# Problem Set 4

## *1. Discounting*

There are two investment opportunities available to you, Hiccup and TwoStep. Hiccup returns a utility of 4 on odd periods and 1 on even periods. TwoStep returns a utility of 10 for the first period and then always a utility of 2. Given a discount factor $\delta$, write down the infinite horizon average discounted utility from Hiccup and TwoStep. Are there values of $\delta$ for which one investment opportunity is better than the other? If so, specify the values of such $\delta$, and name the corresponding preferred investment option.

## *2. The Folk Theorem*

For each of the following simultaneous move games, find the static Nash equilibria and give an accurate sketch of the socially feasible individually rational region.
a)

| | L | R |
|---|---|---|
| U | 8,6 | 2,9 |
| D | 5,0 | 3,1 |

b)

| | E | W |
|---|---|---|
| N | 7,7 | 4,0 |
| S | 0,4 | 0,0 |

## *3. Equilibrium in a Repeated Game*

Consider the simultaneous move stage game

| | H | L |
|---|---|---|
| H | 1,1 | -1, 110 |
| L | 100,-1 | 0,0 |

Consider the "grim trigger" strategy of playing H in period one; playing H as long as both players have played only H in the past, and playing L otherwise. For what values of the common discount factor, $\delta$ , do these strategies form a subgame perfect equilibrium.