

Exercise Sheet 20

Discrete Mathematics, 2020.12.15

1. ([R], Page 557, Exercise 8) In a survey of 270 college students, it is found that 64 like brussels sprouts, 94 like broccoli, 58 like cauliflower, 26 like both brussels sprouts and broccoli, 28 like both brussels sprouts and cauliflower, 22 like both broccoli and cauliflower, and 14 like all three vegetables. How many of the 270 students do not like any of these vegetables?
2. ([R], Page 558, Exercise 22) Prove the principle of inclusion–exclusion using mathematical induction.
3. ([R], Page 565, Exercise 13) How many derangements are there of a set with seven elements?
4. ([R], Page 565, Exercise 16) A group of n students is assigned seats for each of two classes in the same classroom. How many ways can these seats be assigned if no student is assigned the same seat for both classes?
5. ([R], Page 565, Exercise 17) How many ways can the digits 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 be arranged so that no even digit is in its original position?