

Problem set 6, due Monday 12/16/13

**Part I: Single-winner election algorithms**

1. Suppose that there are three candidates in an election, named A, B, and C. There are 100 voters in total, who vote as follows:

40:  $A > B > C$       7:  $B > A > C$       15:  $B > C > A$       38:  $C > B > A$

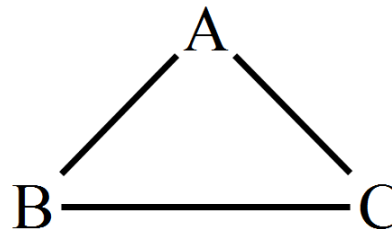
a) **Plurality.** The plurality winner is \_\_\_\_\_.

b) **Hare.** The Hare winner is \_\_\_\_\_. Use the table below to show the vote tallies in each round.

	A	B	C
round 1			
round 2			

c) **Minimax.** The minimax winner is \_\_\_\_\_. Construct the pairwise matrix below-left to find the candidates' scores, and construct a tournament diagram below-right, by drawing arrows from winning candidates to defeated candidates.

	A	B	C
A			
B			
C			



d) **Borda count.** The Borda winner is \_\_\_\_\_.

e) **Smith-Hare.** The Smith-Hare winner is \_\_\_\_\_.

f) **Condorcet winner, majority rule cycle.** Is there a Condorcet winner in this election? If so, who is it? Is there a majority rule cycle in this election?

2. Suppose that there are three candidates in an election, named A, B, C, and D. There are 100 voters in total, who vote as follows:

15: A > B > C > D      24: B > C > A > D      21: C > A > B > D  
 20: D > A > B > C      10: D > B > C > A      10: D > C > A > B

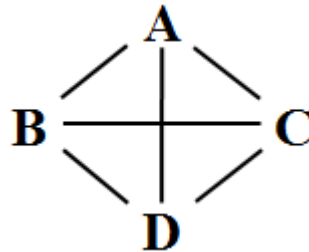
a) **Plurality.** The plurality winner is \_\_\_\_\_.

b) **Hare.** The Hare winner is \_\_\_\_\_. Use the table below to show the vote tallies in each round.

	A	B	C	D
round 1				
round 2				
round 3				

c) **Minimax.** The minimax winner is \_\_\_\_\_. Construct the pairwise matrix below-left to find the candidates' scores, and construct a tournament diagram below-right, by drawing arrows from winning candidates to defeated candidates.

	A	B	C	D
A				
B				
C				
D				



d) **Borda count.** The Borda winner is \_\_\_\_\_. Show your work, including scores for each candidate.

e) **Smith-Hare.** The Smith-Hare winner is \_\_\_\_\_.

f) **Condorcet winner, majority rule cycle.** Is there a Condorcet winner in this election? If so, who is it? Is there a majority rule cycle in this election?

## **Part II: Reflection questions**

**3. Proportional representation.** When electing a legislature, what is the difference between using a proportional representation system, and a single-member district system such as plurality?

### **4. Tiebout model.**

**a)** In Tiebout's model, what are the benefits of having a large number of independent local jurisdictions that make independent decisions regarding the public goods they provide, and the taxes that they charge to residents?

**b)** What are the major limiting assumptions of Tiebout's model? Describe the general types of situations in which devolution of responsibilities to more local levels of government can be problematic, and thus decision-making at higher levels of government is likely to be preferable.

**5. Redistribution.** What are the limits to redistribution in democratic societies? Consider limits based on both political will and practical ability.