✖

Regularization

5 questions

1.

You are training a classification model with logistic

regression. Which of the following statements are true? Check

all that apply.

☐ Introducing regularization to the model always results in equal or better performance on the training set.

☐ Introducing regularization to the model always results in equal or better performance on examples not in the training set.

☐ Adding a new feature to the model always results in equal or better performance on examples not in the training set.

☐ Adding many new features to the model makes it more likely to overfit the training set.

2.

Suppose you ran logistic regression twice, once with $\lambda = 0$, and once with $\lambda = 1$. One of the times, you got

parameters $\theta = \begin{bmatrix} 23.4 \\ 37.9 \end{bmatrix}$, and the other time you got

$\theta = \begin{bmatrix} 1.03 \\ 0.28 \end{bmatrix}$. However, you forgot which value of

λ corresponds to which value of θ. Which one do you

think corresponds to $\lambda = 1$?

○ $\theta = \begin{bmatrix} 23.4 \\ 37.9 \end{bmatrix}$

○ $\theta = \begin{bmatrix} 1.03 \\ 0.28 \end{bmatrix}$

3.

Which of the following statements about regularization are

true? Check all that apply.

☐   Because regularization causes $J(\theta)$ to no longer be convex,
     gradient descent may not always converge to the global
     minimum (when $\lambda > 0$, and when using an appropriate
     learning rate α).

☐   Using too large a value of λ can cause your hypothesis to
     underfit the data.

☐   Using a very large value of λ cannot hurt the performance of
     your hypothesis; the only reason we do not set λ to be too
     large is to avoid numerical problems.

☐   Because logistic regression outputs values $0 \le h_\theta(x) \le 1$,
     it's range of output values can only be "shrunk" slightly by
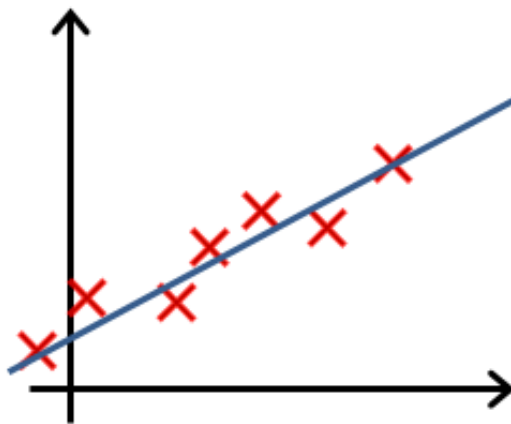   regularization anyway, so regularization is generally not
     helpful for it.

4.

In which one of the following figures do you think the hypothesis has
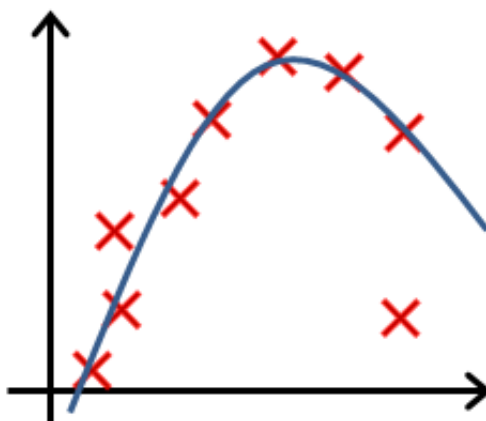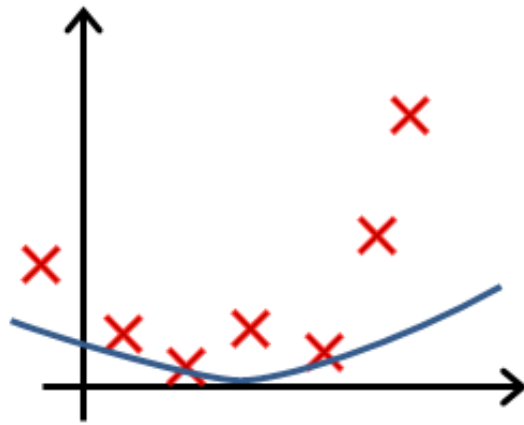overfit the training set?
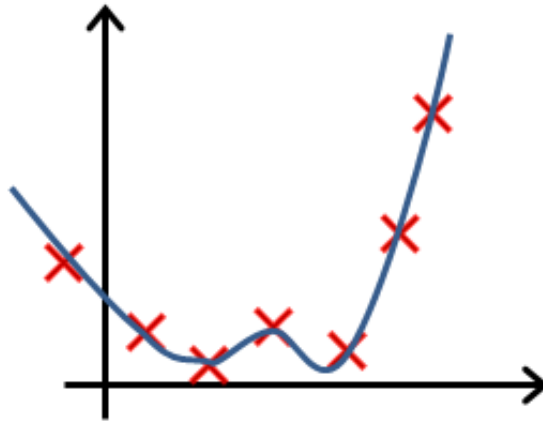
○   Figure:

