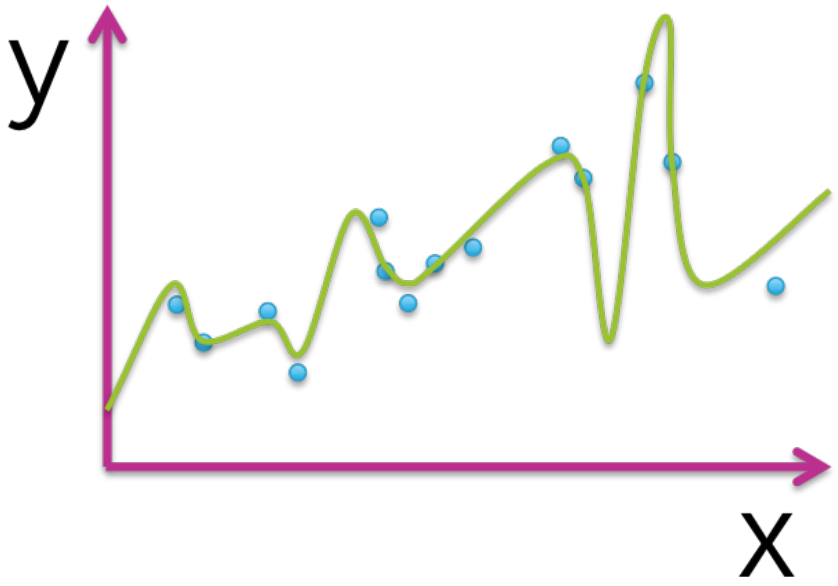
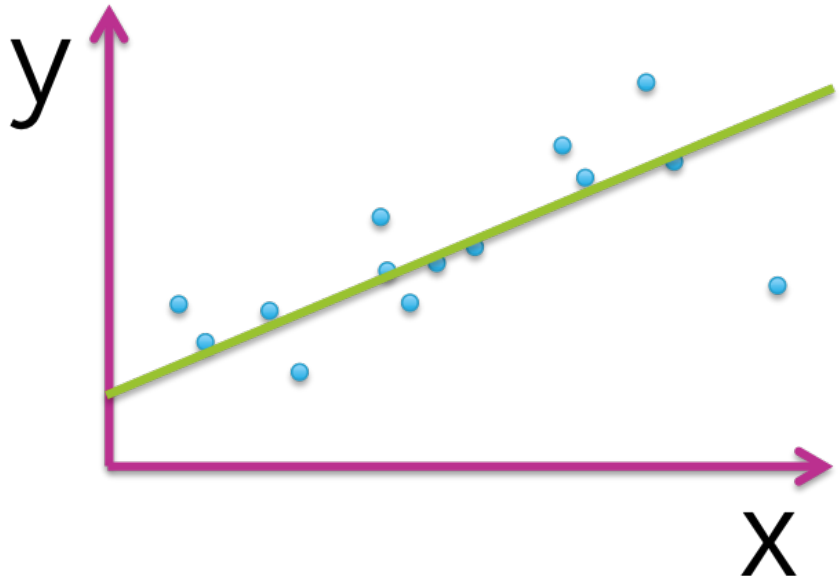
Regression

9 questions

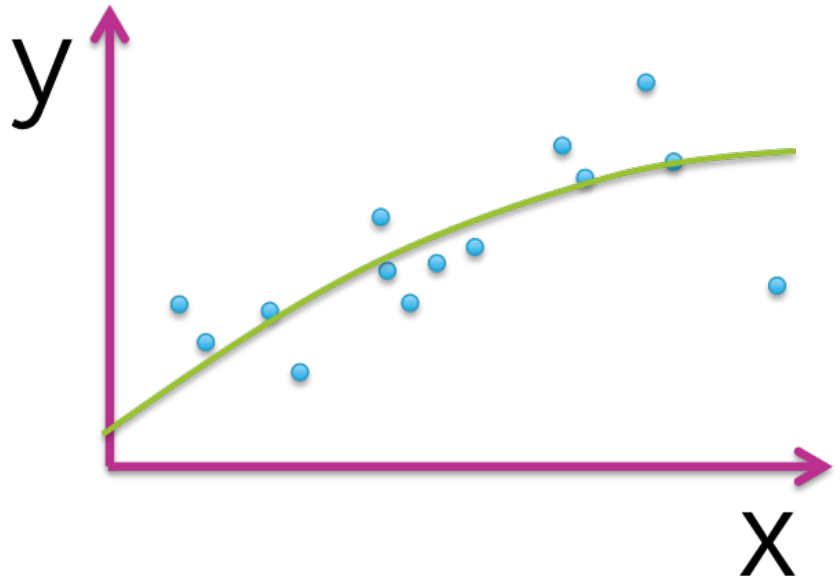
1.

Which figure represents an overfitted model?





o



2.

True or false: **The model that best minimizes training error is the one that will perform best for the task of prediction on new data.**

- ○ True
- ◉ False

3.

