

## Mathematics for Data Scientist

- **Linear Algebra**
  1. Vectors
  2. Matrices
  3. Transpose of a matrix
  4. Inverse of a matrix
  5. Determinant of a matrix
  6. Trace of a matrix
  7. Dot Product
  8. Eigenvalues
  9. Eigenvectors
  10. Single Value Decomposition
- **Calculus (YouTube : Complete Deep Learning)**
  1. Chain Rule of Differentiation
  2. Partial Derivatives
  3. Integrations
  4. Beta and Gamma Functions
  5. Functions of Multiple Variable, Limit, Continuity, Partial Derivatives
  6. Variants Of Optimizers
  7. Loss Functions
  8. Back Propagation
  9. Minima And Maxima
- **Statistics**
  - **Basic Stats-Beginners : (YouTube : Statistics in Machine Learning)**
    - Probability
    - Introduction to Basic Terms
    - Variables
    - Random Variables
    - Population, Sample, Population Mean, Sample Mean
    - Population Distribution, Sample Distribution and Sampling Distribution
    - Mean, Median, Mode
    - Range
    - Measure of Dispersion
    - Variance
    - Standard Deviation
    - Gaussian / Normal Distribution

- **Advance Stats : (YouTube : Feature Engineering)**

- **Q-Q Plot**
- **Chebyshev's Inequality**
- **Discrete And Continuous Distribution**
- **Bernoulli And Binomial Distribution**
- **Log Normal Distribution**
- **Power Law Distribution**
- **Box Cox Transform**
- **Poisson Distribution**
- **Application of Non Gaussian Distribution**
- **Z-Test, T-Test, Chi Square, Anova Test**

**Sources - YouTuber**

- ✓ **3Blue1Brown**
- ✓ **Khan Academy**
- ✓ **Stat Squares**