

Overfitting

Training 98%  $\uparrow$

Testing 70%  $\downarrow$

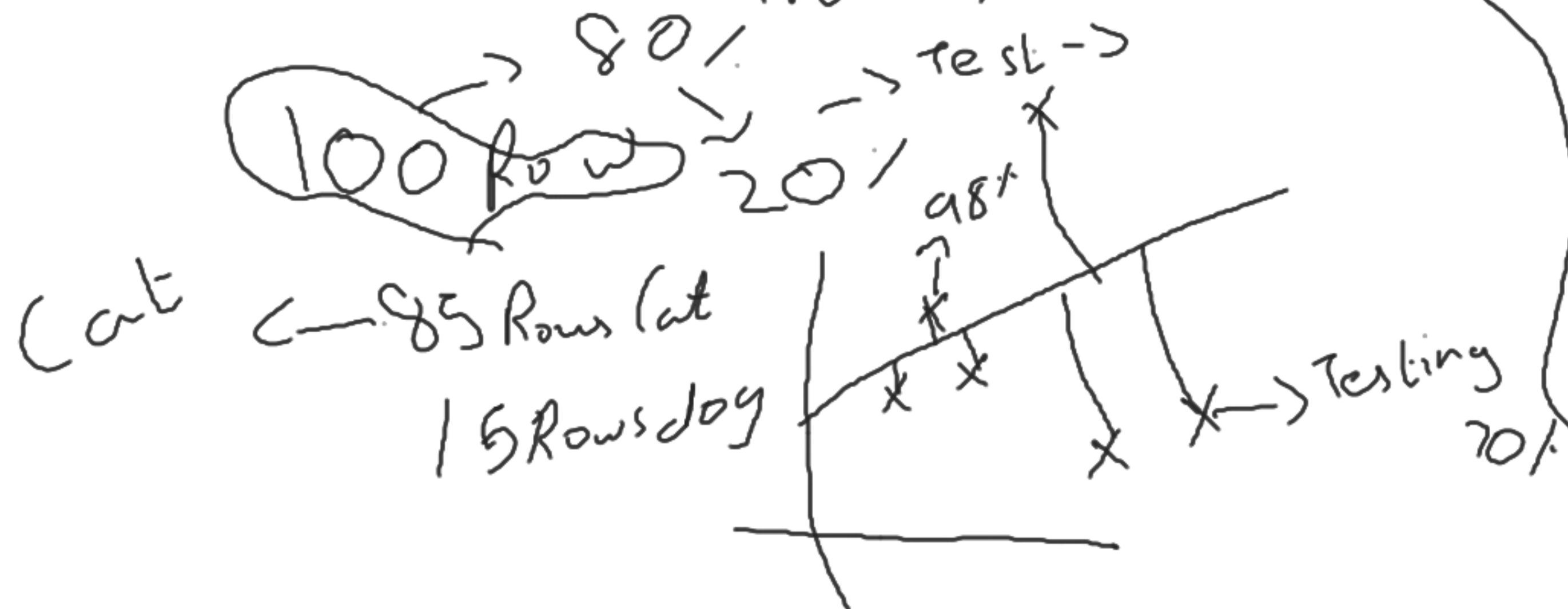
Underfitting

Training

65%  $\downarrow$

Testing

50%  $\downarrow$



# Generalized Model

85% in training

86% in testing..

100% train  
→ Overfitting,  
100% → training:

