Polynomial Regression.

1. Simple linear Regression :

$$y = b_1 x_1 + b_0 = mx + c$$

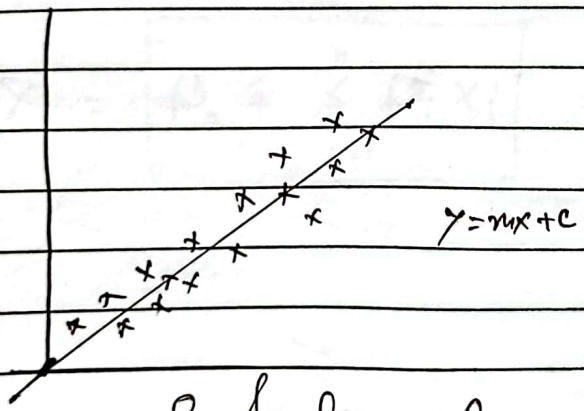
2. Multiple linear Regression.

$$y = m_1 x_1 + m_2 x_2 + m_3 x_3 \text{ ------ --- } + c$$

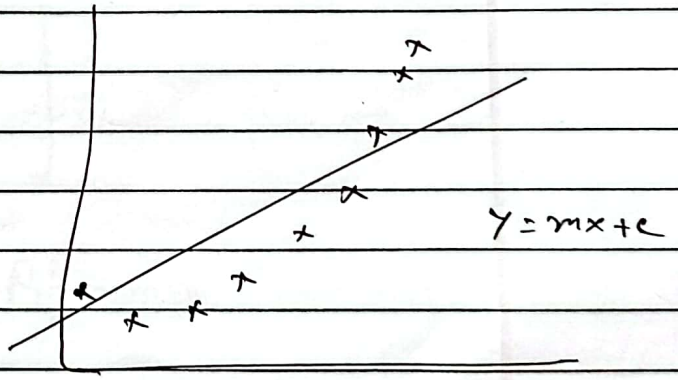
3. Polynomial Regression.

$$y = m_1 x_1 + m_2 x_1^2 + m_3 x_1^3 \text{ ------ } m_n x_1^n + c$$

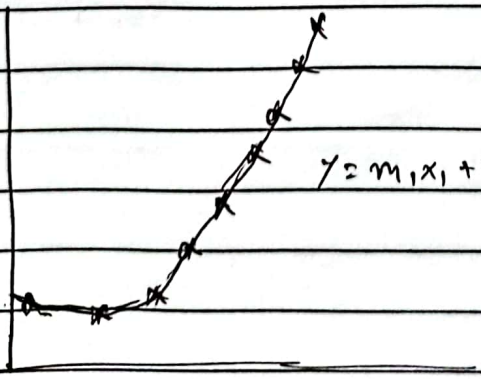
one variable -> different degree of power.



Simple linear Reg.

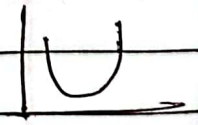


linear Reg but not good.



Polynomial Reg.

Something like Parabola



→ 0 degree Polynomial.

$$y = \beta_0 + \beta_1 x_1 = \text{Constant } (\beta_0)$$

→ 1 degree Polynomial.

$$y = \beta_0 + \beta_1 x_1$$

→ 2 degree Polynomial.

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_1^2$$

$y = \beta_0 + \beta_1 x_1$ → linear with one variable

$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 \cdots \beta_n x_n$

$y = \beta_0 + \sum_{i=1}^{n} \beta_i x_i$ → linear with multivariable.

→ Polynomial linear Regression

↳ why it's called linear?

$y = \beta_0 + \beta_1 x_1 + \beta_2 x_1^2 + \beta_3 x_1^3 \cdots \beta_n x_1^n$

$y = \boxed{\beta_0 + \sum_{i=1}^{n} \beta_i x_i + F_{(p)}}$

↳ Polynomial function.

Best Understanding Test check file.