UNIVERSITY OF KONSTANZ DEPARTMENT OF COMPUTER & INFORMATION SCIENCE Prof. Dr. Sven Kosub / Michael Aichem Complexity Theory Winter 2016

## Assignment 8

Issue date: 14 Dec 2016 Due date: 21 Dec 2016

## Exercise 1.

Show that

$$\operatorname{INEQ}(\Sigma, \cup, \cdot, *) \leq_m^{\log} \operatorname{INEQ}(\Delta, \cup, \cdot, *)$$

for arbitrary alphabets  $\Sigma, \Delta$  such that  $\|\Delta\| \ge 2$ .

## Exercise 2.

Show that

$$C =_{\text{def}} \{ 0^n 1^n \mid n \in \mathbb{N} \} \notin 1\text{-}\text{T-DSPACE}(s)$$

for all  $s = o(\log n)$ .

## Exercise 3.

Show that

 $NP^B \subseteq PSPACE$ 

for all sets  $B \leq_m^{\log}$ -complete for PSPACE.