**ECON 411 Assignment #1 Winter 2022-23**

Due in class on Wednesday, January 25, 2023

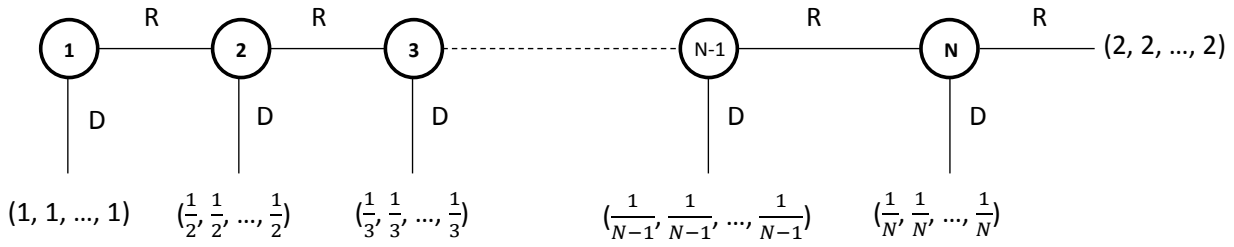
#1. Find all pure and mixed strategy Nash equilibria (if any) in the following game.

| | $L$ | $M$ | $R$ |
|---|---|---|---|
| $U$ | $1, 10$ | $2, 1$ | $3, 8$ |
| $S$ | $4, 1$ | $5, 2$ | $6, 7$ |
| $D$ | $2, 5$ | $6, 3$ | $1, 4$ |

#2. Find all pure and mixed strategy Nash equilibria (if any) in the following game.

| | $L$ | $M$ | $R$ |
|---|---|---|---|
| $U$ | $1, 1$ | $0, 0$ | $0, -1$ |
| $S$ | $0, 0$ | $1, 1$ | $0, -1$ |
| $D$ | $\frac{3}{4}, 0$ | $\frac{3}{4}, 0$ | $0, -1$ |

#3. Characterize the unique subgame-perfect equilibrium in the following game. Can you find any Nash equilibrium which is not subgame perfect? Explain.




#4. Consider the following Rubinstein Alternating Offer Bargaining game of $n$ periods. Two players try to share a pie of size 1. In period 1, player 1 makes an offer first, and then player 2 decides whether or not to accept it. If player 2 accepts it, the game ends; if player 2 rejects it, the game goes on to period 2. In period 2, player 2 makes the offer, and player 1 decides whether or not to accept it. ... ... In period $n$, player 2 (if $n$ is even) or player 1 (if $n$ is odd) makes the offer, and the other player decides whether or not to accept it. If the other player accepts it, the game ends. If the other player rejects it, each player gets 0. Suppose that player $i$'s discount factor is given by $\delta_i$, $i = 1, 2$

(a) Find the subgame-perfect equilibrium in this game when $n = 3$.

(b) Find the stationary subgame-perfect equilibrium in this game when $n = \infty$.