

Math 1015: Exam #1 practice

Question 1. Please find the results of this election using plurality:

4	2	3
A	B	C
B	C	B
C	A	A

Question 2. Use the election from Question 1 and find the results using ranked choice voting.

Question 3. Use the election from Question 1 and find the results using Condorcet's method.

Question 4. Use the election from Question 1 and find the results using Borda count.

Question 5. Please explain why dictatorship does not satisfy the majority winner criterion. (You don't need to write a formal proof.)

Question 6. Use this sample election to show how some of the voters can manipulate the election if we're using plurality. Write some words explaining why your example qualifies as a manipulation.

4	3	2
A	C	B
C	A	C
B	B	A

Question 7. What if, in an election, we just choose the winner completely at random? Is that the same as the "random dictator method" that we discussed in class? Please explain why or why not.

Question 8. Please use this election:

3	4	2
A	B	C
D	A	B
C	D	A
B	C	D

Assume we are using approval voting where each candidate approves of their top two choices. Please find the results of the election.

Question 9. a) Please invent your own example of a weighted voting system which has a dictator.

b) Please invent your own example of a weighted voting system which has two dummies, or explain briefly why this is impossible.

c) Please invent your own example of a weighted voting system which has a voter with veto power who is not a dictator, or explain briefly why this is impossible.

Question 10. Please find the Shapley-Shubik power index for $[15 : 12, 10, 3]$.