

Math 36 — Weekly Homework
Assigned: 9/17
Due: 9/24

1. Consider the following collection of votes:

2	6	3	4
A	E	C	D
D	B	A	C
E	A	B	B
B	C	D	E
C	D	E	A

- (a) Who is the plurality winner?
- (b) Is there a Condorcet winner? If so, who?
- (c) Draw the preference graph for these votes.
- (d) Find an elimination tournament in which A is the winner.
- (e) Find a set of Borda weights to make B the winner.

2. Find vote counts so that the plurality, Borda, and Condorcet winners are all different. (Use standard Borda weights and ensure that a Condorcet winner exists.) Be sure to say which candidate wins in each voting method.

A	A	B	B	C	C
B	C	A	C	A	B
C	B	C	A	B	A

3. Suppose that instead of a line, our 1D spatial model of voting was on a circle. How do you define distance between two points? What are the implications of this modeling choice? Is this a reasonable model? Why or why not?

4. Describe what you think the probability density distribution of the US population in the 1D liberal-conservative model looks like. How many peaks does it have? Are there lots of moderates or extremists? It may be useful to draw a rough sketch. Cite at least one reputable source.

You don't need to give an exact equation for the distribution, just describe it qualitatively.