

### Math. A3, Midterm Test 2. SAMPLE

1. A statistics course is visited by students of four different faculties: 4 math., 5 economy, 6 sociology, and 7 biology students. How many different ways 5 students of this course can be delegated to a meeting in such a way that students of all the four faculties be represented?
2. Three cooks, A, B, and C bake a special kind of cake, and with respective probabilities 0.03, 0.05, and 0.06 it fails to rise. In the restaurant where they work, A bakes 50 per cent of these cakes, B 30 per cent, and C 20 per cent. What proportion of “failures” is caused by A?
3. Let  $A$  and  $B$  be two independent events,  $\mathbb{P}(A) = 0.8$ ,  $\mathbb{P}(B) = 0.7$ .  $\mathbb{P}(A + \bar{B}) = ?$
4. On a multiple choice exam with 5 possible answers for each of the 10 questions, what is the probability that a student would get 8 or more correct answers just by guessing?
5. There are 15 other clients, 5 women and 10 men, waiting in the bank besides me. The only clerk calls the clients one after the other in random order, I am the seventh. What is the probability that the clerk has called exactly 3 women and 3 men before me (in any order)?
6. Find the expectation and variance of the r.v. with p.d.f.  $f(x) = \frac{1}{4}x^3$  if  $0 < x < 2$ , and 0, otherwise.