Chapter 1 : Discrete Distributions :

Name	Probability mass function	Values of X	mean	variance	parameters
Binomail distribution	$f(x) = \binom{n}{x} p^x q^{n-x}$ $where\ , q = 1 - p$	$x = 0,1,2,..,n$	$\mu = \mathrm{E(X)} = \mathrm{np}$	$\sigma^2 = npq$	$n\ , p$
Poisson distribution	$f(x) = \frac{e^{-\lambda}\ \lambda^x}{x!}$	$x = 0,1,2, ...$	$\mu = \mathrm{E(X)} =\ \lambda$	$\sigma^2 =\ \lambda$	λ
Discrete Uniform distribution	$f(x) = \frac{1}{k}$	$x = x_1, x_2, .., x_k$	$\mu = \mathrm{E(X)} = \frac{\sum \mathrm{x_i}}{\mathrm{k}}$	$\sigma^2 =$ $\frac{1}{k}\sum_{i=1}^{k}[x_i\ - E(X)]^2$	-
Hypergeometric distribution	$f(x) = \frac{\binom{K}{x}\binom{N-K}{n-x}}{\binom{N}{n}}$	$x =$ $0,1, .., \min\ (n, k)$	$\mu = \mathrm{E(X)} = \frac{\mathrm{nK}}{\mathrm{N}}$	$\sigma^2 =$ $\frac{N-n}{N-1} n\ \frac{K}{N} (1 - \frac{K}{N})$	*N ,K ,n*

Chapter 2 : Continuous Distributions :

Name	Probability density function	Values of X	mean	variance	parameters
Continuous Uniform distribution	$f(x) = \frac{1}{b-a}$	$a \le x \le b$	$\mu = E(X)$ $= \frac{a+b}{2}$	$\sigma^2 = \frac{(b-a)^2}{12}$	–
Exponential distribution	$f(x) = \lambda e^{-\lambda x}$	$x \ge 0$	$\mu = E(X) = 1/\lambda$	$\sigma^2 = 1/\lambda^2$	λ
Normal Distribution	$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}$	$-\infty < x < \infty$	$E(X) = \mu$	$Var(X) = \sigma^2$	$\boldsymbol{\mu}, \sigma^2$
Standard Normal Distribution	$f(Z) = \frac{1}{\sqrt{2\pi}} e^{-\frac{z^2}{2}}$	$-\infty < z < \infty$	$E(X) = 0$	$Var(X) = 1$	–
Chi -Square	$\mathcal{X}^2 = \frac{(n-1)S^2}{\sigma^2}$	x > 0	$E(x) = v$	$Var(x) = 2v$	Degree of freedom $v = n - 1$
T - Distribution	$T = \frac{Z}{\sqrt{\frac{V}{v}}}$	$-\infty < t < \infty$	-	-	Degree of freedom $v = n - 1$
F – Distribution	$F = \frac{U/v_1}{V/v_2}$	X > 0	-	-	Degree of freedom v_1, v_2