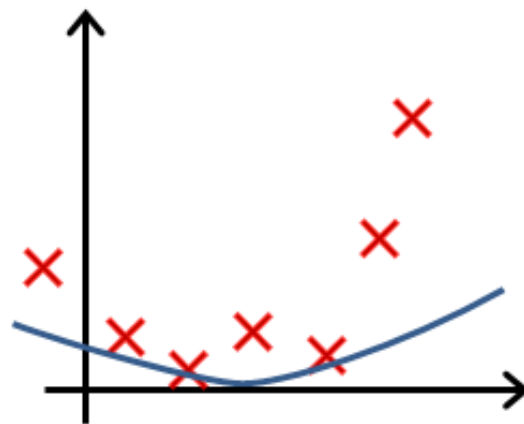○   Figure:
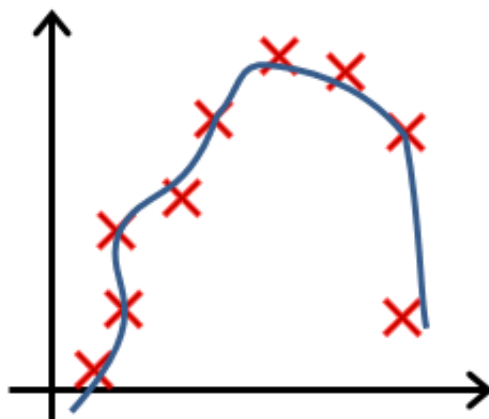

○   Figure:

○   Figure:

5.

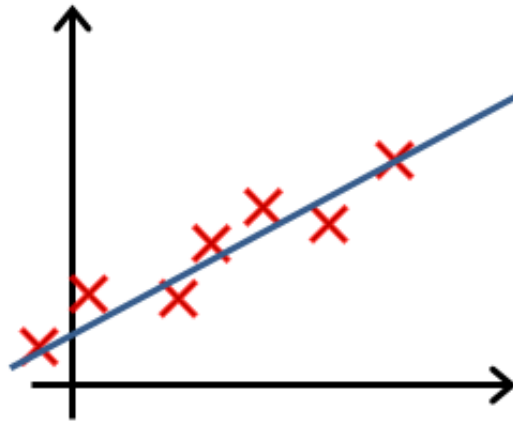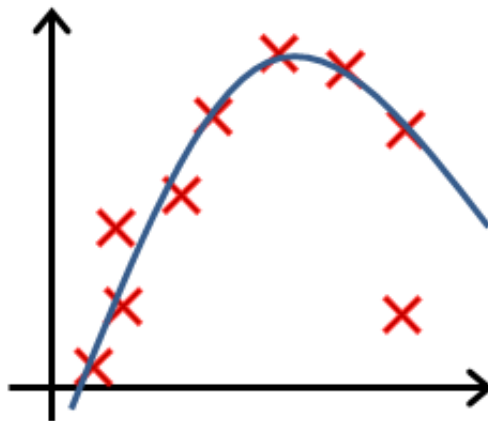In which one of the following figures do you think the hypothesis has underfit the training set?

○　Figure:

○　Figure:

○   Figure:

○   Figure:

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