Probabilty Distribution: General term used for functions providing probabilities of occurrence of different possible outcomes in an experiment.

Probabilty Distributions can be for both discrete random variables and continious random variables.

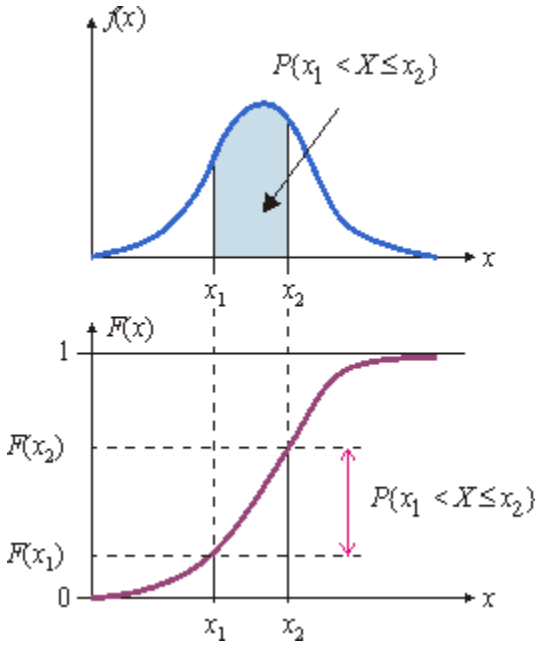
- **Discrete**: For discrete random variables the probabilty distribution is called a probabilty mass function $\boldsymbol{P(X)}$.
- **Continious**: For continious random variables the probability distributions are called probabilty density functions or $\boldsymbol{f(X)}$.

To make it clear, both discrete and continious variables distributions have a cumulative form, known as **CDF**

CDF of a $\int f(X)dx = F(X)$. where getting F(X) over all x's gets you the CDF.

CDF of a **P(X)** accumulates the y values in PMF at each discrete x and less than x. Repeat this for every x. (i.e addition of all values probabilties before x till x).

NOTE: f(X) itself is not the probability of but the area under f(x) between a and b, is the probability of event happening



- $\int_{-\infty}^{\infty} f(x)dx = 1$

DISCRETE PROBABILITIES	CONTINIOUS PROBABILITIES
▪ BINOMIAL DISTRIBUTION ▪ POISSON DISTRIBUTION ▪ GEOMETRIC DISTRIBUTION ▪ HYPERGEOMETRIC DISTRIBUTION ▪ NEGATIVE BINOMIAL DISTRIBUTION	▪ Uniform Prob Distribution ▪ Exponential ▪ Normal Prob Distribution ▪ Gamma Prob Distribution ▪ Chi Prob Distribution ▪ Beta Prob Distribution