

Convex heptagons with border trapezoids

Marko Lj. Ćitić¹ and Vidan Lj. Govedarica²

¹Faculty of Philosophy, University of East Sarajevo, citicm@yahoo.com

²Faculty of Electrical Engineering, University of East Sarajevo, vidangov@yahoo.com

A convex heptagon $A_1A_2A_3A_4A_5A_6A_7$ is given. Let $A_i, A_{i+1}, A_{i+2}, A_{i+3}$ be the four consecutive vertices of this heptagon. The quadrilateral $A_iA_{i+1}A_{i+2}A_{i+3}$ is called *border quadrilateral*. The paper presents the proof of the following claim: if the given heptagon has six border quadrilaterals that are trapezoids, then the seventh border quadrilateral is also a trapezoid. The existence of convex heptagons with border trapezoids in integer lattice was also discussed. Both these problems present continuation in research of analogous problems for convex pentagons and hexagons, which authors solved in previous work.

References

- [1] V. Lj. Govedarica and M. Lj. Ćitić, Convex lattice polygons with border trapezoids, The First Mathematical Conference of Republic of Srpska, (in Serbian), Pale, 2012, 87–92.