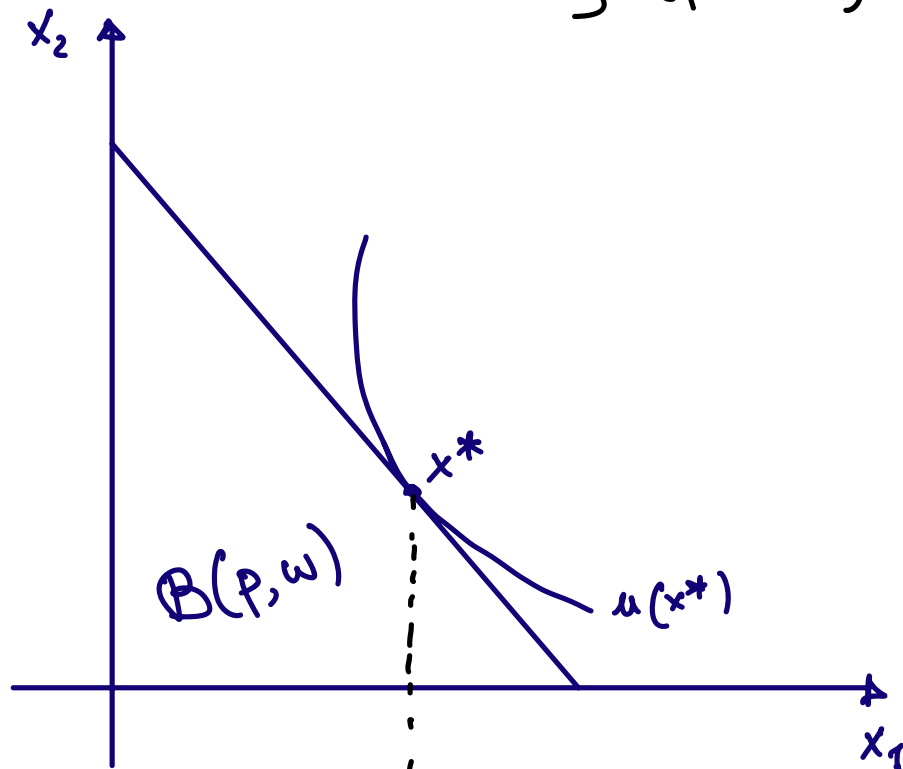
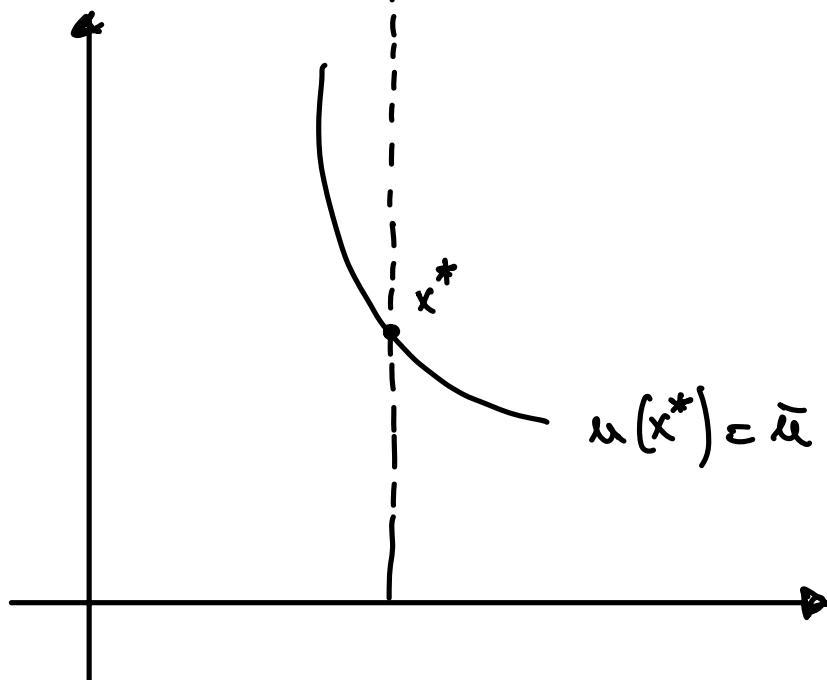


