Math 4990 Problem Set 2

Due Tuesday, Sep 16, 2014 in class

Instructions

As before, write your solutions neatly and clearly, with complete justification (i.e., proof). Please don’t submit scratchwork. Consider using \TeX. Draw figures (possibly by hand) whenever suitable.

Collaboration is encouraged, as long as you

1. understand your solutions,
2. write your solutions in your own words without copying, and
3. indicate the names of your collaborators.

Unless otherwise specified, all numberings refer to the textbook [DO].

Assignment

Liberally peruse pages 11–21 of [DO].

Do Exercise 1.22 about the number of triangulations.

Read (and understand) Lemma 1.18 (and its proof). Do Exercise 1.30.

Do Exercise 1.31 about guards that cover the boundary but not the interior.

Review the (beautiful) proof of the Art Gallery Theorem, then do Exercise 1.35 and Exercise 1.36 about galleries with polygonal holes.

Theorem 1.38 has a typographical error. The guards should be stationed on the boundary of the fortress. Namely, it should read: “To cover the exterior of polygons with $n$ vertices, $\lceil n/2 \rceil$ boundary guards are needed for some polygons, and sufficient for all of them.” Do Exercise 1.39 and Exercise 1.40.

Optionally, for no credit, do Exercise 1.26.