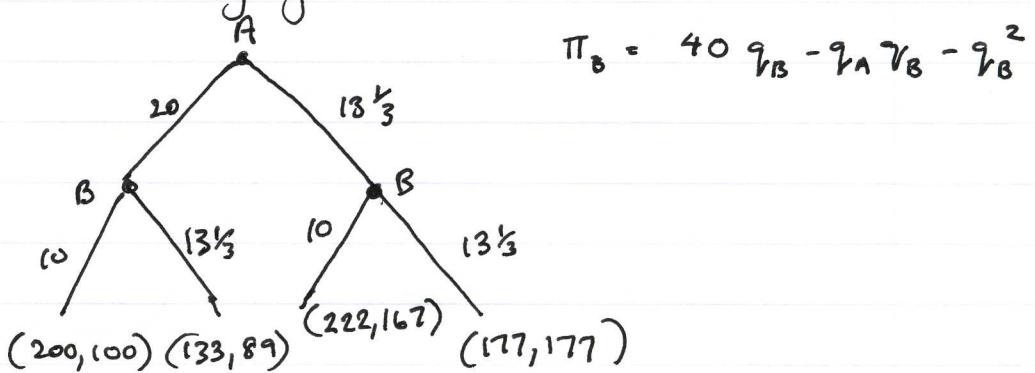


Game Theory & Oligopoly : Exercise 4

- 1) Set up the payoff matrix for a prisoners dilemma game and explain the logic. Explain why the game suggests a potential conflict between the pursuit of individual self interest and the interests of society as a whole.

- 2) Consider the Stackelberg game - done in lecture



- a.) Derive firm B's reaction function showing its profit maximum output for each output of firm A.
- b.) Solve the problem of maximizing firm A's profit function subject to this reaction function as a constraint and explain why this gives a Nash equilibrium
- 3.) Show that $(13\frac{1}{3}, 13\frac{1}{3})$ is the Nash equilibrium of the market game where each firm simultaneously chooses an output level.
- 4.) Consider firm A as an incumbent and firm B a potential entrant assume B will produce $13\frac{1}{3}$ if it enters, so B can either enter and produce $13\frac{1}{3}$ or not enter. Assume A considers 3 possible outcomes $13\frac{1}{3}, 20, 27\frac{2}{3}$. Show the extensive form of the game & explain how subgame perfect equilibrium concept can solve be used to solve the game