

Math 5707 Problem Set 2

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Hints to selected problems

Exercises from Diestel, 4th edition.

1 # 17⁻, 23, 24;

2 # 1, 8, 12⁻, 14, 18.

Exercise 1.24. Let $G = (V, E)$ be a graph. Recall that an *automorphism* on G is a bijection $\varphi : V \rightarrow V$ such that $xy \in E$ if and only if $\varphi(x)\varphi(y) \in E$. As such, an automorphism induces a map from E to itself, and we can thus speak of whether φ fixes an edge (as an *unordered* pair of vertices) or not.

Exercise 2.8. Recall that a k -set is a set of size k . A *system of distinct representatives* of the sets X_1, \dots, X_r is a sequence of r *distinct* elements x_1, \dots, x_r such that $x_i \in X_i$ for each i .

Exercise 2.18. The function q will be defined on Monday, Feb 17.