Homework 5
Graph Theory CSC/MA/OR 565
Due 10:15 a.m., Tuesday, March 29, 2016

1. Problem 6.1.8, text.

2. Using only the result of 6.1.8, prove that if G is a simple planar graph, then $\chi(G) \leq 6$.

3. 6.1.29, text.

4. 6.1.33, text.

5. What is the maximum number of edges (as a function of the number of vertices) in a simple planar graph of girth 5? Use this to prove that the Petersen graph is not planar.

6. Give an example of a simple planar graph with minimum degree 5.

7. Find, if possible, a subdivision of K_5 in Q_4.

8. Find, if possible, a subdivision of $K_{3,3}$ in the Petersen graph.

9. For which pairs (n, r) is $T_{n,r}$ planar?

10. Look up the definition of thickness in the text. Find (and prove) the thickness of Q_4. Find (and prove) the thickness of the Petersen graph.