Math 451 - Spring 2018
Homework 9
Due May 16th, 2018

Turn in:

(1) Find a 4-regular planar graph. (Note that K_5 is such a graph but its not planar.) and a planar bipartite graph such that every vertex has degree 3. (Note that $K_{3,3}$ is such a graph but its not planar.)

(2) Prove Theorem 8.8 in the book. (Hint: Look at the proof of theorem 8.7!)

(3) Exercise 9.1

(4) Show that the Grötzsch graph (Figure 10.11) is not planar.

(5) Determine the chromatic number of each of the following:
  a. The petersen graph.
  b. The n-dimensional hypercube Q_n.
  c. The graph with $V = \{v_i \mid 1 \le i \le 10\}$, $E = \{v_i v_j \text{ if } i \text{ divides } j\}$.