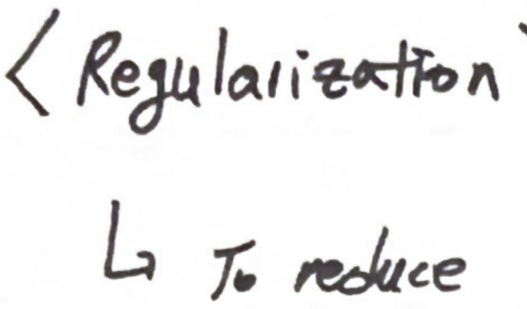
〈 Regularization 〉

↳ To reduce "overfitting"

* Overfitting - Regression Problem

ex) Prediction of housing price

i)



fit
linear function
model

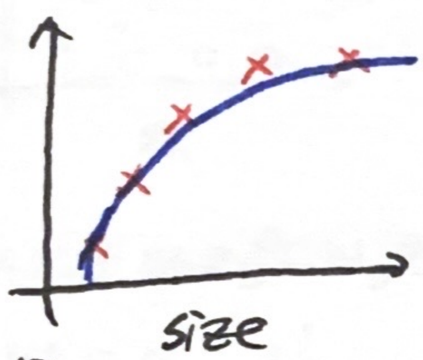
linear function : w_1x+b

⇒ Does not fit the training set well

= Model is "underfitting" the training data

= Algorithm has "high bias"

ii)



fit
quadratic function
model

quadratic function : $w_1x+w_2x^2+b$

⇒ Fits training set pretty well

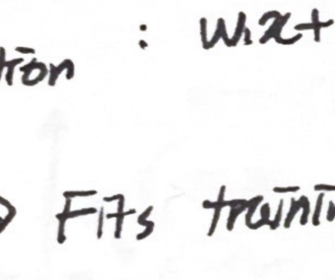
⇒ If you were to get new house data that's not in this training set, this model would probably predict well on that new house

Learning algorithm predicts well

⇒ even on examples that are not on training set

= "Generalization"

iii)



fit curve that passes through all five training examples exacty

fourth order polinomial : $w_1x+w_2x^2+w_3x^3+w_4x^4+b$

⇒ Fits the training set extremely well

⇒ Model has "overfit" the training data

= Algorithm has "high variance"