Homework 2: Chapter 1

Reading: Chapter 1 pgs 3-9
Exercises

(1.1) In an election involving five voters and three candidates, the preference schedule is

2	2	1
A	B	C
B	C	A
C	A	B

Determine the winners using (d) Borda count.

(1.3) The sum of all Borda scores in a mayoral election is $45 + 56 + 52 + 27 = 180$; see equation (1.3) in the text (given to you in class). Explain why the sum of all Borda scores is 180 in any election involving eighteen voters and four candidates, no matter what the preference schedule is. What would be the sum of all Borda scores in an election involving twenty voters and three candidates?

(HINTS: try creating several examples of preference schedules with $N = 18$ and $n = 4$. Compute the Borda scores. Are you seeing a pattern? Why do you think that is? Can you show why it always works?)

(1.4) The total number of points in the pairwise comparison tournament from example 1.1, the first example in the first lecture, is $1 + 3 + 2 + 0 = 6$. Explain why the total number of pairwise comparison points is six in any election involving four candidates, no matter what the pairwise comparison graph is–even if there are ties in head-to-head competition. What would be the total number of pairwise comparison points in an election involving five candidates?

(HINT: look at the graph!)

(1.7) Explain why every majority Candidate is a Condorcet candidate.

After completing the exercises, check your answers with the solutions online.