

## Homework Assignment No. 3

This assignment is due on Friday, February 19.

**Problem 1** Recall the voting system properties for two-candidate elections that we talked about in class:

1. All voters are treated equally.
2. All candidates are treated equally.
3. Monotonicity.

**a** *What is the technical meaning of property (1)?*

**b** *What is the technical meaning of property (2)?*

**c** *What is the technical meaning of property (3)?*

**d** *Define a new voting system called minority rule, in which the candidate with the fewest votes wins. Which of the above three properties does this voting system have? Explain your answers thoroughly.*

**Problem 2** Find or come up with an example of a voting system that, for the properties in problem 1:

**a** *Satisfies properties (1) and (2) but not (3)*

**b** *Satisfies properties (1) and (3) but not (2)*

**c** *Satisfies properties (2) and (3) but not (1)*

**Problem 3** Given the following list preference ballots, answer the following questions:

Voter 1	A	B	C	
Voter 2	B	C	A	
Voter 3	C	B	A	

**a** *Which candidates does A defeat in the one-on-one contests describes in Condorcet's method?*

**b** *Which candidates does B defeat in the one-on-one contests describes in Condorcet's method?*

**c** *Which candidates does C defeat in the one-on-one contests describes in Condorcet's method?*

**d** *Is there a Condorcet winner in this election? If so, who is it?*

