

## Problem Set 2: More Static Game Theory

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### 1. Nash Equilibrium

For each of the games in Problem Set 1, find the all of the Nash equilibria.

### 2. Duopoly

Stephen J. Seagull and Clod VandeCamp are making movies. The amount that movie-goers are willing to pay (the revenue) to attend depends on the amount of violence in the two movies:

$r_i = a + bx_i - e(x_i)^2 - fx_i x_{-i}$ . (There is a fixed number of movie-goers who will attend both films.) Violence is produced at constant marginal cost  $c$ . Both stars simultaneously determine how much violence to produce. Determine the symmetric Nash equilibrium levels of violence and prices. Here  $f$  is a measure of how violence much more violence in one film lowers the demand for the other film. What happens to the equilibrium level of violence as  $f$  increases?

### 3. The Challenge

Stephen J. Seagull and Clod VandeCamp once again meet in a bar. Now Stephen must decide whether or not to challenge Clod to a duel. If he does not, both get a utility of 0. If Stephen does challenge Clod to a duel, Clod must decide whether to accept the challenge or leave the bar. If he leaves the bar, he gets a utility of -1 and Stephen gets a utility of 10. If he accepts the challenge, both get a utility of -5. Draw the extensive form of this game. Find the normal form. Find all the Nash equilibria. Find all the subgame perfect equilibria.