MATH 2601 - FoMP - Homework 5

Instructor : Prasad Tetali, office: Skiles 132, email: tetali@math.gatech.edu

Due: **Friday, October 19, in class**

Problem 1. Suppose that G is a planar graph on n vertices and $m \geq 2$ edges, but with *no 3-cycles*. Then show that $m \leq 2n - 4$.
Hint: As in the proof done in class, use the Euler characteristic that $n - m + f = 2$, for a connected planar graph drawn in the plane with $f = \#$faces, and n and m being as above.

Problem 2. Show that K_5 and $K_{3,3}$ are nonplanar, using the upper bounds on the number of edges in a planar graph.

Additionally, the following problems from Hammack's book:

Chapter 8: 2, 8, 18
Section 11.1: 8, 16
Section 11.2: 4, 6, 10