

Zbl 345.52007

Erdős, Paul; Purdy, George

Some extremal problems in geometry. IV. (In English)

Proc. 7th southeast. Conf. Comb., Graph Theory, Comput.; Baton Rouge 1976, 307-322 (1976).

[For the entire collection see Zbl 328.00003.]

The authors discuss some questions and obtain new results on bounds for several functions occurring in problems of Combinatorial Geometry, mostly in the plane. Examples: Let $f(n)$ denote the maximum number of times that unit distance can occur among n points in the plane if no three points lie on a line; then $f(n) \geq 2n \log \frac{n}{6} / 3 \log 3$. Let $g(n)$ be the minimum number of triangles of different areas which must occur among n points in the plane, not all on a line; then $c_1 n^{3/4} \leq g(n) \leq c_2 n$. Let $f(n)$ be the minimum number k such that there exist k points in the n by n lattice L_n so that the lines through any two of them cover all the points of L_n ; then $f(n) \geq cn^{2/3}$. Other similar problems are concerned with congruent triangles, isosceles triangles, congruent or incongruent subsets, always taken from n given points.

R.Schneider

Classification:

52A40 Geometric inequalities, etc. (convex geometry)

51M25 Length, area and volume (geometry)

00A07 Problem books