

PRIMAL PROBLEM:

$$\max_{x,y} \min_{\lambda} \mathcal{L}(x,y,\lambda) \quad \text{s.t. } \lambda \geq 0$$

DUAL PROBLEM:

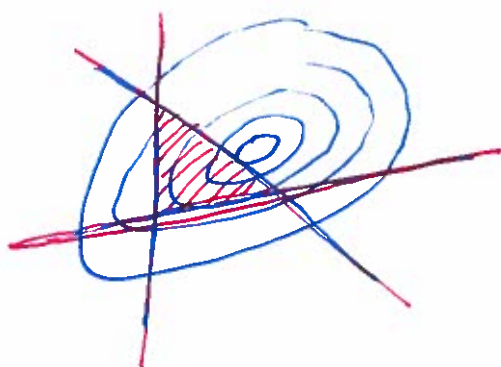
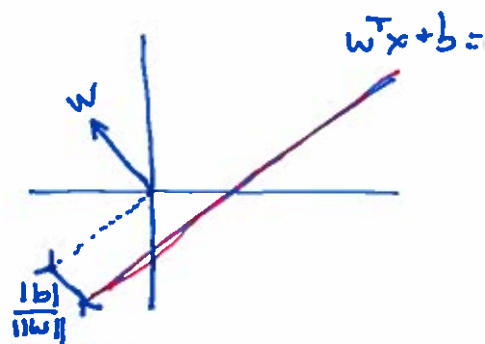
$$\min_{\lambda} \underbrace{\max_{x,y} \mathcal{L}(x,y,\lambda)}_{g(\lambda)} \quad \text{s.t. } \lambda \geq 0$$

PRIMAL AND DUAL HAVE SAME SOLUTION IF ORIGINAL PROBLEM CONVEX.

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THE BIAS DETERMINES THE DISTANCE FROM THE ORIGIN

$$w^T \frac{c \cdot w}{\|w\|} + b = 0 \Rightarrow c = \frac{-b}{\|w\|}$$



QUADRATIC OBJECTIVE  
WITH LINEAR CONSTRAINTS