

CSDS 440: Assignment 5

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Problem 19

$$\begin{aligned}b^T u &= u^T b \\&\leq u^T \cdot Ax \text{ (Since } Ax \geq b\text{)} \\c^T X &= x^T c \\&\geq x^T A^T u \text{ (Since } A^T u \leq c\text{)} \\&\geq u^T Ax \\&\Rightarrow b^T u \leq u^T Ax \leq c^T X \\&\Rightarrow b^T u \leq c^T X\end{aligned}$$

The statement is therefore proven.