Consider the following variant of rock paper scissors:

- As usual, ***Rock*** beats ***scissors, paper*** beats ***rock,*** and ***scissors*** beats ***paper***.
- When a player plays ***rock*** and wins, he/she is the winner and gets a reward of $3 while the other player needs to pay $3 to the winner.
- When a player plays ***paper*** and wins, he/she is the winner and gets a reward of $2 while the other player needs to pay $2 to the winner.
- When a player plays ***scissors*** and wins, he/she is the winner and gets a reward of $1 while the other player needs to pay $1 to the winner.
- When there is a tie, the payoff is 0 for both players.

	R	P	S
R	0, 0	-2, 2	3, -3
P	2, -2	0, 0	-1, 1
S	-3, 3	1, -1	0, 0

1. When restricted to pure strategies only, do we have a Nash equilibrium? If so, determine the Nash equilibrium in pure strategies. If not, explains why there is none.
2. When mixed strategies are allowed, do we have a Nash equilibrium? If so, determine a Nash equilibrium in mixed strategies. If not, explains why there is none.