## MATH 181 F1 Quiz \#6

Directions: You have 15 minutes for this quiz. Please write clearly and justify your answers.
Question 1 (4 points): Consider the following election with 4 candidates.

|  | Voter 1 | Voter 2 |
| :---: | :---: | :---: |
| 1st | $B$ | $A$ |
| 2nd | $C$ | $D$ |
| 3rd | $A$ | $C$ |
| 4th | $D$ | $B$ |

Show how Voter 1 can manipulate a Borda count.

Question 2 (4 points): Use the following election to show the Borda count is manipulable for 4 candidates and three voters.

|  | Voter 1 | Voter 2 | Voter 3 |
| :---: | :---: | :---: | :---: |
| 1st | $A$ | $B$ | $B$ |
| 2nd | $B$ | $A$ | $A$ |
| 3rd | $C$ | $C$ | $C$ |
| 4th | $D$ | $D$ | $D$ |

Question 3 ( 2 points): Show the Borda count is manipulable for 4 candidates and five voters.

