

STAT 511 - Test 1

Formula Sheet

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$

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

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

Combinatorial Formulas:

$$\frac{n!}{(n-r)!}$$

$$\frac{n!}{n_1! n_2! \dots n_k!}$$

$$\frac{n!}{r! (n-r)!}$$

Bayes' Rule:

$$P(B_j | A) = \frac{P(A | B_j) P(B_j)}{\sum_{i=1}^k P(A | B_i) P(B_i)}$$

where $\{B_1, \dots, B_k\}$
is a partition
of S .

Special case:

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