

Introduction to Contemporary Mathematics

Assignment 2

Below are several *bad* voting methods. Answer the questions after each method.

1. This method will work like the *Borda method* except all of the female candidates must be ranked better than the male candidates.
 - (a) Does this method satisfy Pareto optimality?
 - (b) Does this method satisfy neutrality?
 - (c) Does this method satisfy nondictatorship?
2. This method will work like a *plurality method* but each candidate can only receive a maximum of 10 possible votes. In the case of a tie, the winner is chosen by a random drawing.
 - (a) Does this method satisfy Pareto optimality?
 - (b) Does this method satisfy neutrality?
 - (c) Does this method satisfy nondictatorship?
3. This method will work like a *plurality method* but any vote for a candidate that has a Russian surname (ex. Chebychev) will be counted twice.
 - (a) Does this method satisfy anonymity?
 - (b) Does this method satisfy neutrality?
 - (c) Does this method satisfy nondictatorship?
4. This method will work like a *plurality method* but after the election, the person with the second highest number of votes is automatically given five extra votes and then the winner is determined.
 - (a) Does this method satisfy Pareto optimality?
 - (b) Does this method satisfy universal domain?
 - (c) Does this method satisfy monotonicity?
5. This method will work like a *plurality method* but after all of the votes are counted, the chairman of the voting committee will decide who wins.
 - (a) Does this method satisfy Independence from irrelevant alternatives?
 - (b) Does this method satisfy universal domain?

- (c) Does this method satisfy nondictatorship?
6. This method will work like a *plurality method* except each vote cast by a female voter gets counted twice.
- (a) Does this method satisfy Pareto optimality?
 - (b) Does this method satisfy neutrality?
 - (c) Does this method satisfy nondictatorship?
7. This method works like a plurality method but after the election, all the votes are tallied and reported and any voter can choose to change his or her vote. This will continue until all voters are satisfied.
- (a) Does this method satisfy Pareto optimality?
 - (b) Does this method satisfy neutrality?
 - (c) Does this method satisfy nondictatorship?