

CH2

NONLINEAR OPTIMIZATION

$$\begin{array}{ll}
 \text{minimize} & f(x) \\
 x \in \mathbb{R}^n & \\
 \text{s.t.} & g(x) = 0 \\
 & h(x) \leq 0
 \end{array}$$

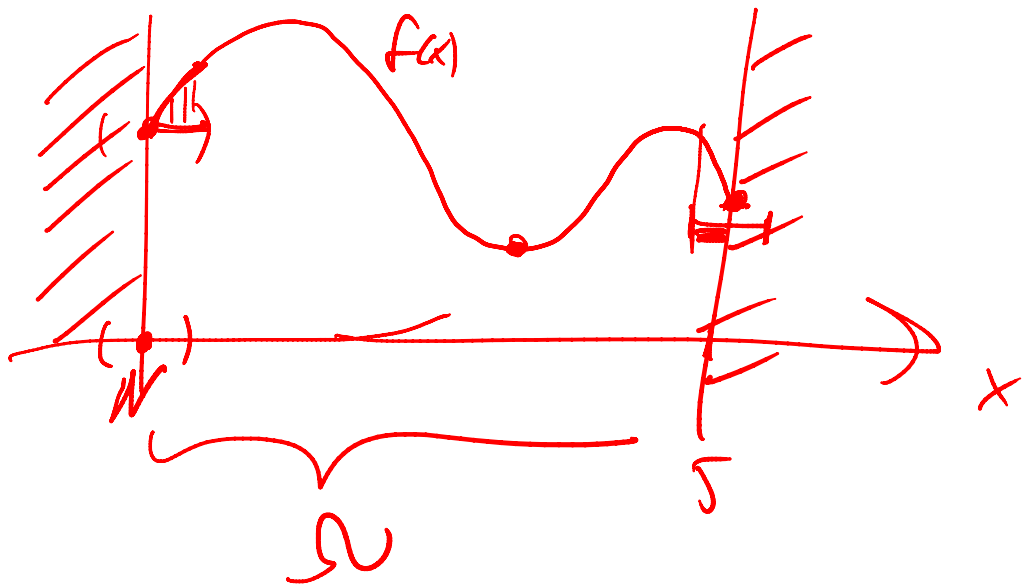
DEF: FEASIBLE SET $\Omega = \{x \in \mathbb{R}^n \mid g(x) = 0 \text{ \& \ } h(x) \leq 0\}$

DEF: GLOBAL MINIMIZER

x^* IS G.M. IFF $\begin{cases} x^* \in \Omega \\ f(x^*) \leq f(x) \quad \forall x \in \Omega \end{cases}$

DEF: LOCAL MINIMIZER:

x^* IS L.M. IFF $\left(x^* \in \Omega \text{ AND } \exists N(\text{NEIGHBORHOOD OF } x^*) \right. \\ \left. \forall x \in \Omega \cap N: f(x^*) \leq f(x) \right)$



$$-5 + x \leq 0$$

i ACTIVE CONSTRAINT: $h_i(\bar{x}) = 0$
 AT $\bar{x} \in \Omega$

2.7 . . .

