Lecture 15 – Optimization

I. Intro to Optimization
II. Optimization in Excel
III. Optimization in Python

I. Intro to Optimization

- iterative fixed-point methods (Picard's, Newton's) } Solve NLEs

$$x = g(x) \Rightarrow x = g(x^*)$$

$x_1 \rightarrow x_0$

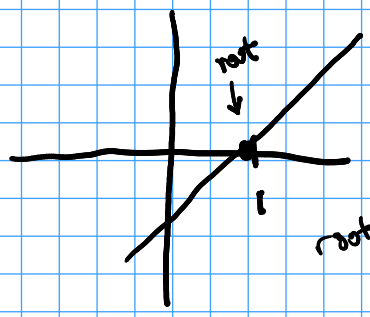
- SciPy → single/multiple NLEs
- "optimization methods"

$$f(x) = x - 1 = 0$$

objective function / cost function

$$s(x) = [f(x)]^2 = (x-1)^2 = 0$$

(a)

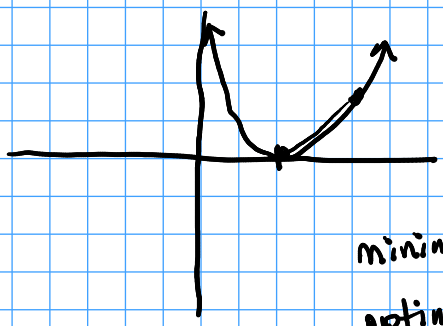


+

root-finding

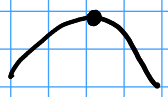
−

(b)



minimization

optimization



* No time to learn optimization methods ∴ ← John Hedengren

II. Optimization in Excel: Solver

Example / Activity

III. Optimization in Python

* scipy.optimize.minimize

Example/Activity