Final Exam Topics

- All topics on midterm review slides, plus:
- Divide & conquer
  - Recurrences
  - Polynomial multiplication (Karatsuba)
  - Matrix multiplication (Strassen)
- Graphs
  - Representation (edge list/adjacency matrix)
  - Breadth/depth first search
  - Articulation points & biconnected components

Final Topics (cont.)

- ## P vs NP

  - Definition of NP - hints and verifiers

  - Example problems from slides & assigned reading

    - SAT, VertexCover, knapsack, quadratic Diophantine equations, clique, independent set, TSP, Hamilton cycle

  - P $\subseteq$ NP $\subseteq$ Exp

  - Definition of reduction,

  - SAT $\leq_p$ VertexCover example

  - Definition of NP-completeness

  - Backtrack search