

HOMEWORK 4 (MATH 180, SPRING 2016)

Read: MN, sections 6.1-4.

Solve: Exc 1, 3 and 6 without * part in §6.3, 1, 3 and 4 in §6.4.

I. Let $P \subset \mathbb{R}^3$ be a convex polytope. Denote by $c(P)$ the sum of the number of triangular faces and the number of vertices of degree 3. Prove that $c(P) \geq 8$.

II. Let G be a connected planar graph such that G^* has a Hamiltonian cycle. Prove that $\chi(G) \leq 4$.

III. Let D and G be the dodecahedron and icosahedron graphs, respectively. Find $\chi(D)$ and $\chi(G)$.

This Homework is due Wednesday May 11, at 12:59:59 pm. (right before class). Please read the collaboration policy on the course web page. Make sure you write your name in the beginning and your collaborators' names at the end. You **MUST** box all answers. Remember that answers are not enough, you also need to provide an explanation exhibiting your logic.