Homework 2

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Part 1. Answer **True** or **False** at following sentences. (25 points, 5 points/question)

1. A player may have some information that is not known by some other players. Such informational asymmetry can be modeled by Nature's moves. (T)
2. With the use of grim-trigger strategies, almost any repeated-game payoff can be achieved in equilibrium with impatient players by Folk theorem. (F)
3. A subgame-perfect Nash equilibrium is always a Nash equilibrium. (T)
4. In a game with infinitely many nodes, backward induction always results in a Nash equilibrium. (F)
5. In a sequential game, a player's ability to commit is always good. (F)

Part 2. Solve the following problems. (75 points)

6. Consider a three-period bargaining model. Player 1 and 2 are bargaining over one dollar. A detailed description of the timing of the three-period bargaining game is as follows.

   (1a) At the beginning of the first period, player 1 proposes to take a share s_1 of the dollar, leaving $1 - s_1$ for player 2.

   (1b) Player 2 either accepts the offer (in which case the game ends and the payoffs s_1 to player 1 and $1 - s_1$ to player 2 are immediately received) or rejects the offer (in which case play continues to the second period).

   (2a) At the beginning of the second period, player 2 proposes that player 1 takes a share s_2 of the dollar, leaving $1 - s_2$ for player 2. (Note the convention that s_t always goes to player 1, regardless of who made the offer.)

   (2b) Player 1 either accepts the offer (in which case the game ends and the payoffs s_2 to player 1 and $1 - s_2$ to player 2 are immediately received) or rejects the offer (in which case play continues to the third period).

   (3) At the beginning of the third period, player 1 receives a share s of the dollar, leaving $1 - s$ for player 2, where $0 < s < 1$. (Notice that the third-period settlement $(s, 1 - s)$ is given exogenously.)