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 x_i 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 level of violence. Here *f* is a measure of how 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.