Test
Advanced Microeconomics: Part II (Uwe Jirjahn)

Summer 2022

Choose **two** questions out of the three questions Q1, Q2 and Q 3.

Q.1 Player 1 and player 2 bargain over sharing 300 dollars. The asymmetric Nash product is: $\Omega = (x_1 - 20)^{1/3}(x_2 - 10)^{2/3}$. Find the bargaining solution.

Q.2 Player 1 and player 2 bargain over sharing 300 dollars. The bargaining procedure follows the Rubinstein bargaining model. Player 1's share is

$$x_1^* = 300\,\frac{1-e^{-\Delta/5}}{1-e^{-\Delta/5}e^{-2\Delta/5}}$$

where Δ is the time interval between subsequent periods. Calculate player 1's and player 2's share if Δ approaches zero.

Q.3 Two firms (i = 1, 2) produce differentiated products. The market-clearing price is given by: $p(q_i, q_j) = 60 - q_i - \frac{1}{2}q_j$, where q_i is the quantity chosen by firm i and q_j the quantity chosen simultaneously by its competitor. The cost function of each firm is $C_i(q_i) = 10q_i$.

Q.3.a Find the response functions and show the response functions graphically.

Q.3.b Identify the Nash equilibrium.

Q.3.c Calculate each firm's equilibrium profit.

Note: If you answer all questions, we will only consider Q.1 and Q.2.