ELEC 321: Assignment #1.1

Anup Aprem

Problem 1

(a) No.
(b) No.
(c) Yes.
(d) $P(A_0) \leq \frac{1}{2^{31}}$
(e) No.

Problem 2

(a) $A \cap B$
(b) $A \cap B \cap C^c$
(c) $D = (A \cap B^c \cap C^c) \cup (A^c \cap B \cap C^c) \cup (A^c \cap B^c \cap C)$
(d) $E = (A \cap B \cap C^c) \cup (A^c \cap B \cap C) \cup (A \cap B^c \cap C)$
(e) $A \cap B \cap C$
(f) $F = A^c \cap B^c \cap C^c$
(g) $D \cup F$
(h) $D \cup E \cup F$

Problem 3

(a) Induction.
(b) 0.5

Problem 4

Use set theory manipulations and definition of conditional probability.

Problem 5

0.81

Problem 6

(a) $\binom{n-m+1}{m}$
(b) 0.72881

Problem 7

(a) No.
(b) Yes. For example, Poisson distribution.

Problem 8

(a) Consider $n-1$ tosses that satisfy the constraint. Now add a new coin toss to make it to n.
(b) $P_n = \frac{f_n}{2^n}$
(c) Use R and Part b

Problem 9

(a) 0.5
(b) ~ 625
(c) ~ 1.