MA 1015: Homework #2

Question 1. In this election:

4	3	3	1
A	B	C	D
B	A	A	E
C	C	B	C
D	D	D	A
E	E	E	B

Please determine the results if we are using instant runoff voting.

Question 2. In the 1980 US senate race in New York, the candidates were D'Amato (D), Holtzman (H), and Javits (J). Based on polling people's opinions between the three, the population's preferences were something like this:

22%	23%	15%	29%	7%	4%
D	D	H	H	J	J
H	J	D	J	H	D
J	H	J	D	D	H

Please determine the results if we are using instant runoff voting.

Question 3. The plurality system does satisfy monotonicity. Please invent your own example in which you make some change showing how the monotonicity property is satisfied. (Show the original election, then show the changed election, and show who wins each time.)

Question 4. Say I have an election like this:

3	2	2
A	A	B
C	B	A
B	C	C

a) Please show that A is the winner using Borda count.

b) If the ACB voters (first column) change their vote to BCA, find the winner using Borda count.

c) Please explain why this example does not demonstrate the monotonicity criterion for the Borda count.

Question 5. Please use this election to demonstrate that IRV fails to satisfy the monotonicity property:

7	5	4	1
A	C	B	D
D	A	C	B
B	B	D	A
C	D	A	C

(Say something like: "if I change ... to ..., then ..." Make sure you are boosting the winner.)