

Due Friday, March 14, 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. # 3.1.23 in the book
2. # 3.1.24 in the book
3. # 3.1.26a) in the book.
4. For  $k, n \in \mathbb{N}$ , let  $G$  be a **simple**  $A, B$ -bigraph with  $|A| = n = |B|$  such that  $\delta(G) \geq k$ . Suppose that for all  $X \subseteq A$  and  $Y \subseteq B$ , if  $|X| \geq k$  and  $|Y| \geq k$ , then  $E(X, Y) \neq \emptyset$ . Prove that  $G$  has a perfect matching. (Recall that  $E(X, Y)$  is the set of edges with one endpoint in  $X$  and one endpoint in  $Y$ .)
5. # 3.2.4 in the book.

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

WARMUP PROBLEMS:

Section 3.1: # 5, 7, 8.

Section 3.2: # 3.

OTHER INTERESTING PROBLEMS:

Section 3.1: # 21, 25, 28, 29, 32, 33, 40.

Section 3.2: # 11, 10, 12, 14.

Do not write these up!