

Math 118 G1

Exam #3 Review

This is NOT necessarily a complete list of topics that you should know. Consult your class notes to see what we have covered, and meet with me to discuss any material that you do not understand.

Chapter 9

1. Know the voting theory for two-candidate elections.
2. Understand how voting with a preference list works.
3. Determine the results of an election using plurality.
4. Determine the results of an election using Borda count.
5. Determine the results of an election using sequential pairwise voting.
6. Determine the results of an election using the Hare system.
7. Discuss CWC, IIA, Pareto, and Monotonicity.
Know what they mean and a voting system that fails each one.
8. Know Kenneth Arrow's Impossibility Theorem.
9. Determine the results of an election using approval voting.

Chapter 11

1. Use the notation $[q : w_1, w_2, \dots, w_n]$ to describe a weighted voting system.
2. Identify winning, losing, and blocking coalitions.
3. Determine whether a dictator exists in a weighted voting system.
4. Determine whether anyone has veto power in a weighted voting system.
5. Use the Extra Votes Principle to find critical voters in a coalition.
6. Calculate the Banzhaf Power Index for a weighted voting system.
7. Find the pivotal voter in a permutation.
8. Calculate the Shapley-Shubik index for a weighted voting system.
9. Understand how each index tries to measure the "power" of a voter.