

# Introduction to Computation and Complexity

## Exercise Sheet 5

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### Exercise 1

Prove that  $\text{ISOMORPHISM} = \{G \# H \mid G \text{ and } H \text{ are isomorphic graphs.}\} \in \text{NP}$ .

**Hint 1:** design a binary encoding of graphs.

**Hint 2:** find a certificate.

### Exercise 2

Prove that  $\text{SUBSETSUM} = \{\{x_1, \dots, x_n\} \# t \mid \exists i_1, \dots, i_k \in \{1, \dots, n\} \text{ such that } \forall j \neq j', i_j \neq i_{j'} \text{ and } x_{i_1} + \dots + x_{i_k} = t\} \in \text{NP}$ .