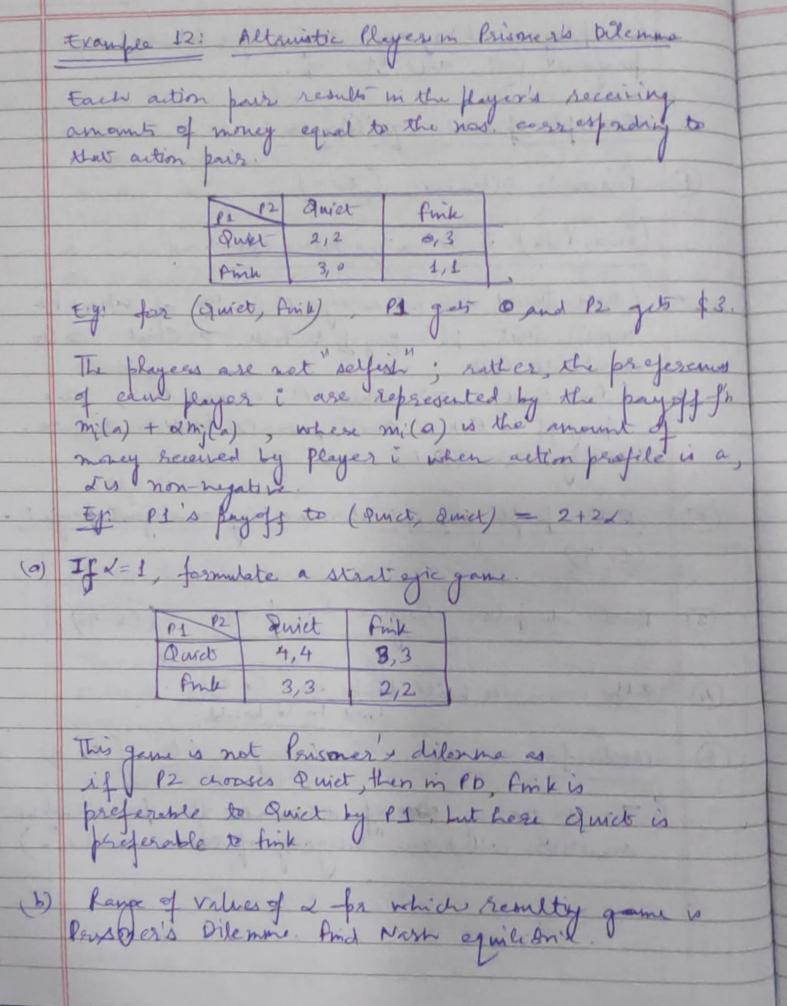
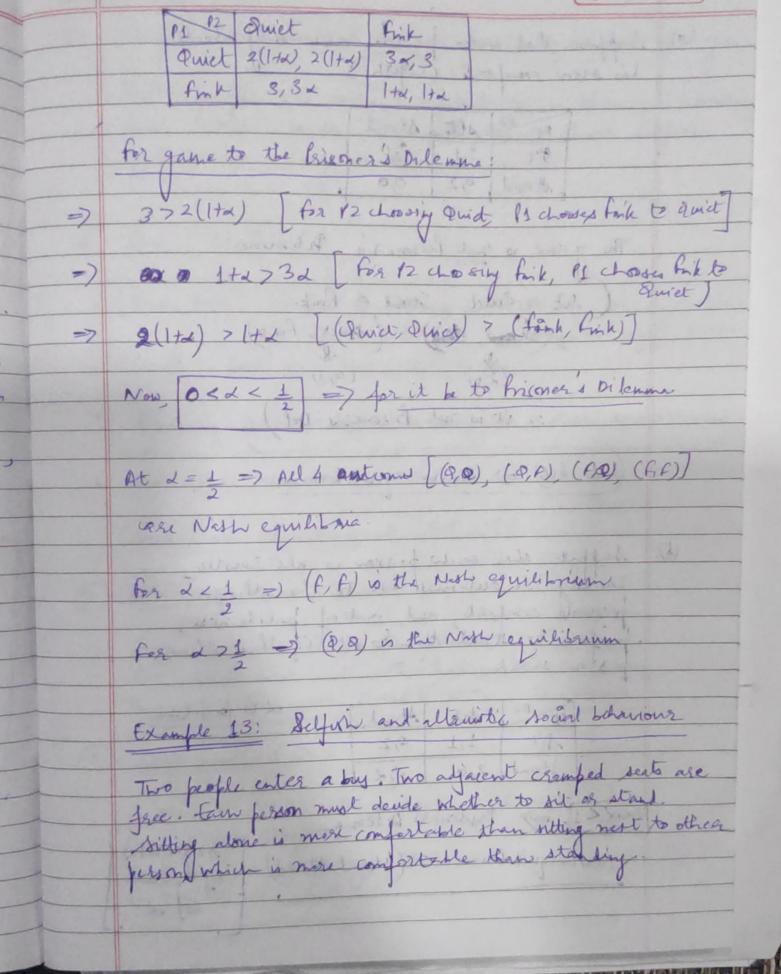
Nash Equilibrium ! Par a strategic game one must form a belief about the This belief can be formed from just confirmed playing this game. sponents, not any sprific set of sponents.

