

1. (20pts) A 10-member board holds an election for a chairperson. The candidates are Demoya, Ferguson, MacArthur and Hearn. Their preference rankings and approval votes are as follows:

Number of voters:	1	3	1	2	1	2
Demoya	1√	1√	2	3	2√	3√
Ferguson	2√	3	1√	4	3√	4
MacArthur	3√	2√	4	1√	4√	2√
Hearn	4	4	3	2√	1√	1√

- Who wins the vote in a plurality election?
- Who wins the vote in a plurality election, followed by a runoff of the first two finishers?
- Who is the Condorcet winner, if any?
- Who is the winner using Borda's method? Perform the check on the sum of Borda points.
- Who is the winner using the approval method?
- In the Borda election, could the two voters who ranked MacArthur first achieve a preferable outcome by voting strategically, assuming all the other members voted as shown?