1. Which of the following can address overfitting?

☑ 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.

☐ Remove a random set of training examples

☑ Collect more training data

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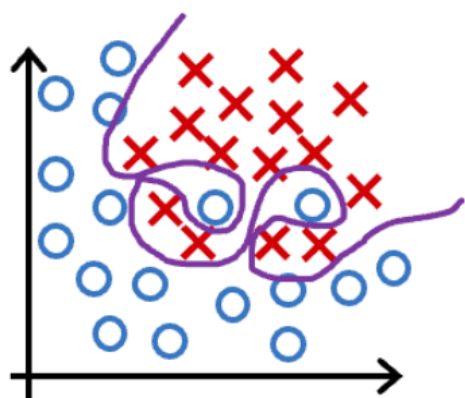> If the model trains on more data, it may generalize better to new examples.

☑ Apply regularization

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

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

What would you conclude? (Pick one)

○ 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

○ 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

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

3.

Regularization

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

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

◉ This will reduce the size of the parameters $w_1, w_2, ..., w_n$

○ This will increase the size of the parameters $w_1, w_2, ..., w_n$

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