Discrete and Computational Geometry, WS1516
Exercise Sheet "7": Convexity
University of Bonn, Department of Computer Science I

- *Written solutions have to be prepared until* **Friday 15th of January, 12:00 pm**.
- *There is a letterbox in front of Room E.01 in the LBH builiding.*
- *You may work in groups of at most two participants.*

Exercise 15: Diameter of a set (4 Points)

Let $X \subseteq \mathbb{R}^2$. Please prove the Following:

$$\operatorname{diam}(\operatorname{conv}(X)) = \operatorname{diam}(X),$$

where the diameter $\operatorname{diam}(Y)$ of a set Y is $\sup\{||x - y|| \mid x, y \in Y\}$.

Exercise 16: Radon Point (4 points)

For a $(d+2)$-point set in $\mathbb{R}^d$, a point $x \in \mathbb{R}^d$ is called *Radon point* of A if it is contained in convex hulls of two disjoint subsets of A. Prove that if A is in general position (no $d+1$ points affinely depedent), then its Radon point is unique.