

# Problems from TextBook: CS 215, Fall 2024

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29 August 2024

This is a sheet containing practice questions. Solve them and ask any doubts regarding them in tutorial classes. Refer to Ross Textbook Edition 3.

## 1 Ross Textbook Chapter 4

Try Questions: 6, 7, 8, 11, 25, 26, 28

## 2 Ross Textbook Chapter 5

Try Questions: 4, 5, 6

## 3 Questions

1. Prove or disprove the following:

- (a) If event B includes the event A, then  $P(A) \leq P(B)$ .
- (b) If  $P(B | A) = P(B | \bar{A})$ , then A and B are independent.
- (c) If  $P(A) = a$  and  $P(B) = b$ , then  $P(A|B) \geq \frac{a+b-1}{b}$

2. Find the probability that a randomly written fraction will be irreducible. Assume both numerator and denominator belongs to set of natural numbers

3. Under what conditions does the following equality hold:

$$P(A) = P(A|B) + P(A|\bar{B})?$$