

MA 440 Homework 4

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1. Gintis, problem 2.7. You may regard the probabilities as payoffs to Fighter Command. Payoffs to Bomber Command are minus these numbers. Be sure to tell me in what order you eliminate strategies and why each can be eliminated.
2. Gintis, problem 2.13. *Do not turn in.* Answer is $(8, -8)$.
3. Gintis, problem 2.14. *Do not turn in.* Answer is on p. 396 of the text.
4. (This problem is loosely based on problem 2.11 in the text.) A Ming vase is sold at auction. The auction works like this. Every bidder raises her hand. The auctioneer then calls out 1 dollar. Every bidder who is not willing to pay this price lowers her hand. If no hands remain up, the auction is over, and the vase is not sold to anyone. If exactly one buyer still has her hand up, the vase is sold to her for 1 dollar. If more than one buyer still has her hand up, the auctioneer calls out 2 dollars. The auction continues in this manner. Once a bidder lowers her hand, she cannot raise it again. All the bidders decide simultaneously whether to lower their hands.

Notice that the auction ends when either (1) the auctioneer calls out k dollars and all hands are lowered but one, or (2) the auctioneer calls out k dollars and all hands are lowered. In the first case, the vase is sold to the remaining bidder for k dollars. In the second case, the vase is not sold to anyone.

There are n bidders, $n \geq 2$. The value of the vase to bidder i is v_i dollars; v_i is a nonnegative integer $(0, 1, 2, \dots)$. The payoff to bidder i

is 0 if bidder i does not win the vase, and is v_i minus the price if player i does win the vase.

A strategy for bidder i is simply the highest price she is willing to pay, which we assume is a nonnegative integer.

- (a) Show that bidder i 's strategies $v_i - 1$ and v_i weakly dominate all her other strategies.
 - (b) Does either of bidder i 's strategies $v_i - 1$ and v_i weakly dominate the other? Explain.
5. Gintis, problem 3.3a. Do this problem by examining all strategy profiles. Ignore "actions".
 6. Gintis, problem 3.4a. Do this problem by examining all strategy profiles.
 7. Gintis, problem 3.5a. Do this problem by examining all strategy profiles.