

Math 1015
Homework #2

2a, 3b, 4, 7

#2 a. D vs (H):
D: $22+23+4=49$
H: $15+29+7=51$

(D) vs J:
D: $22+23+15=60$
J: $29+7+4=40$

H wins with Condorcet's method.

(H) vs J:
H: $22+15+29=66$
J: $23+7+4=34$

3b

M: $76 \cdot 2 + 59 \cdot 0 + 27 \cdot 0 + 15 \cdot 1 = 167$

N: $76 \cdot 1 + 59 \cdot 1 + 27 \cdot 2 + 15 \cdot 2 + 11 \cdot 2 = 241$

S: $76 \cdot 0 + 59 \cdot 2 + 27 \cdot 1 + 15 \cdot 0 = 145$

N wins with Borda.

4 Borda satisfies unanimity:

Imagine all voters rank X above Y.

then X gets more points than Y,

so Y does not win using Borda.

#7 RCV satisfies Majority

Imagine that a majority of voters rank X first.

Then X can never be eliminated, since X will always remain 1st place in every round.

So X wins with RCV.