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Another version:

$$A_R = \begin{bmatrix} \text{all rows of } A \\ \text{but the first} \\ \text{two} \end{bmatrix}$$

$$\# \quad w^T = \begin{matrix} \text{second} \\ \text{row of } A \end{matrix} \quad (\text{which is target})$$

$$\max \quad w^T f$$

$$\text{st.} \quad A_R f = 0 \quad (\text{Kirchhoff's law})$$
$$f \geq 0 \quad f \leq c$$

We will do max-flow, min cut by LP-duality

Step 1:

A, A_R are TUM