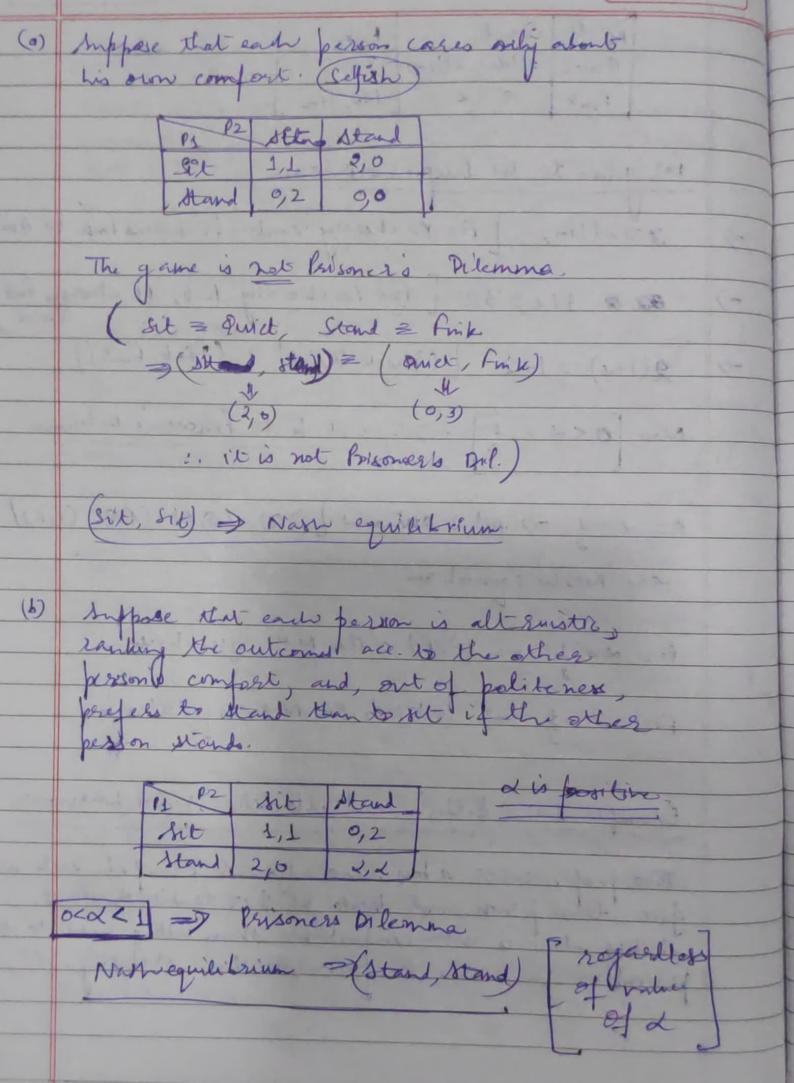
Egg interaction spw brugers and sellers. Solution theory has 2 components: the player chooses his action acc to the model of rational choice, given his belief about the other players' actions.

Correct. A Nash equilibrium is an action profile at with the property that no player i can do better by choosing an action different from ait, given that every other player jadheres to ait. A Nash equilibrium embodies a stable "social nam": if everyone else adheres to it, no individual mishes to deviate. Francis. A poor fit with the idealized setting [player do not have much experience of the game I may be miligated by other considerations. En vierpersenced flager may be able to draw conclusions about their offenato they retions from their experience in other situations.

