

Homework 8

*Assigned: 04/21/2020**Due: 04/29/2020*

Homework must be L^AT_EX'd or it will not be graded. Make sure to rigorously justify *all of your answers!*

Problems from Boyd & Vandenberghe: 9.8, 9.27, 9.30, 10.1(a)

Problems from additional exercises

https://web.stanford.edu/~boyd/cvxbook/bv_cvxbook_extra_exercises.pdf: A8.7

For problem 9.30, use $n = 100$, $m = 100$; it is in your best interest to use the chain rule to compute the Hessian; you are free to directly compute the newton step via $\mathbf{vnt} = -H \setminus g$, rather than using the efficient solve method developed in problem 9.27 (although you may notice a marked increase in speed if you choose to implement the latter!).

Extra problem bonus questions: These bonus questions are completely optional. These are problems that would have normally been assigned as homework problems, but are now being added as additional problems for those of you who would like to attempt them. An extra 0.5 marks can be earned by successfully completing them.

1. Problems 9.17(c), 9.18 and 10.2 from B&V

“Standard” bonus questions: These are the previous standard bonus questions, and are again completely optional. If a certain threshold of correctness is exceeded, you will earn an additional 0.5 marks on your assignment grade. These are fun, challenging problems, and we ask that you try your best to get as far into the proofs/answers as you can *without consulting outside sources!* Once you get stuck, indicate the point at which you were stuck in your solutions with a **“I made it this far on my own,”** after which, you should indicate what outside source you consulted in order to finish the problem, in accordance with the Penn Academic Integrity policy.

1. Problem 10.1(b) from B&V.
2. Problem A8.5 from additional exercises.