Cheat Paper 1 - Stat 5101

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Feb. 1, 2018

Set theory (Section 1.4 in the book)

Events and probability (Section 1.5 in the book)

Counting, Permutation (Section 1.7 in the book)

Combination (Section 1.8 in the book)

Binomial Theorem. For all numbers x and y and each positive integer n,

$$(x+y)^n = \sum_{k=0}^n \binom{n}{k} x^k y^{n-k}$$

Lec-7 Jan. 31, Wed.

Inclusion-Exclusion formula. Show

$$\binom{n}{0}^2$$

$$P(A \cup B) = P(A) + P(B) - P(AB)$$

$$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(AB) - P(BC) - P(CA) + P(ABC)$$

Lec-5, Jan. 26, Fri.

Combination (Section 1.8 in the book)

Lec-4, Jan. 24, Wed.

Counting, Permutation (Section 1.7 in the book)

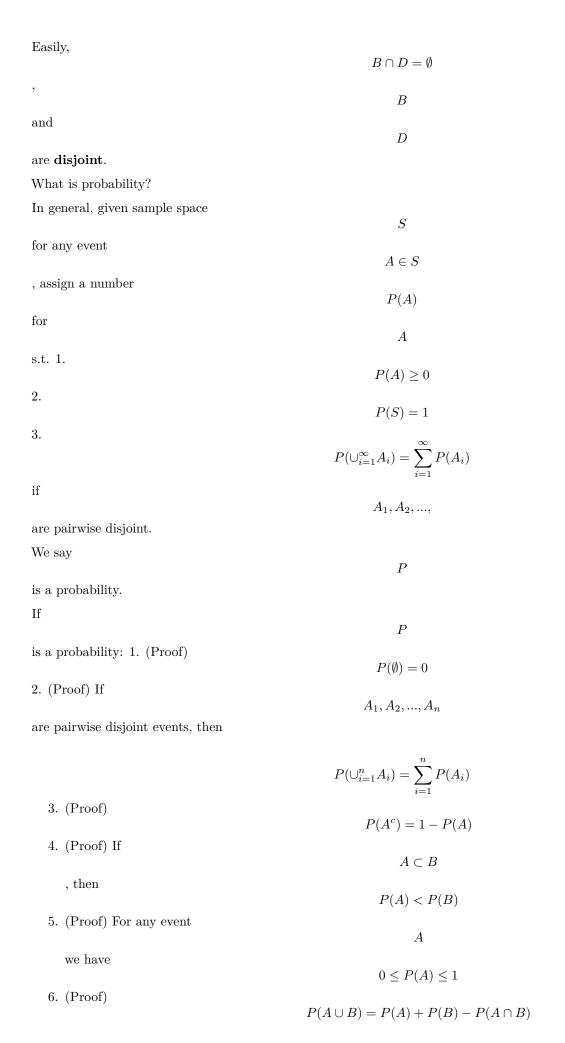
Lec-3, Jan. 22, Mon.

Events and probability (Section 1.5 in the book)

Eg. Flip a coin 3 times

$$S = \{HHT, HTH, HTT, HHH, THT, TTH, TTT, THH\}$$

$$S_1 = HHH, S_2 = THH, S_3 = HTH, S_4 = HTT, S_5 = THT, S_6 = TTT, S_7 = TTH, S_8 = HHT$$



Lec-2, Jan. 19, Fri.

Set theory (Section 1.4 in the book) * event * union & intersection * complement * relationship among events * partition Sample space: run one experiment, put all possible outcomes together, it forms the sample space of this experiment. * Eg.1 Flip a coin.

$$S = H, T$$

 \ast Eg.2 Roll a die,

$$S = 1, 2, 3, 4, 5, 6$$

* Eg.3 Randomly select a person whose birthday,

$$S = 1, 2, ..., 365$$