

## Practice problems

**Problem 9** There are a finite number of straight lines on a plane such that no two are parallel and every intersection point belongs to at least 3 lines. Prove that all lines intersect in a common point.

**Problem 10** Prove that if  $n$  points in  $\mathbb{R}^2$  are not all on one line, then there are at least  $n$  distinct lines connecting pairs of them.

**Problem 11** There are  $n$  points in the plane, no three on a line. Prove that there are at least  $\binom{n}{5}/(n-4)$  convex 4-gons formed by these points.