Homework #2 — Due in class, Thursday October 10, 2019

Re-do Homework #1, replacing the backtracking line search with the algorithm discussed in this lecture.

Do not forget the safe-guards.

Note that (some of) the interpolation formulas are anchored at 0 on the left; but neither α_{low} nor α_{high} is guaranteed to be 0.

Compare the performance for both the Newton and Steepest Descent algorithms; is there a significant difference?

Help and hints on the next slide...

Homework #2 — Help & Hints

- Modularize your code — Have separate `zoom`, and `interpolate` functions, and a "`driver`" which directs "traffic."
- Implement `zoom` first. Debug using a simple version of `interpolate(alow,ahigh) = (alow+ahigh)/2`.
- Once `zoom` works, replace the interpolation step by *either*
  - [easier] Hermite-based cubic interpolation
  - [harder] Quadratic-Cubic interpolation
    - In order to debug the interpolation, it is useful to plot the interpolation function in the (alow,ahigh) interval, and verify that the value selected for the next alpha indeed corresponds to the minimum.