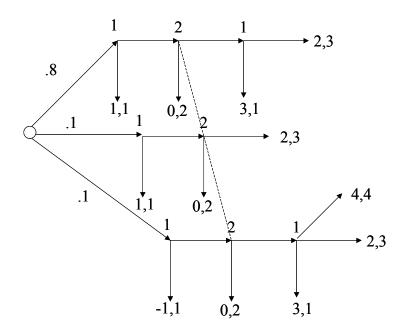1. Compute all the perfect Bayesian equilibria of the following game.

2. Consider the entry deterrence game, where an Entrant decides whether to enter the market; if he enters the Incumbent decides whether to Fight or Accommodate. We consider a game where Incumbent's payoff from the Fight is private information, the entry deterrence game is repeated twice and the discount rate is $\delta = 0.9$. The payoff vectors for the stage game are (0,2) if the Entrant does not enter, $(-1, a)$ if he enters and the Incumbent Fights; and (1,1) if he enters and the Incumbent accommodates, where the first entry in each parenthesis is the payoff for the entrant. Here, a can be either -1 or 2, and is privately known by the Incumbent. Entrants believes that $a = -1$ with probability $\pi = .9$; and everything described up to here is common knowledge. Find the perfect Bayesian Equilibrium.

3. Consider a buyer and a seller. The seller owns an object, whose value for himself is 0. The value of the object for the buyer is $v \in \{1, 2\}$. The seller believes that $v = 2$ with probability $\pi = 0.8$, while the buyer knows what v is. We have two dates, $t = 0, 1$. The players discount the future payoffs with $\delta = .9$. Hence, if they trade at $t = 0$ with price p, the payoffs of seller and the buyer are p and $v - p$, respectively, while these payoffs would be $0.9p$ and $0.9(v - p)$, respectively, if they traded at $t = 1$. If the do not trade at any of these dates, each gets 0. For the two bargaining procedures below, find the perfect Bayesian Nash equilibrium of the game in which all these are common knowledge.

(a) At $t = 0$, the buyer offers a price p_0. If the seller accepts, trade occurs at price p_0. If the seller rejects, at $t = 1$, the seller sets another price p_1. If the buyer accepts the price, the trade occurs at price p_1; otherwise they do not trade.

(b) At $t = 0$, the seller offers a price p_0. If the buyer accepts, trade occurs at price p_0. If the buyer rejects, at $t = 1$, the buyer sets another price p_1. If the seller accepts the price, the trade occurs at price p_1; otherwise they do not trade.

4. Gibbons 4.3.a.

5. Gibbons 4.4.