Matching Theory.

Concepts & Notation

- Sec. 3.1: matching, saturate, maximum vs. maximal matching, M-alternating path, M-augmenting path, Berge’s Theorem, Symmetric Difference Lemma, Hall’s Condition, Hall’s Theorem, Marriage Theorem, $k$-regular bipartite graph theorem, vertex cover, König-Egervary Theorem, independent set, edge cover, Gallai Identities.

Review

1. What is Hall’s Theorem?

2. What is the Marriage Theorem?

3. What can we say about $k$-regular bipartite graphs?
Notes

1. What is a vertex cover?

2. What is the notation for the vertex covering number—and the matching number?

3. What is the König-Egerváry Theorem?

4. Prove it!

5. What is a min-max relation? What is an example?

6. What is an independent set? What is the independence number?

7. What is the relationship between independent sets and vertex covers?

8. What is an edge cover?

9. What are the Gallai Identities?

10. Prove them!