

Math 110
Quiz 4
Summer 2007

Justify all answers with neat and organized work. Clearly indicate your answers. 25 points possible.

1. (13 pts.) The theater society members are voting for the kind of play they will perform next semester: a comedy (C), a drama (D), or a musical (M). Their votes are summarized in the following preference table.

# of Votes	10	6	6	4	2	2
1st choice	M	C	D	C	D	M
2nd choice	C	M	C	D	M	D
3rd choice	D	D	M	M	C	C

(a) Which type of play is selected using the plurality method? Show enough work to justify your answer.

(b) Which type of play is selected using the Borda count method? Show enough work to justify your answer.

(c) Which type of play is selected using the plurality-with-elimination method? Show enough work to justify your answer.

(d) Which type of play is selected using the pairwise comparison method? Show enough work to justify your answer.

2. (12 pts.) The preference table for an election is shown. The Borda count method is used to determine the winner.

Number of Votes	21	12	6
1st choice	A	B	D
2nd choice	B	D	A
3rd choice	C	C	C
4th choice	D	A	B

(a) Using the Borda count method, who is the winner? Show enough work to justify your answer.

(b) Is the majority criterion satisfied? Using one or more complete sentences, explain your answer.

(c) Is the head-to-head criterion satisfied? Using one or more complete sentences, explain your answer.

(d) Suppose that candidate C drops out. Construct the new preference table for the election with C removed. Using the Borda count method, who among the remaining candidates is the winner? Is the irrelevant alternatives criterion satisfied? Using one or more complete sentences, explain your answer.