

Problem Set #9

All problems are of equal value.

1. Consider the polyhedra  $P \subseteq \mathbb{R}^3$  defined by the equations

$$\begin{aligned}x + 2y - z &\leq 0 \\3x + y + z &\leq 11 \\-x + 2y &\leq 5 \\x, y, z &\geq 0\end{aligned}$$

- (a) Using Fourier-Motzkin elimination, give equations for the projection of  $P$  onto the  $(x, y)$ -plane; that is, eliminate  $z$ .
  - (b) Using Fourier-Motzkin elimination, give equations for the projection of  $P$  onto the  $(y, z)$ -plane; that is, eliminate  $x$ .
2. Monotone Satisfiability. Kleinberg-Tardos Chapter 8, Problem #6.
  3. Path Selection. Kleinberg-Tardos Chapter 8, Problem #9.