

Mathematics 116

Convexity and Optimization with Applications

- Assignment V Due in class on Tuesday, March 15.
- Announcements This is a week devoted to consolidation, especially for those who need to catch their breath. In addition to sections, please never hesitate to make an appointment to speak with me, Daniel Goroff (goroff@math), in Science Center 427 if you have particular questions, issues, or interests.
- Reading Reread the material we have covered but also look ahead in both books so that you can answer the last writing question below.
- Exercises
1. Redo up to three problems from the previous problem sets that you did not get quite right the first time and explain what you did not understand then that you do get now. If you don't have enough wrong or want to try something different, pair up with a classmate and explain his or her mistakes.
 2. Make up three problems that you believe would be appropriate exercises for this class and solve them. (Another incentive: good ones submitted may appear on the midterm or final.)
- Writing
3. Post on our website's discussion list some examples, illustrations, questions, history, or comments relevant to the material we have been covering. (www.courses.fas.harvard.edu/~math116).
 4. After looking ahead in both books, decide on a topic that you might want to pursue for a project then write something about it and say why it seems interesting to you. Also hand in a very preliminary reading list and plan for your work.
- Calculus Challenge Show $ab \leq \frac{a^p}{p} + \frac{b^q}{q}$ for positive a and b when $\frac{1}{p} + \frac{1}{q} = 1$ and $p > 1$.
Hint: Compute the inverse of $f(x) = x^{(p-1)}$ and then think geometrically.