

Discrete and Computational Geometry, WS1516
Exercise Sheet “9”: Convex Polytope
University of Bonn, Department of Computer Science I

- *Written solutions have to be prepared until **Friday 29th of January, 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: Dual sets **(4 Points)**

Let $C = \text{conv}(X) \subseteq \mathbb{R}^d$. Please prove the following

$$C^* = \bigcap_{x \in X} D_0(x)^-$$

(For simplicity, you can assume that C contains the origin 0.)

Exercise 18: Duality of Convex Polytope **(4 points)**

Prove the following:

- The dual of a d -dimensional simple convex polytope is a d -dimensional simplicial convex polytope.
- The dual of a d -dimensional cube is a d -dimensional cross-polytope.