Due: 2013/12/20

Homework 11

Problem 1. *Find seven points in the plane such that when we connect pairs of points with distance 1, the resulting graph has chromatic number 4.*

Problem 2. *Given $2n$ points in the plane, n red and n blue. Prove that one can always 1-1 pair the red and blue points such that these n segments do not intersect.*

Problem 3. *Given a set V of n points in the plane, call a line* magic *if it contains exactly 3 points in V. Prove that the number of magic lines is at most $n^2/6$.*

Problem 4. *Given a point set V in the plane, call a line* magic *if it contains exactly 3 points in V. Let M_n be the maximum number of magic lines over all configuration of n points. Prove a lower bound on the order of M_n as better as you can.*