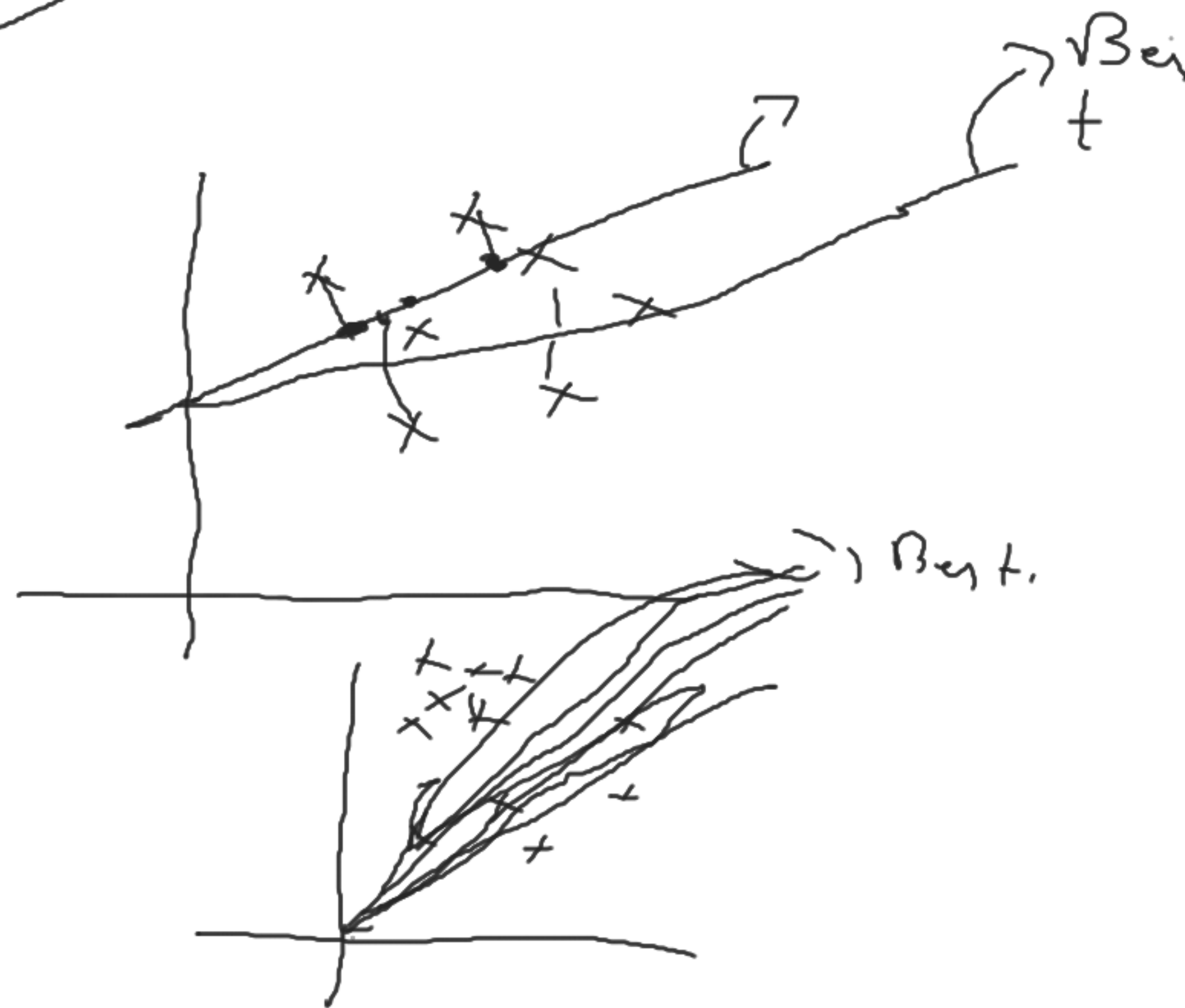
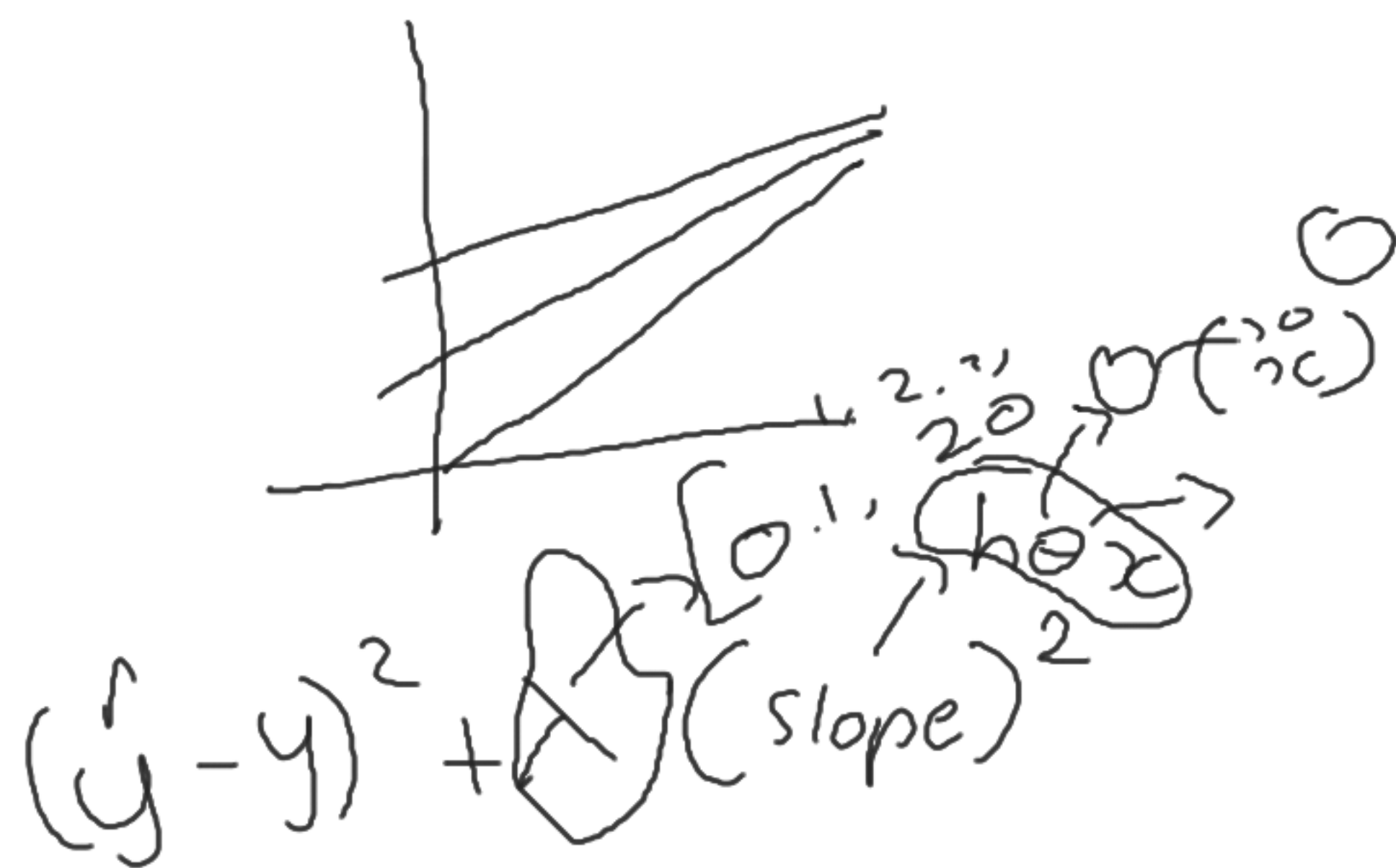
↓  
Impossible  
Not



→ Overfitting

Ridge (L2 Regularization)

$$= \frac{1}{2m} \sum_{i=1}^m \underbrace{\left( \underbrace{h\theta x^{(i)}}_{\text{slope}} - y^{(i)} \right)^2}_{\text{}} > (\hat{y} - y)^2$$



$\lambda$  - hyper parameter

## Lasso Regression (L1 Regularisation)

Overfitting avoided  
feature selection }  $\rightarrow$  impact on the output  $\rightarrow$  overfitting

$$(\hat{y} - y)^2 + \lambda$$

$h\theta_0 + h\theta_1 + h\theta_2$

high Repeating input.

Overfitting  
feature Selection

$$(y - \hat{y})^2 \times 1 / \text{Slope}$$

$$\text{Slope} = h\theta x_i$$

$$h\theta_0 + h\theta_1 + h\theta_2 + h\theta_1$$

