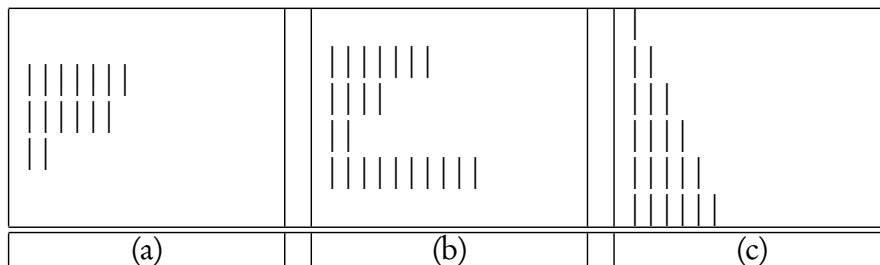


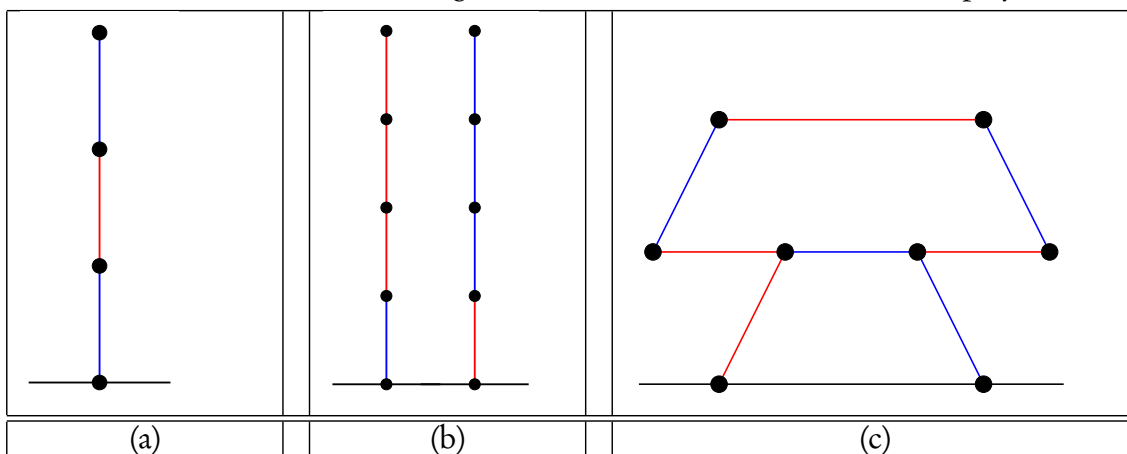
MAT 681: GAME THEORY HOMEWORK

1. What would be an *optimal* first move in the following games of Nim? If none, explain.

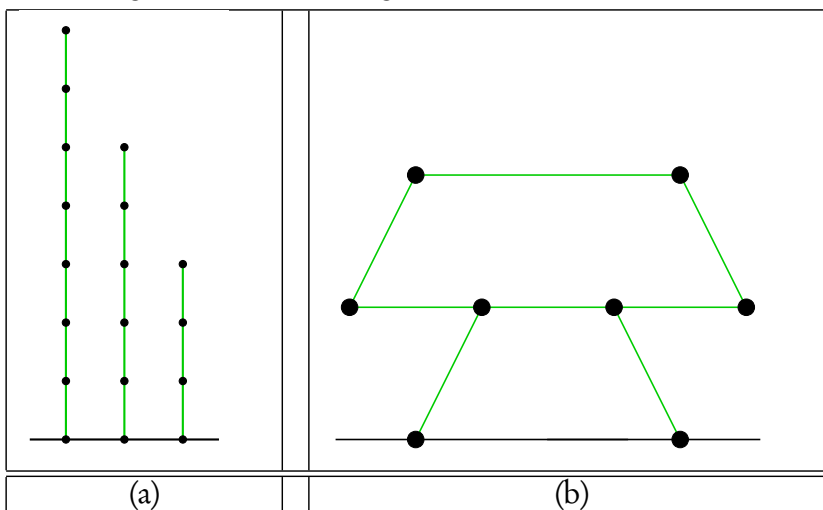


2. Find the polynomials over \mathbb{F}_2 that correspond to each row of each Nim game in Exercise 1.

3. Find the values of these Hackenbush games, and the best first move for each player.



4. Find the values of these green Hackenbush games, and the best first move for each player.



5. Find the values of the following *general* games.

(a) $\{-2|1\}$ (b) $\{-3, -1, 1|2, 3, 4\}$ (c) $\{-2\frac{15}{16}|3\frac{1}{2}\}$ (d) $\{-2\frac{1}{4}|-1\frac{1}{2}\}$