Mere precipe definition! Let a be an action profile, in which the action of each player & is qi. Let a " he any action of player i (either equal to ail, or diff. from it). Then (ai, ai) denotes the action profile in which every player j'except i chosses his action of as specified by on a stands for except i"). That is, (9i,92) is the to a while i deviates to a (If of = 4i there (ai, ai) = (ai, ai) = a) If there are 3 players, then (92, 92) is the action profile in which players I and 3 and player 2 chooses of Nash equilibrium of steategic game with ordinal The action prefile at in a strategic game with ordinal pereferences is a North equilibrium if, for every player i and every action a; of player i, a is at bast as good and to player is preferences as the action profile (90, a) in which player i chooses at while every other player j chooses aj Equivalently, for every player is up(a*) > ui (qi, at) for every action ai of players where up is a payoff for that represent players's







Compare the people's comfort in the equilibria of 2 games Both people are more comfortable in the equilibrium that results when they out ace to their safection preferences. of returned stay a start only by the hander · (Bruh, Bruk) => If PL dariates to Atrainsty, his payoff 2-30 If 12 doriates to Stravinsky, his payoff I (Bach, Back) is a Nash equilibrium · Similarly (Attarinoky, Attarinoky) is a Nash equilibrium · But (B,s) or (J,B) is not. : 2 North equilibria => (B,B), (S,S) D Matching Penniss (Ex.9) · for (H, H) and (T, T) , P2 is better off deviating.

For (H, T) and (T, H, P1 is better off deviating.

Thus, for this game, there is no Nash equilibrium. (8) stag Hant (Ex.11) 2 Nash equilibria: (Stag, stag) (Hase, Hase)
Many player Stag Hunt also has the same aprilibria:
(Stag, Stag), (Hase, Hase, Hase)

Example 14! Variants of the stag Hunt Consider two variants of the n-hunter stag Hint in which only m hunters, with 25 mcm, need to pursue the stag in order to catch it. Assume that a captured stag is shared only by the hunters that contain it. Assume, that each hunter prefers the fruition 1/n
of the stag to a here. (a) Nash equilibria = (Stag, __, Stag) and (Hare, , Hare). Any player that devistes from the first profile obtains a have rather than the fraition 4n of the Stag. Any player that deviates from the seems profile An action prefile in which it least I and it most my hunters farme the stay is not a Nish equi, Since any one of them is botter of catching a have An action prefile in which it least in and it most med hunters pursue the stay is not a Nagh Letter off jaining propriet stay (b) Assume that can hunter prefers the fraction 1/k of the stay to a have, but profess the have to any smiller fruition of stay, maken. each obtains nothing, and is better off artiling here · If at least in and fewer than to hunters pursue

the stay then each she that pursues a here is better off switching to the pursuit of the stage If more than k hunters pulsue the stay then the fruiton of the stag that each obtain is less than 1/k, so each of them is better off enteling a have. Nash equilibria: (Hire, __, Haze) and Extend the n-hunter stay Hunt by giving early (a tre integer) units of effort, which between pulsuly the stay and catching heres Denot effort hunter i devotes to sussuing the Stay by e; egual to at most K. The chance that the stag is conject depends on the smallest of all the hunters' offorts dested munge; (" A chain is as strong as its weakest link.") Hunter i's payoff to the action profile (e, en) is 2 min; e; - ei. (He is better off the shore likely the stay is cauge, and worse off the new effort be devoted to pursuing the stop, which means he catches fewer heray THE YOUNG is a Nash equilibrium. In the equi, (e, -, e), each players of payoff agus, since of player i chooses like, then his pay of is 20; -0; = eice; and if he choases eize then payoff 2e-ejce

Consider an action peofile (, , en) in which not all effort levels are the same. Suppose that ei is the ninimum. Consider some player I whose effect level exceeds ei this payoff is sej-ej e; while if he devoates to the effort level e; his payoff is se; e; = ei Thus, he can increase the payoff by dericating, so (e, , en) is not and wash lequilibration Example 16: Hank - Dove. can be passive or regressive. Each prefers to be gyressive if its offment is passive, and passible if its opponent is aggressine; given its own stonce, it prefers the but come when its opposent is passing to that is which its profet is aggressive. 4 P Aggressive fassive Aggressin 0,0 3,1
Passine 1,3 2,2 2 Novegnilitain: (Aggresin, Passin) and (Rassire, Aggizzasire)