Problems in discrete geometry

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May 16, 2016

The suggested project is concerned with the following problem:

We are given a set of n red points and n blue points in the plane such that not all the points lie on one line. We wish to find a line passing through a red point and a blue point that contains as few points as possible from our set of points. It is known that there always exists such a line with at most 4 points on it and there are constructions where every such line contains at least 3 points. It will be interesting to decide what is the tight answer here (3 or 4).

A reference paper is:

http://www2.math.technion.ac.il/~room/ps_files/PP_bichromatic.pdf

A different possible project is the following:

Given an odd number of unit discs in the plane (with possible overlaps). What can be said about the area of those points in the plane that belong to an odd number of the discs? In particular is it always greater than or equal to the area of one disc?

A reference paper is:

http://www2.math.technion.ac.il/~room/ps_files/odd.pdf

Also: http://www2.math.technion.ac.il/~room/ps_files/odd_area.pdf

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