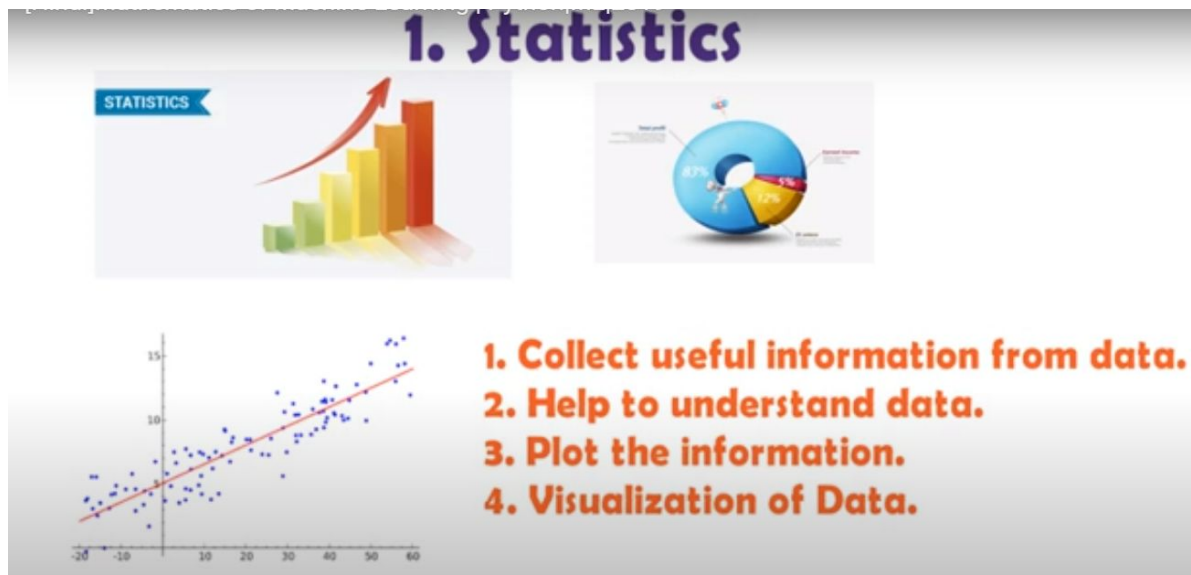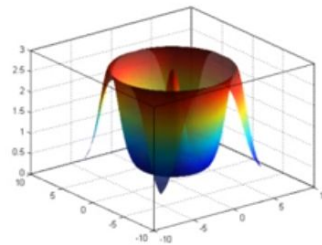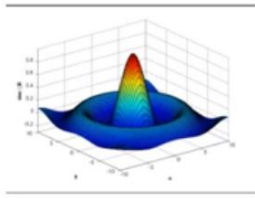For Machine learning , focus on 4 topics

1. Statistics
2. Calculus
3. Linear Algebra
4. Probability

Statistics is a main branch of ML or mathmatics

1. Statistics

STATISTICS

1. Collect useful information from data.
2. Help to understand data.
3. Plot the information.
4. Visualization of Data.

2. Calculus

1. **Pattern variations in data.**
2. **Model changes with respect to time.**
3. **Algorithm Optimization.**
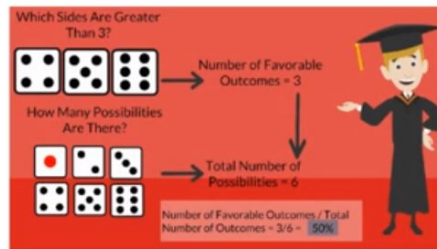4. **Algorithm behaviour analysis.**

3. Linear Algebra

n columns

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} & \cdots & a_{1n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{i1} & a_{i2} & a_{i3} & \cdots & a_{in} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & a_{m3} & \cdots & a_{mn} \end{bmatrix} \quad m \text{ rows}$$

Linear Algebra (Stock Example)

Adjust AAPL
Adjust GOOG
Adjust MSFT
Compute Profit

New Portfolio & Profits

Market Events

Alice and Bob's Portfolio

1. **Run all kinds of algos on various types of datasets.**
2. **All kinds of regressions.**
3. **Model optimization**

4. Probability

1. Helps you to predict the outcome.
2. Predict the likelihood of an event occurence.