Practice quiz: The problem of overfitting

Congratulations! You passed!

Grade received	Latest Submission Grade	To pass
100%	100%	80% or higher

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1. Which of the following can address overfitting? **1 / 1 point**

- [x] Select a subset of the more relevant features.

  Correct
  If the model trains on the more relevant features, and not on the less useful features, it may generalize better to new examples.

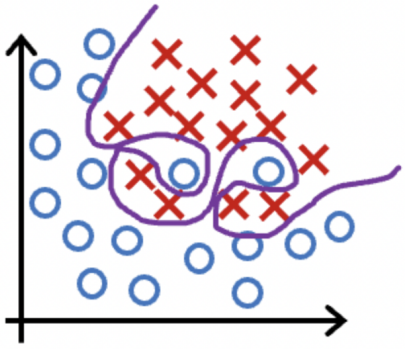
- [x] Apply regularization

  Correct
  Regularization is used to reduce overfitting.

- [ ] Remove a random set of training examples
- [x] Collect more training data

  Correct
  If the model trains on more data, it may generalize better to new examples.

2. You fit logistic regression with polynomial features to a dataset, and your model looks like this. **1 / 1 point**



What would you conclude? (Pick one)

- ○ The model has high bias (underfit). Thus, adding data is, by itself, unlikely to help much.
- ○ The model has high bias (underfit). Thus, adding data is likely to help
- ○ The model has high variance (overfit). Thus, adding data is, by itself, unlikely to help much.
- ◉ The model has high variance (overfit). Thus, adding data is likely to help

✓ **Correct**
The model has high variance (it overfits the training data). Adding data (more training examples) can help.

3. **1 / 1 point**

Regularization

$$\min_{\vec{w},b} J(\vec{w},b) = \min_{\vec{w},b} \left[\overbrace{\frac{1}{2m}\sum_{i=1}^{m}\left(f_{\vec{w},b}(\vec{x}^{(i)}) - y^{(i)}\right)^2}^{\text{mean squared error}} + \overbrace{\frac{\lambda}{2m}\sum_{j=1}^{n} w_j^2}^{\text{regularization term}} \right]$$

Suppose you have a regularized linear regression model. If you increase the regularization parameter λ, what do you expect to happen to the parameters $w_1, w_2, \ldots, w_n$?

- ○ This will increase the size of the parameters $w_1, w_2, \ldots, w_n$
- ◉ This will reduce the size of the parameters $w_1, w_2, \ldots, w_n$

✓ **Correct**
Regularization reduces overfitting by reducing the size of the parameters $w_1, w_2, \ldots w_n$.