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Complexity of Boolean functions
SS 2018
Homework 10
09.07.2018

Exercise 1:

Prove Lemma 6.1 of the lecture.

Exercise 2:

Prove that the graph $G_- = (V, E_-)$ defined in the lecture contains a perfect matching iff $\sum_{v \in A} h(v) = \sum_{w \in B} h(w)$.

Exercise 3:

Work out the transformation of an Ω_0-network β into a standard network β'. Prove formally $|\beta'| \leq 2|\beta|$.

Exercise 4:

Let μ be a formal complexity measure. Prove that for all $f \in \mathcal{B}_n$ there holds $\mu(f) \leq L_{\Omega_0}(f)$.

Exercise 5:

Prove Theorem 7.2 and Theorem 7.3 of the lecture.

Exercise 6:

Extend the DNF/CNF- and CNF/DNF-switches such that they can be used for formula containing non-negated and also negated variables.