



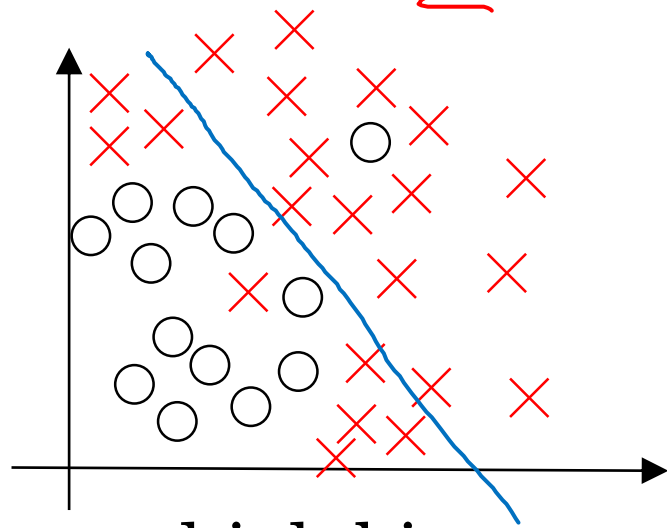
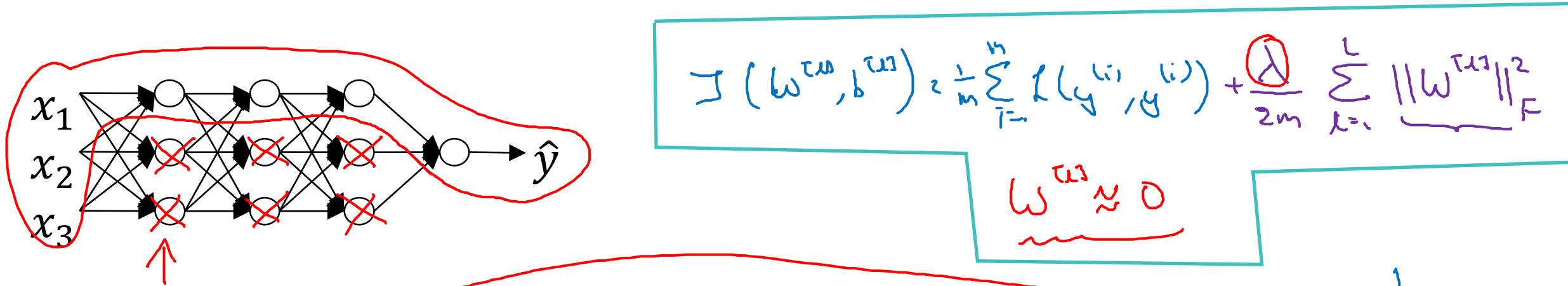
deeplearning.ai

# Regularizing your neural network

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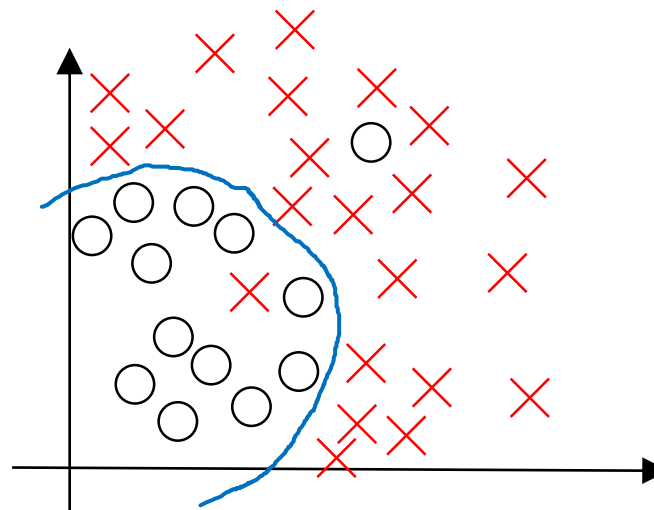
Why regularization  
reduces overfitting

