

# GEOMETRIC CONSTRUCTIBILITY OF POLYGONS LYING ON A CIRCULAR ARC

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For a positive integer  $n$ , an  $n$ -sided polygon lying on a circular arc or, shortly, an  $n$ -fan is a sequence of  $n + 1$  points on a circle going counterclockwise such that the “total rotation”  $\delta$  from the first point to the last one is at most  $2\pi$ . We prove that for  $n \geq 3$ , the  $n$ -fan cannot be constructed with straightedge and compass in general from its central angle  $\delta$  and its central distances, which are the distances of the edges from the center of the circle. Also, we prove that for each fixed  $\delta$  in the interval  $(0, 2\pi]$  and for every  $n \geq 5$ , there exists a concrete  $n$ -fan with central angle  $\delta$  that is not constructible from its central distances and  $\delta$ . The present paper generalizes some earlier results published by the second author and Á. Kunos on the particular cases  $\delta = 2\pi$  and  $\delta = \pi$ .

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