Math 421 Q1 Winter 2017 Homework 2 Solutions

Due Jan. 26, 12pm.

Total 20 points.

Question 1. (5 pts) *How many ways are there to line up 1,2,...,9 such that 1 is somewhere to the right of 2 and 2 is somewhere to the right of 3? Justify your answer.*

Question 2. (5 pts) *How many ways are there to form four blocks of four seats from 25 consecutive seats? Justify your answer. (Here as the seats are already put in a line, they are seen as different: 1st seat, 2nd seat, 3rd seat, ..., and the blocks cannot overlap.)*

Question 3. (5 pts) *How many solutions are there for*

$$x_1 + x_2 + x_3 = 10, \qquad 0 \leqslant x_1 < 5, \quad -1 \leqslant x_2 < 6, \quad 2 \leqslant x_3 < 7? \tag{1}$$

Justify your answer.

Question 4. (5 pts) *A bag of coins contains eight nickles, four dimes, and three quarters. Assuming that coins of any one denomination are identical, in how many ways can a collection of ten coins be made up from the bagful? Justify your answer.*