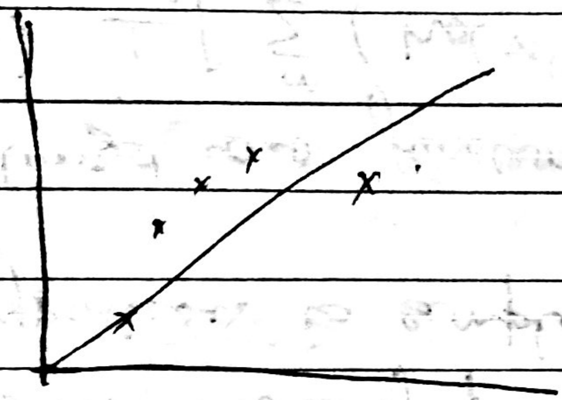
$-6 + x_1 \geq 0$

$x \geq 6$

$6 - x_2 \geq 0$

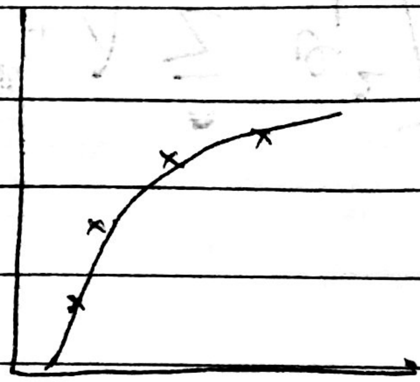
$6 \geq x_2 \quad x_2 \leq 6$

Problem of overfitting

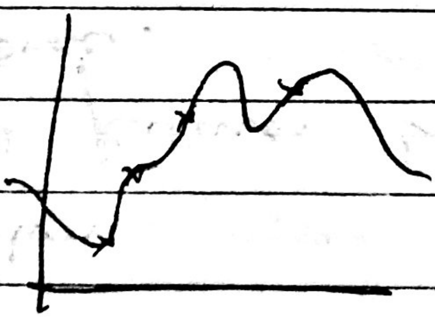


$\rightarrow \theta_0 + \theta_1 x$

"Underfit" or "high bias"



$\rightarrow \theta_0 + \theta_1 x + \theta_2 x^2$



$\rightarrow \theta_0 + \theta_1 x + \theta_2 x^2 + \theta_3 x^3 + \theta_4 x^4$

"overfit" "High variance"

- If we have too many features, the learned hypothesis fit the training set but fail to generalize to new examples.

How to address overfitting.

→ Maybe plot hypothesis.

1) Reduce number of features
   - Model selection algorithm (automatically select features)

↳ Regularization.
- keep all features but reduce the magnitude.

REGULARIZATION

Small values of parameters so that the hypothesis is simple.

Regularized cost function.

$$J(\theta) = \frac{1}{2m}\left[\sum_{i=1}^{m}(h_\theta(x^{(i)}) - y^{(i)})^2 + \lambda \sum_{j=1}^{n} \theta_j^2\right]$$

↑ regularization parameter