Formula Sheet

Geometric Distributions

$P(x \leq n) = 1 - (1-p)^n$

$P(x < n) = 1 - (1-p)^{n-1}$

$P(x \geq n) = (1-p)^{n-1}$

$P(x > n) = (1-p)^n$

$p(y) = P(Y = y) = pq^{(y-1)}$

Binomial Distributions

$\binom{n}{k} p^y q^{n-y}$

Combination

$\binom{n}{k} = \frac{n!}{k!(n-k)!}$

Def 3.5

$E(Y) = \frac{1}{p}$, $V(Y) = \frac{1-p}{p^2}$ or $V(Y) = \frac{q}{p^2}$

Bayes Theorem

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

Conditional Probability

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

Permutation

$P\binom{n}{r} = \frac{n!}{(n-r)!}$

Mean

$\frac{(a_1 + a_2 + \cdots a_n)}{n}$

Standard Deviation

$\sqrt{\frac{\sum(x - mean)^2}{n-1}}$