The Practise Ground

Class 11-12 Maths

Probability Rules

Addition, multiplication, conditional and Bayes

1

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

Addition rule

For mutually exclusive events the last term is 0

2

$$P(A \text{ and } B) = P(A) \times P(B \mid A)$$

Multiplication rule

For independent events, $P(B \mid A) = P(B)$

3

$$P(A \mid B) = P(A \text{ and } B) / P(B)$$

Conditional probability

The probability of A given that B has happened

4

$$P(A \mid B) = P(B \mid A)\, P(A) / P(B)$$

Bayes' theorem

Reverses a conditional probability

Remember

P(not A) = 1 − P(A).

Every probability lies between 0 and 1.

Quick example

Two coins are tossed.

P(at least one head) = 1 − P(no heads)

= 1 − 1/4 = 3/4

Think you've got it? Test yourself.

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