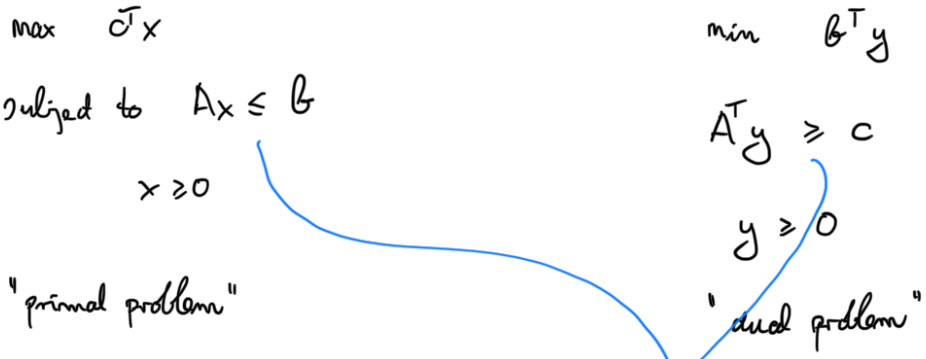

x is feasible, not necessarily optimal

Weak duality: If x is a solution to the primal problem and y is a solution to the dual problem, then $c^T x \leq b^T y$

Proof: $c^T x = x^T c \leq x^T A^T y = (Ax)^T y \leq b^T y$

Strong duality: If the primal problem has an optimal solution, then the dual problem has an optimal solution, and $c^T x = b^T y$