CSE 21
Mathematics for Algorithm and System Analysis

Final Review
Questions

• Total 17 questions, 8 of them are choice questions.

• Only prove proof that might be tested in Final is to prove a solution to a recursion, which is like question 25 in final practice.

• Get arithmetic result
  – Points will subtracted if your results are like \( C(5, 2), S(3, 2), 3!, \ldots \)
  – No points will subtracted if your results are \( (5\times4)/(2\times1), 3, 3\times2\times1, \ldots \)
Suggestions

• Try to write your analysis for all questions, so you might have partial credits even your results are wrong.

• Pay attention to the words like all, not, at least, at most. The results change dramatically with and without these words.

• If you have time in the end, I suggest you check whether you can explain your solution back to the question.
  – It will help you finding errors.
Counting questions

• For counting questions, pay attention to the words like identical, different, with/without replacement.
  – Pick 2 balls from 8 identical balls: 1 way.
  – Pick 2 balls from 8 different balls: $C(8, 2)$ ways.
  – Pick twice from 8 different balls with replacement, pick one ball each time: 8 balls to choose each time.
  – Pick twice from 8 different balls without replacement, pick one ball each time: $9-n$ balls to choose for $n$th pick.
Clarification

- Do (di)graph and simple (di)graph allow loops?
  - By default, no loops are allowed.
  - If loops are allowed, it has to be explicitly said, like question 3 in Quiz 4.