Anil
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Baye's Thm:-

Partition of a sample space:-

Condition:- (a) $E_i \cap E_j = \phi$, $i \neq j$, $i, j = 1, 2, ---, n$

(b) $E_1 \cup E_2 \cup ... \cup E_n = S$ (sample space)

(c) $P(E_i) > 0 \cdot \forall i = 1, 2, ---, n$

Thm of total probability:-

sample space S ; $E_1, E_2, E_3, --- E_n$ has non-zero prob.

A is any event associated with S.

$$P(A) = P(E_1) P(A|E_1) + P(E_2) P(A|E_2) + -- + P(E_n) P(A|E_n)$$

$$= \sum_{j=1}^{n} P(E_j) P(A|E_j)$$

~~EFE~~

Baye's thm:

if $E_1, E_2, ---$ are n non empty events which constitute a partition of sample space S

$E_1, E_2, ---, E_n$ are pairwise disjoint & $E_1 \cup E_2, --- \cup E_n = S$.

$$P(E_i|A) = \frac{P(E_i) P(A|E_i)}{\sum_{j=1}^{n} P(E_j) P(A|E_j)} \quad \forall i = 1, 2, --, n$$