

Math Review Notes—Convex Optimization

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1 Convex Optimization

These are my notes from taking EE 588 at USC and the textbook *Convex Optimization* (Boyd and Vandenberghe) 7th printing.

Need to cover:

- Update rules for optimization problems (e.g. gradient descent, be able to write down gradient, etc.)
- Know which algorithms are useful in which settings
- Homework-like problems from first part of class (no proofs though) (Boyd homework is good practice)
- Understand how to derive algorithms
- Understand how to calculate gradients, proximal functions, etc.
- Understand examples, how to run algorithms
- Only conceptual thing: duality question (write down dual)
- Formulate problems as convex optimization problems

Do not need to cover:

- ADMM
- Proofs from 2nd half of class (rates of convergence, etc.)
- Coding