

Discrete and Computational Geometry, WS1516
Exercise Sheet “10”: Last Exercise
University of Bonn, Department of Computer Science I

- *Written solutions have to be prepared until **Friday 5th of February, 12:00 pm.***
- *There is a letterbox in front of Room E.01 in the LBH building.*
- *You may work in groups of at most two participants.*

Exercise 17: Cyclic Polytopes **(4 Points)**

Let V be a finite subset of the moment curve. Please prove that all the points of V are vertices of $\text{conv}(V)$. (Hint: each of them contributes to at least one facet)

Exercise 18: Probabilistic Tools **(4 Points)**

Let H a set of n element, and R and T be two random subsets of S , where $|R| = r$, $|T| = k$, and $k < r < n$. Please prove the followings

- The probability that $R \cap T \neq \emptyset$ is $O(kr/n)$.
- If $n > 2r$, the probability that $R \cap T = \emptyset$ is $O(e^{-\frac{k}{n}r})$