# How does regularization prevent overfitting?

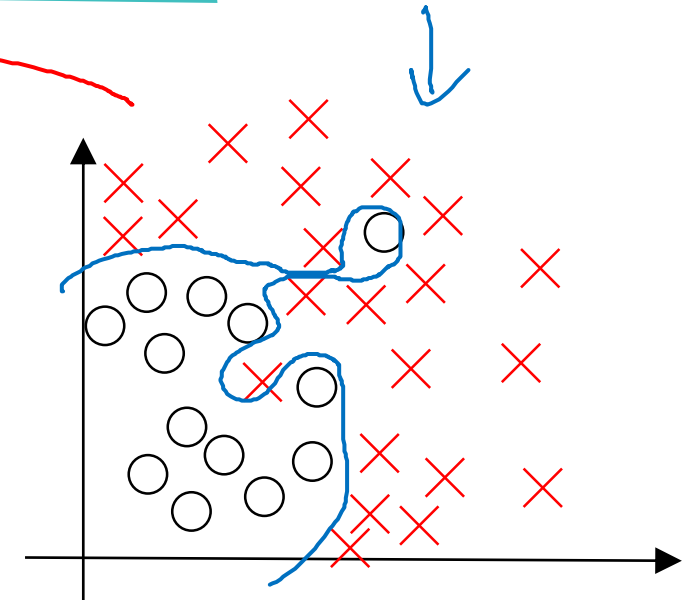


high bias

The existence of regularization term  
removes some of the terms

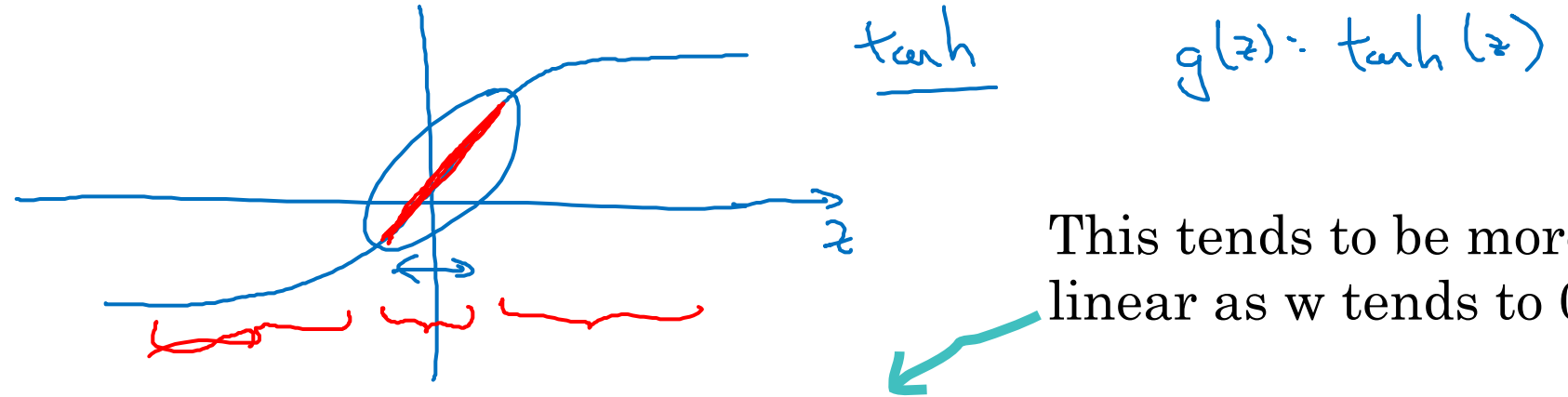


"just right"



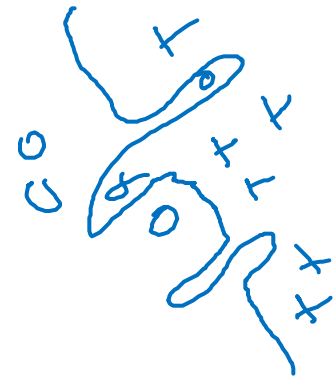
high variance

# How does regularization prevent overfitting?



$\lambda \uparrow$        $w^{[L]} \downarrow$        $z^{[L]} = w^{[L]} a^{[L-1]} + b^{[L]}$

Every layer  $\approx$  linear.



$$J(\dots) = \underbrace{\sum_i \mathcal{L}(\hat{y}^{(i)}, y^{(i)})}_{\text{loss}} + \underbrace{\frac{\lambda}{2m} \sum_l \|w^{[l]}\|_F^2}_{\text{regularization}}$$

