

Game theory homework 5

1. On a TV game show two contestants must choose between four prizes with values d_1, d_2, d_3 and d_4 , where $d_1 > d_2 > d_3 > d_4 > 0$. If they choose different prizes, they both get to keep them. If they choose the same prize, they both get nothing.
 - (a) Write down the payoff matrix.
 - (b) Find the pure Nash equilibria of the game.
 - (c) Find the symmetric Nash equilibria of the game. You may assume

$$d_3 > \left(\frac{1}{d_1} + \frac{1}{d_2} \right)^{-1}$$
$$d_4 > 2 \left(\frac{1}{d_1} + \frac{1}{d_2} + \frac{1}{d_3} \right)^{-1}.$$

2. Two players play a card game with a standard deck of cards. Player I draws a card at random from the deck without showing it to player II. Player I can either say “ace” or “pass.” If player I says ace, then player II must either “accept” and give \$1 to player I or “reject” and claim that player I is lying. If the card is an ace, player I gets \$2 from player II while if it is not an ace player I pays player II a penalty of \$ R . For each value of R find the Nash equilibrium for this game and the expected payment.