Theorem 8 on Duality (part 1)

8/10/2024

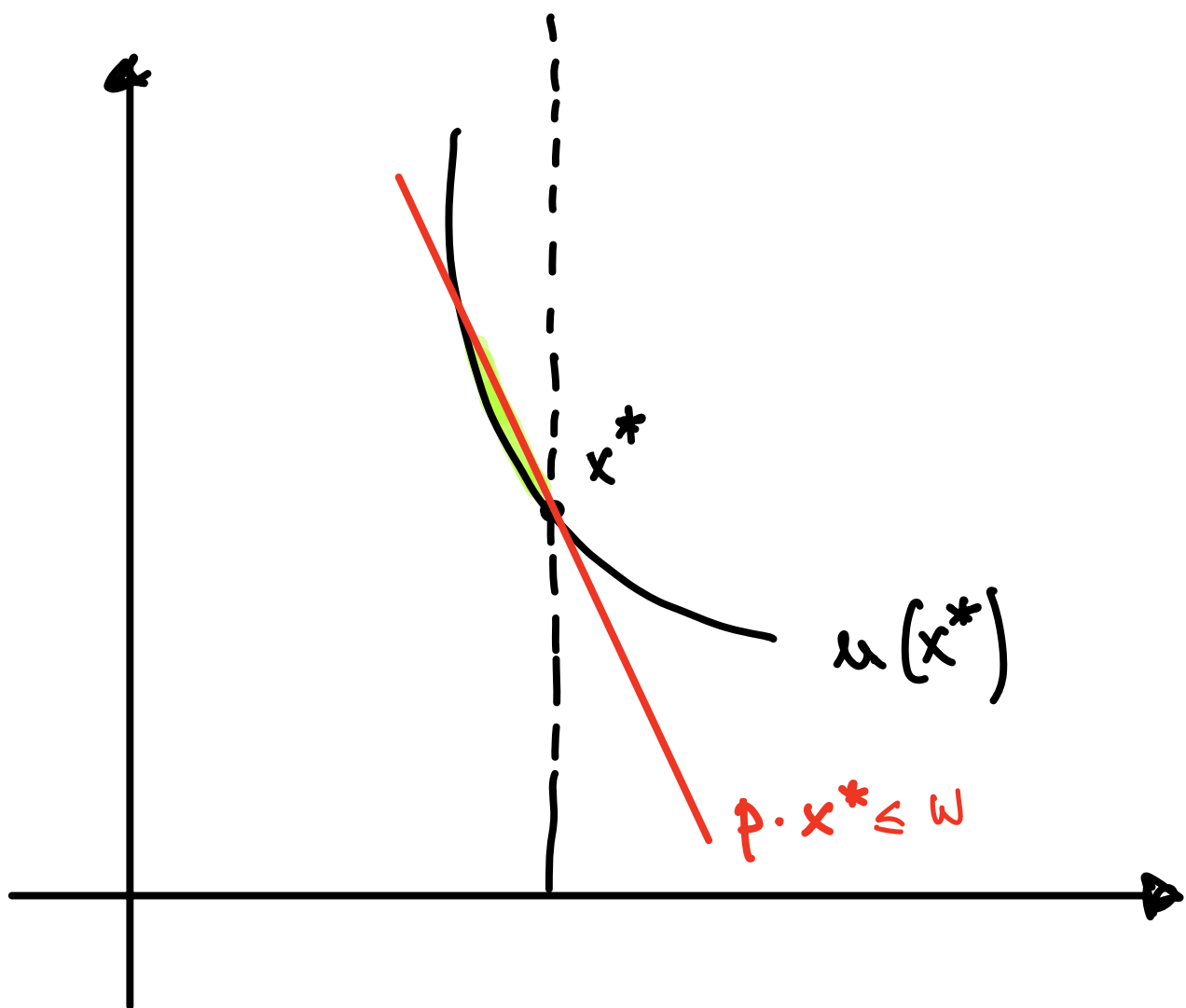


x^* solves UMP

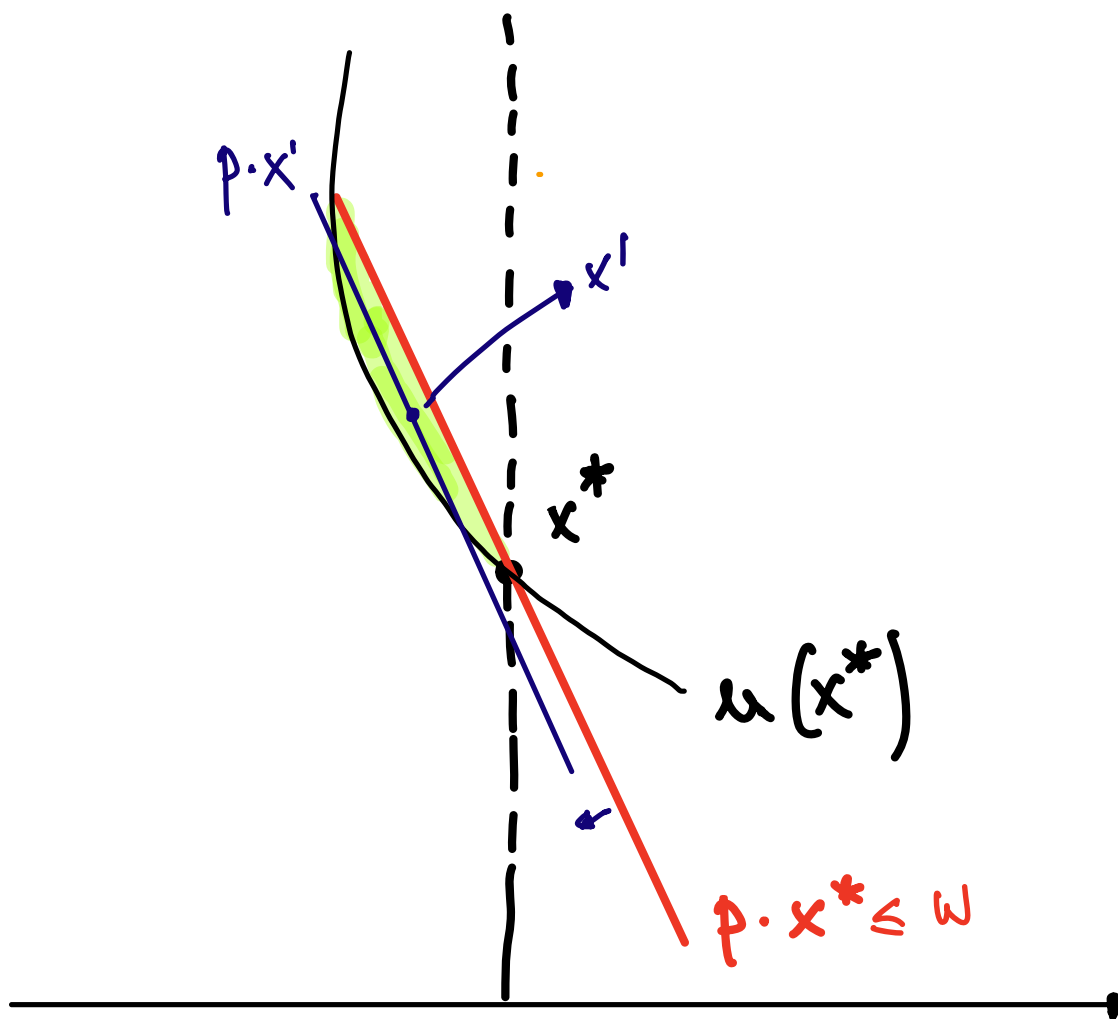


EMP
with
 $\bar{u} = u(x^*)$

