

Online Motion Planning, SS 17
Exercise sheet 11
University of Bonn, Inst. for Computer Science, Dpt. I

- *You can hand in your written solutions until Tuesday, 18.07., 14:15, postbox in front of room E.01 LBH.*

Exercise 31: Simple escape path (4 points)

1. Is the shortest escape path always unique? Answer the question for convex or non-convex regions R .
2. Show that for non-convex regions the diameter need not be an escape path. Define a path for any simple polygon, that is always an escape path.

Exercise 32: Escape path calculations (4 points)

1. Show that the median of a triangle is always shorter than the average of the adjacent sides.
2. Show that for $\alpha = 60^\circ$ and Besicovitsch Zig-Zag path, b_α equals $\sqrt{\frac{28}{27}}$.

Exercise 33: Escape path proof arguments (4 points)

1. Show that Theorems 5.1 and 5.2 also hold for closed escape paths.
2. Give a formal argument that for $\alpha = 60^\circ$ all Zig-Zag path constructions of Figure 6.5 i) are indeed escape paths.