1. Consider the independent private value auction setting that we talked about in class. Assume that there are a total of n bidders (including yourself). For each of the following bidding functions answer the following:

    - Assuming that everyone else plays the proposed bidding function, what do you want to do?
    - Is the proposed bidding function a Nash equilibrium?

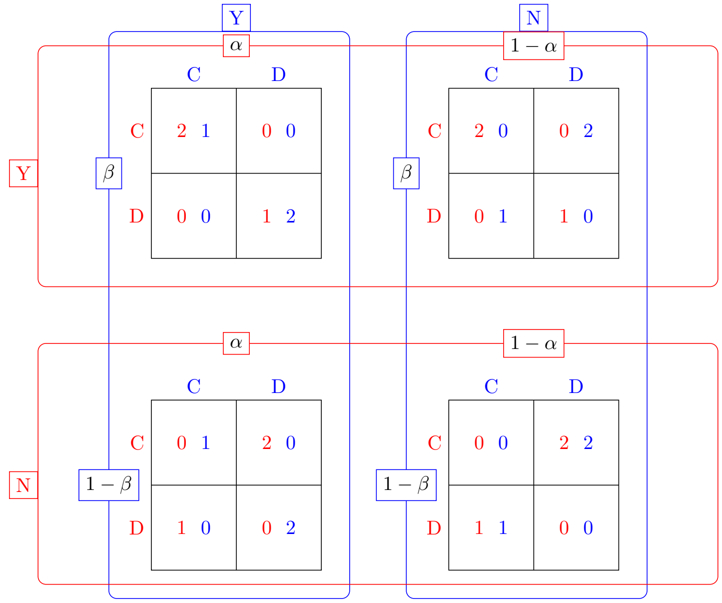
    a) First-price auction - highest bidder gets the item and pays their bid, everyone else pays nothing and gets nothing.

    - $b(v) = v$
    - $b(v) = 2v$
    - $b(v) = \frac{v}{2}$
    - $b(v) = \frac{n-1}{n}v$
    - $b(v) = \frac{n-1}{n}v^n$

    b) All-pay auction - highest bidder gets the item and everyone pays their bid.

    - $b(v) = v$
    - $b(v) = 2v$
    - $b(v) = \frac{v}{2}$
    - $b(v) = \frac{n-1}{n}v$
    - $b(v) = \frac{n-1}{n}v^n$

2. Consider the game we talked about in class where the players play the battle of the sexes game, but both players may or may not want to meet (displayed below). In this case, player 1 believes that player 2 has signal t_2^Y (left rectangle) with probability α and has signal t_2^N (right rectangle) with probability $1-\alpha$. Similarly, player 2 believes that player 1 has signal t_1^Y (top rectangle) with probability β, and has signal t_1^N (bottom rectangle) with probability $1-\beta$. For each pair of α, β values ($\alpha \in [0,1]$ and $\beta \in [0,1]$), find all pure strategy Bayesian Nash equilibria of the Bayesian game .



3. Whether candidate 1 or candidate 2 is elected depends on the votes of two citizens. The economy may be in one of two states, A or B. The citizens agree that candidate 1 is best if the state is A and candidate 2 is best if the state is B. Each citizen's preferences are represented by the expected value of a Bernoulli payoff function that assigns a payoff of 1 if the best candidate for the state wins (obtains more votes than the other candidate), a payoff of 0 if the other candidate wins, and payoff of $\frac{1}{2}$ if the candidates tie. Citizen 1 is informed of the state, whereas citizen 2 believes it is A with probability 0.9 and B with probaiblity 0.1 Each citizen may either vote for candidate 1, vote for candidate 2, or not vote.

    (a) Construct the table of payoffs for each state of the world and draw the rectangles to get a diagram that represents this game (the diagram should look similar to the ones we looked at in class and the one in problem #2 of this homework).

    (b) Show that the game has exactly two pure strategy Nash equilibria, in one of which citizen 2 does not vote and in the other she votes for 1.

    (c) Show that an action of one of the players in the second equilibrium is weakly dominated.

    (d) Why is "swing voter's curse" an appropriate name for the determinant of citizen 2's decision in the first equilibrium?