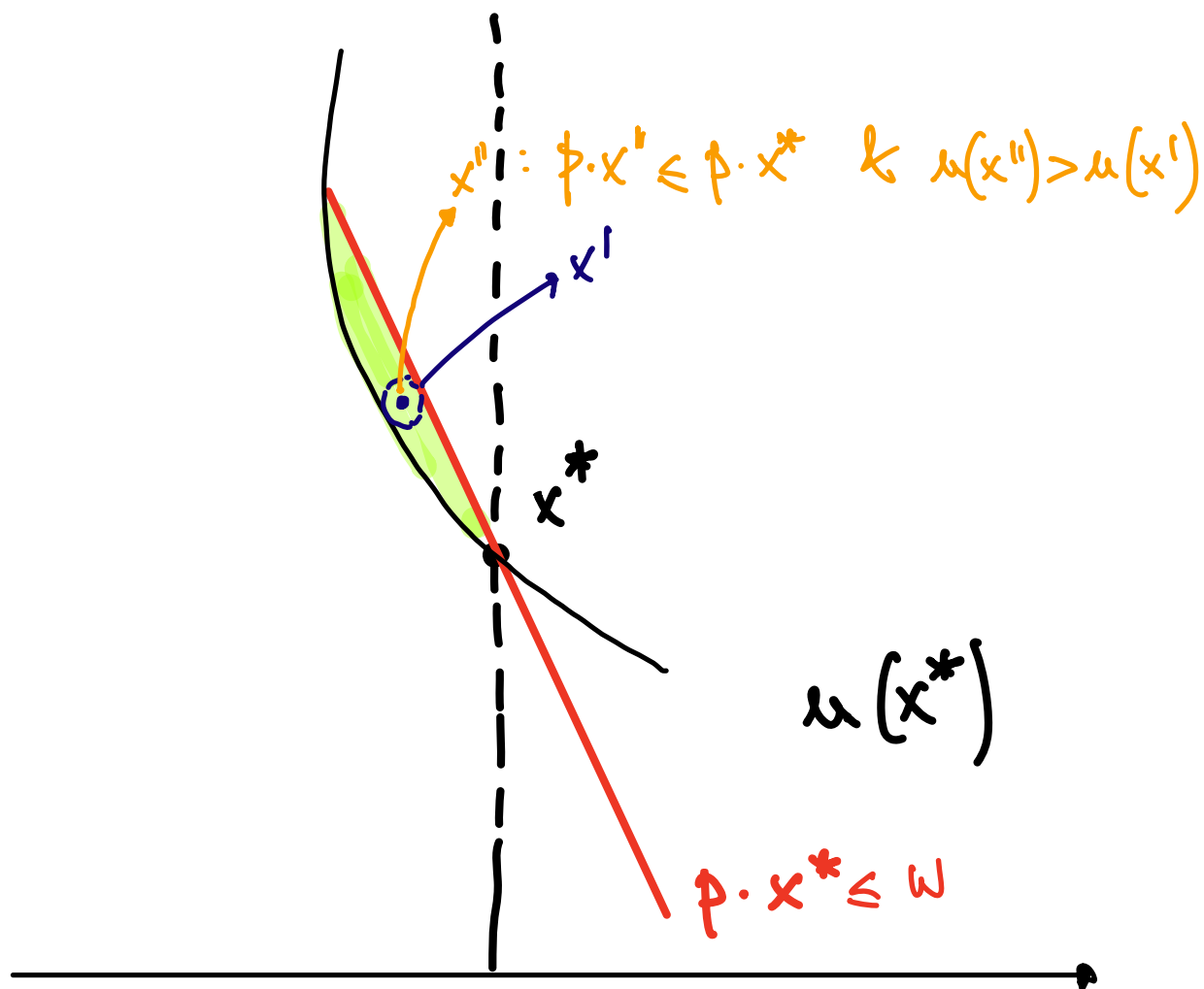
by contradiction assume x^* DOES NOT
SOLVE EMP



$$\exists x' : \begin{aligned} u(x') &\geq u(x^*) \\ p \cdot x' &< p \cdot x^* \end{aligned}$$



by LNS, $\exists x'' : \|x'' - x'\| < \varepsilon \quad x'' \notin x'$
 and ε small $\Rightarrow p \cdot x'' < p \cdot x' \leq p \cdot x^*$



$x'' \in B(p, w) \text{ \& } x'' \succ x^* \Rightarrow x^* \notin x(p, w)$