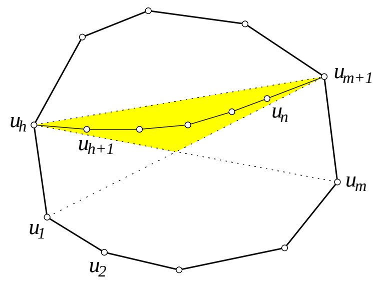

Рис. 7: Universal set S_1

5 *Four more problems*

2.8. Prove that the statements of problems 2.3. б) and в) is still valid if we suppose in addition that the numbering of vertices of the convex hulls of the sets S_1 and S_2 is fixed from the very beginning.

The next problem is a generalization of problem 2.2.

2.9. Let S_1 and S_2 be n-point sets whose convex hulls are h-polygons with vertices $u_1, \ldots, u_h$ and $v_1, \ldots, v_h$ in the counterclockwise order. Denote $u_{h+1}, \ldots, u_n$ the inner points of the set S_1. Suppose that there exists $m \leqslant h-2$ such that the set $S_1 \setminus \{u_1, u_2, \ldots, u_m\}$ is in convex position and moreover the inner points $u_{h+1}, \ldots, u_n$ are inside the triangle defined by the lines $u_h u_{m+1}$, $u_h u_m$ and $u_1 u_{m+1}$ (see fig. 7). Prove that the sets S_1 and S_2 have a compatible triangulation.

Finally the last problem generalizes problem 3.2.

3.7. A polygon $A_1 \ldots A_k B_{k+1} \ldots B_n$ is called *spiral* if its angles $\angle A_1, \ldots, \angle A_k$ are less than 180°, and the angles $\angle B_{k+1}, \ldots, \angle B_n$ exceed 180°.

Is it true that every triangulation of a spiral n-polygon can be constructed from any other one by $O(n)$ flips?