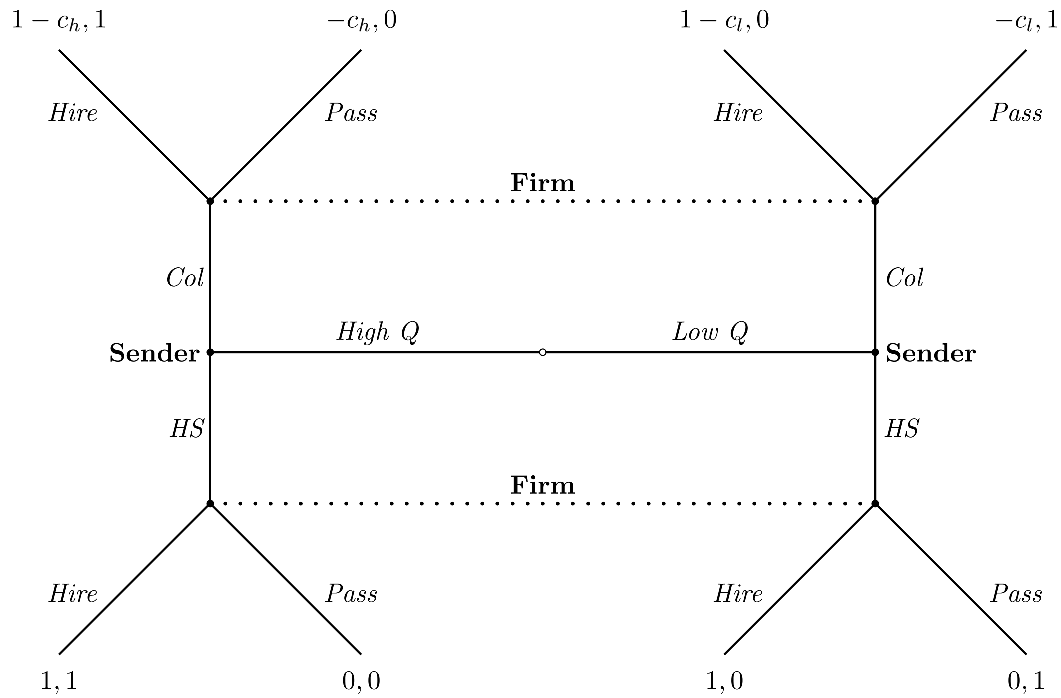
# Problem 1

Recall this costly signaling game:



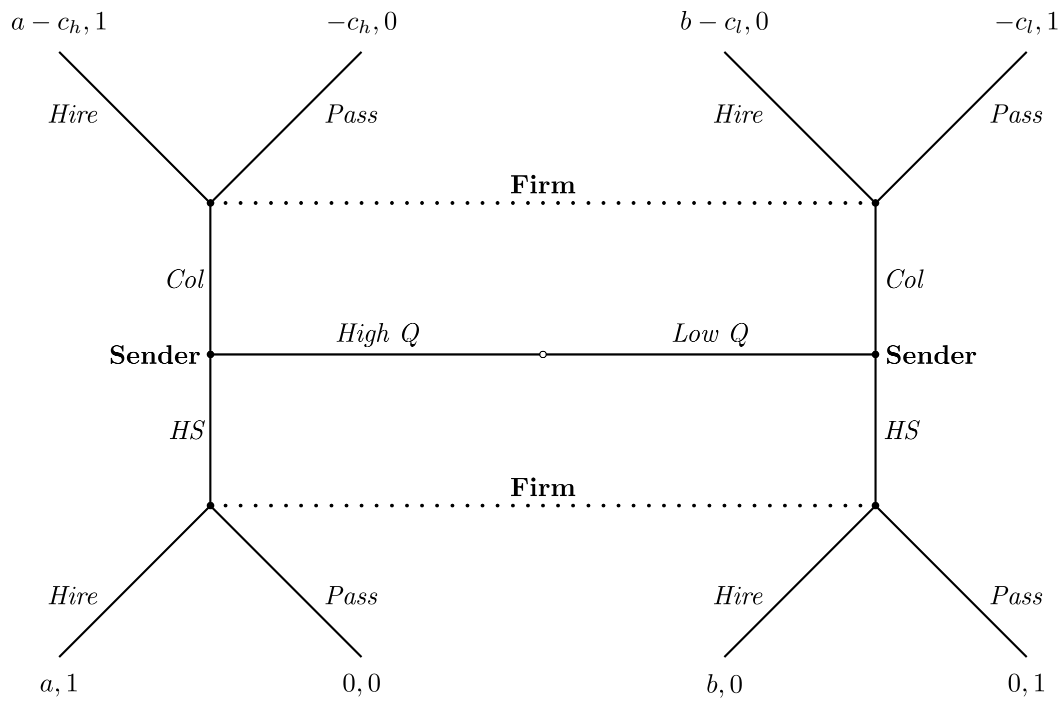

Suppose that $1 > c_l > c_h > 0$ and where the probability of being the high type is less than 1/2. The hybrid equilibrium exists in this situation. Consider the two-player, two-strategy game where the sender is choosing between **only** the strategies *always signal* and *signal only if High Q*, and the receiver is choosing only between the strategies *Hire only if signal* and *Never hire*.

**Part A**. Write down the matrix for the game. It should remind you of Matching pennies – see why?

**Part B**. Find all the Nash equilibria (both pure and mixed) of the game.

# Problem 2

This game is a combination of both differential cost and differential benefit versions of the costly signaling game.




Under what conditions is perfect communication possible?

# Problem 3

This game illustrates a totally different type of costly signaling where I am signaling, not about nature but about my own moves. Consider the following game:

| | $A$ | $B$ |
|---|---|---|
| $A$ | 4, 1 | 0, 0 |
| $B$ | 0, 0 | 1, 4 |

**Part A**. What are the pure strategy Nash equilibria of this game?

Now imagine that the row player has a extra "first" move. Row player can chose to burn two "points" in front of the other player. So now the structure of the game is as follows: Row player chooses whether or not to burn the points, the column player sees the decision of the row player, then both players choose a strategy in the game (the column player can adopt a conditional strategy like "play A if he burns, and play B if he doesn't."

**Part B**. Write out the normal form of this new game?

**Part C**. Find all the pure strategy Nash of this game. Do some of them seem more or less reasonable than others?