

Probability Lecture 3

* In this lecture, problems have been discussed.
So, let's put up the formulas that have been used:

* if A_1, A_2, \dots, A_m are events (total), then
 $A_1 \cup A_2 \cup \dots \cup A_m = S \rightarrow$ sample space.

$$* P(E) = \frac{n(E)}{n(S)} = \frac{n}{m} \text{ (say)}$$

$$\text{Then } P(E^c) = 1 - P(E) = 1 - \frac{n}{m} = \frac{m-n}{m}$$

* For impossible event, $P(E) = 0$.

$$* P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

For mutually exclusive, $P(A \cup B) = P(A) + P(B)$

$$* P(A) + P(\bar{A}) = 1$$

$$P(A - B) = P(A \cap \bar{B}) = P(A \cup B) - P(B) \\ = P(A) - P(A \cap B)$$

$$P(A \Delta B) = P(A \cup B) - P(A \cap B) \\ = 2P(A \cup B) - (P(A) + P(B))$$

* $P(\text{exactly two of } A, B, C \text{ occur}) =$

$$P(A \cap B) + P(B \cap C) + P(C \cap A) - 3P(A \cap B \cap C)$$