**Here are some key bullet points about the Normal Distribution:**

The normal distribution is a continuous probability distribution that is symmetric around its mean, representing data that clusters around a central point with tails that taper off symmetrically.

**Bell-shaped Curve**: The normal distribution has a bell-shaped curve, where most of the data points lie near the mean, and fewer points appear as you move away from the mean in either direction.

- Parameters:

- **Mean (μ):** The center of the distribution, representing the average value.

- **Standard Deviation (σ):** Measures the spread or dispersion of the distribution. Smaller values of σ result in a narrower curve, while larger values result in a wider curve.

**- Symmetry**: The normal distribution is perfectly symmetrical about the mean, meaning the left and right sides of the curve are mirror images.

- **68-95-99.7 Rule:**

- \*\*68%\*\* of data lies within 1 standard deviation of the mean.

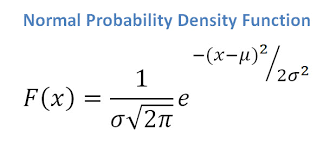
- \*\*95%\*\* of data lies within 2 standard deviations of the mean.

- \*\*99.7%\*\* of data lies within 3 standard deviations of the mean.

- **Central Limit Theorem (CLT**): The sum or average of a large number of independent and identically distributed random variables tends to follow a normal distribution, regardless of the original distribution of the variables.

- **Application**: Normal distribution is commonly used in statistics, finance, natural and social sciences for modeling phenomena such as height, test scores, measurement errors, stock prices, and more.

- **Probability Density Function (PDF):**



This equation describes the likelihood of a value occurring in a normal distribution.

- **Unimodal**: The normal distribution has a single peak (mode) at the mean.

**- Area Under the Curve**: The total area under the normal distribution curve equals 1, representing the entire probability space.

- **Z-Scores**: Z-scores are used to standardize values from a normal distribution, indicating how many standard deviations a data point is from the mean.