C. Borda Count Method

17. This exercise refers to the following preference schedule. (This is the election for Mathematics Department chair discussed in Exercise 3. The candidates are Professors Argand, Brandt, Chavez, Dietz, and Epstein.)

Number of voters	5	3	5	3	2	3
1st choice	*A*	*A*	*C*	*D*	*D*	*B*
2nd choice	*B*	*D*	*E*	*C*	*C*	*E*
3rd choice	*C*	*B*	*D*	*B*	*B*	*A*
4th choice	*D*	*C*	*A*	*E*	*A*	*C*
5th choice	*E*	*E*	*B*	*A*	*E*	*D*

(a) Find the winner of the election under the Borda count method.

(b) Suppose that before the votes are counted, Professor Epstein withdraws from the race. Find the preference schedule for a new election held without Professor Epstein as a candidate, and then find the winner under the Borda count method.

19. The editorial board of *Gourmet* magazine is having an election to choose the "Restaurant of the Year." The candidates are Andre's, Borrelli, Casablanca, Dante, and Escargot. The preference schedule for the election is given in the following table.

Number of voters	8	7	6	2	1
1st choice	*A*	*D*	*D*	*C*	*E*
2nd choice	*B*	*B*	*B*	*A*	*A*
3rd choice	*C*	*A*	*E*	*B*	*D*
4th choice	*D*	*C*	*C*	*D*	*B*
5th choice	*E*	*E*	*A*	*E*	*C*

(a) Find the winner under the Borda count method.

(b) Explain why this election shows that the Borda count method violates the *majority* criterion.

(c) Explain why this election shows that the Borda count method violates the *Condorcet* criterion.

23. An election with four candidates and 50 voters is to be determined using the Borda count method.

(a) What is the maximum number of points a candidate can receive?

(b) What is the minimum number of points a candidate can receive?

25. An election is to be decided using the Borda count method. There are four candidates (A, B, C, D) in this election.

(a) How many points are given out by one ballot?

(b) If there are 110 voters in the election, what is the total number of points given out to the candidates?

(c) If candidate A gets 320 points, candidate B gets 290 points, and candidate C gets 180 points, how many points did candidate D get?