COMP 3105 — Fall 2025 — Assignment 1

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Question 1: Subquestion b.

1.

$$\underset{1\times(d+1)}{\mathbf{c}^T} \quad \underset{(d+1)\times 1}{\mathbf{u}} \quad = \delta$$

Since $\mathbf{u} = \begin{bmatrix} \mathbf{w} \\ \delta \end{bmatrix}$, we can make all the weights in $\mathbf{w}$ zero, and just have δ in the last entry of $\mathbf{u}$.

As such, we can set:

$$\mathbf{c} = \underset{(d+1)\times 1}{\begin{bmatrix} 0 & 0 & 0 & \cdots & 0 & 1 \end{bmatrix}^T}$$

2.

Change the first part of inequality of L_∞ to:

$$-\delta \leq 0$$

We can break $G^1\mathbf{u} \leq 0$ into two parts: