

Probability Distributions Cheat Sheet

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Discrete Distributions

Bernoulli Distribution

Description: Models a single trial with two possible outcomes (success with probability p and failure with probability $1 - p$).

PMF: $P(X = k) = p^k(1 - p)^{1-k}$ for $k \in \{0, 1\}$

Mean: $\mu = p$

Variance: $\sigma^2 = p(1 - p)$

Figure Placeholder

Continuous Distributions

This section covers the key continuous probability distributions.

Normal (Gaussian) Distribution

Description: Described by its mean (μ) and standard deviation (σ), and has the classic "bell curve" shape.

PDF: $f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$

Mean: μ

Variance: σ^2

Figure Placeholder