

# In-Class Worksheet

CS 181 Advanced Algorithms — Spring 2026

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Consider the following linear program on a bipartite graph  $G = (L \cup R, E)$ :

$$\begin{aligned} \min \quad & \sum_{e \in E} c_e x_e \\ \text{s.t.} \quad & \sum_{e \in \delta(u)} x_e = 1 \quad \forall u \in L, \\ & \sum_{e \in \delta(v)} x_e = 1 \quad \forall v \in R, \\ & x_e \geq 0 \quad \forall e \in E. \end{aligned}$$

1. What are the **integer** solutions to this LP?

2. What is the **dual** LP?

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