Summary

- A variable is a one that changes its value depending on time, place, person etc. whereas, constant is one which never changes its values at any situation
- A *random variable*, usually written *X*, is a variable whose possible values are numerical outcomes of a random experiment
- There are two types of random variable. These variables are capable of taking values from (-[∞], +[∞]) including fractions
 - Discrete: If the values of the variable are captured through counting we may say it is a discrete variable
 - Continuous: If the values of the variable are captured through measurement then we may say it is a continuous variable
- The random variable are denoted using capital letters like X,Y,Z..., whereas values taken by the random variable are denoted by small letters like x, y, z....
- If f(x) is the probability function associated with the random variable X, then P(X $\leq x$) = $\int_{a}^{x} f(x) dx$.
- For a continuous random variable, P(X=c) = 0, c being constant. Unlike discrete variable, for a continuous random variable P(X≤x) = P(X < x). Because the function is continuous at x
- A probability density function is probability function associated with the continuous random variable. Probability density function is abbreviated as P.D.F. One can calculate probability of any continuous random variable, provided it satisfied certain conditions
- P.D.F always satisfied the following property The function is always non negative Total probability is always unity The function continuous for all values x in the given range
- $P(X \le x) = \int_{a}^{x} f(x) dx$. Is called the distribution function
- Distribution functions are always monotonically non decreasing function
- F (.) being a distribution function, we have $P(a < x \le b) = F(b) - F(a)$.