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Minimum planar sets with maximum equidistance counts. (In English)

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Let $g(k)$ be the smallest integer n for which there are n planar points each of which has k others equidistant from it. Every equilateral triangle realizes $g(2) = 3$. We prove that $g(3) = 6$, $g(4) = 8$ and $g(5) \leq 16$. Every realizer of $g(3) = 6$ consists of the vertices of two similarly-oriented equilateral triangles of side length d with distance d between each vertex of a triangle and its congruent twin in the other triangle. Our constructions for $k = 4, 5$ feature squares and equilateral triangles.

Classification:

68U05 Computational geometry, etc.

Keywords:

minimum planar sets