

Homework 1

UP: optimality conditions



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- **Step 1 (2 points out of 10):** Formulate mathematically **your own** unconstrained NLP problem: complex enough (see last slide) & useful in practice (if possible). Be precise and rigorous.
- **Step 2 (3 points out of 10):** Solve **your own** unconstrained NLP problem using GAMS. Verify and document that the solution found is a minimizer.

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- **Step 3 (4 points out of 10)**: Derive and solve the FONC of **your own** unconstrained NLP problem using Octave. Make sure that this solution coincided with that obtained in Step 2.
- **Step 4 (1 points out of 10)**: Discuss the two solution procedures (Steps 2 and 3) and document the difficulties that you have found.

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Make sure that your problem is **complex enough**:

- **At least 3** optimization variables.
- **No quadratic** functions
- **No Rosenbrock's** function

