3Sat is NP-complete

#### Title

Content

TODO

Questions:

### 2Sat in P (graph construction)

#### Title

Content

TODO

Questions:

## 2Sat in NL

Title
Content

TODO

Questions:

## MaxSat is NP-complete

Title
Content

TODO

Questions:

## NaeSat is NP-complete

Title
Content

TODO

Questions:

## References

- [1] Christos H. Papadimitriou. *Computational Complexity*. Addison-Wesley Publishing Company, 1994.