

Final Exam Topics

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The exam will be 6 questions, 2 hours.

The questions will not be more difficult than the homework problems. They will likely be easier.

Possible topics for Q1-Q3:

- Posets, lattices
- Linear extensions
- Möbius functions
- Dilworth/Mirsky theorem
- Projective planes (*but no finite fields*)

Possible topics for Q4-Q6:

- Basic concepts:
 - Directed/undirected graphs
 - Trees
 - Paths
 - Bipartite graphs
 - Cycles
- Graph colorings
- Chromatic number, chromatic polynomial, acyclic orientations
- Matchings (Hall's Marriage Theorem)
- Extremal graphs, Turan's Theorem, $K_{2,2}$ -avoiding, Cauchy-Schwarz inequality

Topics we will not cover:

- Matroids
- Geometric lattices
- Geometry
- Ramsey theorem
- Probability and Probabilistic Proofs
- Planar graphs

Important proof techniques:

- Induction
- Contradiction