

Due Friday, April 25, 2014

Students in section X13 (three credit hours) need to solve any four of the following five problems. Students in section X14 (four credit hours) must solve all five problems.

1. # 6.1.12 in the book.
2. Use Euler's Formula to prove that the Petersen graph is not planar.
3. # 6.1.27 in the book.
4. Prove that the vertices of a simple planar graph G can ordered so that every vertex is preceded by at most 5 of its neighbors. In other words, prove that there exists an ordering v_1, \dots, v_n of $V(G)$ so that $|N_G(v_i) \cap \{v_1, \dots, v_{i-1}\}| \leq 5$ for every $i \in [n]$.
5. Prove that every simple planar graph with $n(G) \geq 4$ has at least four vertices with degree less than six. (Hint: Prove the statement for a maximal planar graphs. In a maximal planar graph you can assume that $\delta(G) \geq 3$).

Problems below review basic concepts and their ideas could be used in the tests.

OTHER INTERESTING PROBLEMS:

WARMUP PROBLEMS:

Section 6.1: # 1, 2, 3, 4, 7.