

3.9: Formula Review

3.2: Terminology.

A and B are events

$P(S) = 1$ where S is the sample space

$$0 \leq P(A) \leq 1$$

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

3.3: Independent and Mutually Exclusive Events

If A and B are independent, $P(A \cap B) = P(A)P(B)$, $P(A | B) = P(A)$ and $P(B | A) = P(B)$.

If A and B are mutually exclusive, $P(A \cup B) = P(A) + P(B)$ and $P(A \cap B) = 0$.

3.3 Two Basic Rules of Probability.

The multiplication rule: $P(A \cap B) = P(A | B)P(B)$

The addition rule: $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

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