1. Consider the following two-player game:

12, 2	3, 9
5, 8	4, 2

   (a) Find all the Nash equilibria, pure and mixed. Explain how you know you have found all the equilibria.

   (b) Suppose that the payoff of the column player in the bottom-left outcome is reduced from 8 to 6, but all other payoffs remain the same. Again, find all the pure- and mixed-strategy Nash equilibria.

   (c) Compare the mixed-strategy equilibria in parts (a) and (b). Did this worsening in one of player 2's payoffs change player 2's equilibrium mixed strategy? Did it change player 1's? Give some intuition.

2. A game consists of you and an opponent deciding what side of a coin to reveal. If the coins show the same side, you win. If the coins show different sides, your opponent wins.

   (a) Suppose that winning is 1 point. What are the Nash equilibria?

   (b) Is this game fair (Are the expected payouts equal)?

   (c) Suppose:

     - If both sides are heads, you earn 3 points
     - If both sides are tails, you earn 1 point
     - If the sides differ, your opponent earns 2 points

   What are the Nash equilibria?

   (d) Is this game fair?

3. Suppose that the pure strategy s is evolutionarily stable. Is it possible that there is some other pure strategy that weakly dominates s? Is it possible that there is some other pure strategy that is not weakly dominated by s? Briefly explain your answer.