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Date: Wednesday, September 28, 2016

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**MATH 181 F1 Worksheet: Introduction to Voting Theory**


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**Question 1:**

Focusing only on candidates  $A$  and  $B$ , which is the winner using majority rule?

|     | Voter 1 | Voter 2 | Voter 3 |
|-----|---------|---------|---------|
| 1st | $A$     | $B$     | $C$     |
| 2nd | $B$     | $C$     | $A$     |
| 3rd | $C$     | $A$     | $B$     |

**Question 2:**

Who is the winner using Condorcet's method?

|     | Voter 1 | Voter 2 | Voter 3 |
|-----|---------|---------|---------|
| 1st | $A$     | $B$     | $C$     |
| 2nd | $B$     | $C$     | $A$     |
| 3rd | $C$     | $A$     | $B$     |

**Question 3:** Consider the following preference lists.

|     | Voter 1 | Voter 2 | Voter 3 | Voter 4 | Voter 5 | Voter 6 | Voter 7 |
|-----|---------|---------|---------|---------|---------|---------|---------|
| 1st | $C$     | $C$     | $E$     | $E$     | $C$     | $D$     | $A$     |
| 2nd | $E$     | $E$     | $B$     | $B$     | $A$     | $E$     | $E$     |
| 3rd | $D$     | $D$     | $D$     | $D$     | $D$     | $A$     | $C$     |
| 4th | $A$     | $A$     | $C$     | $C$     | $E$     | $C$     | $D$     |
| 5th | $B$     | $B$     | $A$     | $A$     | $B$     | $B$     | $B$     |

Calculate the winner using:

1. plurality voting,
2. the Borda count,
3. and the Hare system.