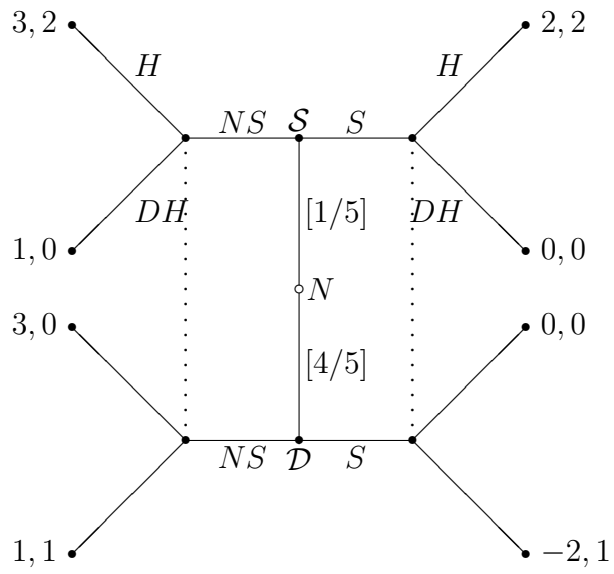


PROBLEM SET 6

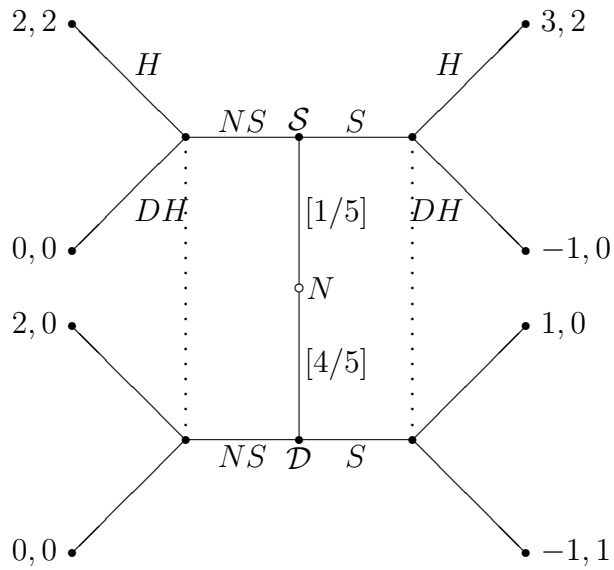
1. Consider Game 1 on page 3. The story behind the game is that the sender can be one of two types, “Dumb” (\mathcal{D}) or “Smart” (\mathcal{S}). Sender knows his type, but receiver doesn’t. Sender chooses to go or not to go to school (S or NS), then Receiver observes Sender’s CV, and chooses to hire or not to hire (H or NH) the Sender. Education does not affect the productivity of Sender, but it is costly for him to go to school.
 - (a) Write down all the players’ possible strategies; the normal form of Game 1, and find all Bayesian Nash equilibria.
 - (b) Find all Perfect Bayesian equilibria (PBE).
 - (c) Show that any PBE where both types choose “No School” does not survive the domination refinement.
 - (d) Why is education valuable in this model?
2. Now consider Game 2 on page 3. Find a pure-strategy pooling PBE, and a pure-strategy separating PBE. Do these PBE satisfy the domination refinement? Do they satisfy the equilibrium domination refinement?
3. There is an investor with a project in the sausage industry seeking a loan from a bank. The project has a probability of success $\theta \in \{0.7, 0.8, 0.9\}$ that only the investor knows. The bank’s prior beliefs about θ is that $P(0.7) = 1/2$, $P(0.8) = P(0.9) = 1/4$. The value of the project if successful is $V = 10$, and 0 if it is not successful. The investment needed is $I = 15$. The bank charges an interest $r = 1/4$, and it will only get its money back if the project is successful. The expected payoff to the bank if it decides to loan the money is $\theta r I - (1 - \theta)I$, and 0 if it does not loan the investor the money.

The investor does not have enough funds to pay I , but she can sink some money $m \in \{0, 2, 4, 6\}$ in a wasteful way (e.g. she can buy expensive sausage-related clothes, or have her initials engraved in the floor of her sausage factory). The bank observes this sunk investment before deciding on the loan. The investor’s expected payoff if she gets the loan is $\theta(V - rI) - m$, and $-m$ if she does not get the loan. Find a pooling and a “weakly separating” (one where one type of investor sends a different message than the other two) pure-strategy PBE. Interpret.

4. From Osborne, do problems 340.1, 342.1, 346.1, 350.1.



Game 1: Education Signaling



Game 2: Education Signaling II