**Linear Regression (Simple Explanation with Netflix Example)**

**1. What is Linear Regression?**

* It’s a machine learning algorithm used to predict a continuous value.
* It finds a straight-line relationship between **input (X)** and **output (Y)**.
* Formula: Y=mX+b

where:

* + **Y** = predicted value
  + **m** = slope (impact of X on Y)
  + **X** = input (feature)
  + **b** = intercept

**2. Netflix Example – Predicting Monthly Watch Time**

**Problem:**  
Netflix wants to **predict how many hours a user will watch in a month** based on their past watch time.

**Inputs (X - Features):**

* Watch time last month
* Number of shows watched
* Subscription plan (basic, premium)

**Output (Y - Target):**

* Predicted watch time for next month (in hours).

**How It Works:**

* The model learns from past data:
  + A user who watched **30 hours last month** might watch **32 hours next month**.
  + Another user with **10 hours last month** might watch **12 hours next month**.
* The model draws a **best-fit line** to predict watch time for new users.

**3. When to Use Linear Regression?**

* When the relationship between **X and Y is roughly linear**.
* When you need a **simple, interpretable model**.