

## CS 519: Probability and Linear Algebra

### Assignment 1

Due date: 17th August, Wednesday (During Class, 12pm)

1. Prove that set of rational numbers  $Q$  is a countable set.

2. Prove that:

a. If  $B \subset A$  then  $P(B) \leq P(A)$  and  $P(A-B) = P(A) - P(B)$

b. If  $A$  and  $B$  are independent events (i.e.,  $P(A \cap B) = P(A) \cdot P(B)$ )

then show that  $P(A^c \cap B) = P(A^c) \cdot P(B)$

3. **HOS:** [Hossein Pishro-Nik](#). *Introduction to Probability, Statistics, and Random Processes*. 2014.

[Companion Website](#)

End of chapter problems

Chapter 1 / section 1.5

Problem nos. 10, 17, 25, 33, 36, 37

Chapter 2

Problem nos. 13, 14, 15

#### **NOTE:**

Any question related to assignment must be posted on Piazza. Direct mail to instructor's email-id will not be entertained.