✅ **Congratulations! You passed!**

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

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

☐ Remove a random set of training examples

☑ 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.

☑ Apply regularization

> ✓ **Correct**
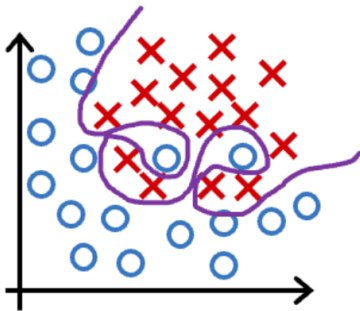> Regularization is used to reduce overfitting.

☑ Collect more training data

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

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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 variance (overfit). Thus, adding data is likely to help

◯ The model has high bias (underfit). Thus, adding data is, by itself, unlikely to help much.

◯ The model has high variance (overfit). Thus, adding data is, by itself, unlikely to help much.

◯ The model has high bias (underfit). 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.

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3.   **1 / 1 point**

Regularization

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

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

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 reduce the size of the parameters $w_1, w_2, \ldots, w_n$

◯ This will increase the size of the parameters $w_1, w_2, \ldots, w_n$

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