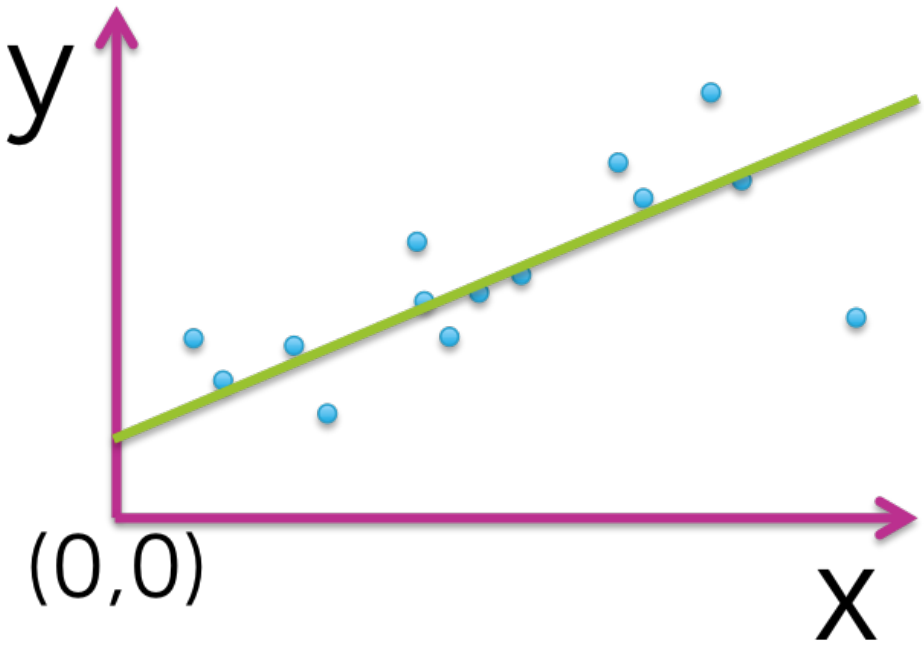
The following table illustrates the results of evaluating 4 models with different parameter choices on some data set. Which of the following models fits this data the best?

Model index	Parameters (intercept, slope)	Residual sum of squares (RSS)
1	(0,1.4)	20.51
2	(3.1,1.4)	15.23
3	(2.7, 1.9)	13.67
4	(0, 2.3)	18.99

- ○ Model 1
- ○ Model 2
- ◉ Model 3
- ○ Model 4

4.

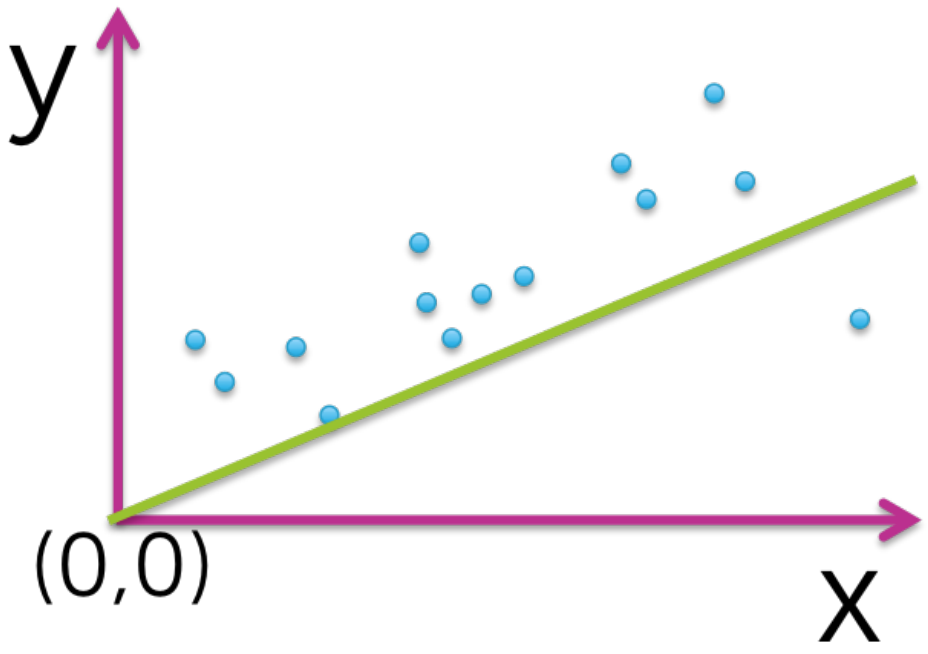
Assume we fit the following quadratic function: f(x) = w0+w1*x+w2*(x^2) to the dataset shown (blue circles). The fitted function is shown by the green curve in the picture below. Out of the 3 parameters of the fitted function (w0, w1, w2), which ones are estimated to be 0? *(Note: you must select all parameters estimated as 0 to get the question correct.)*



- [ ] w0
- [ ] w1
- [x] w2
- [ ] none of the above

5.

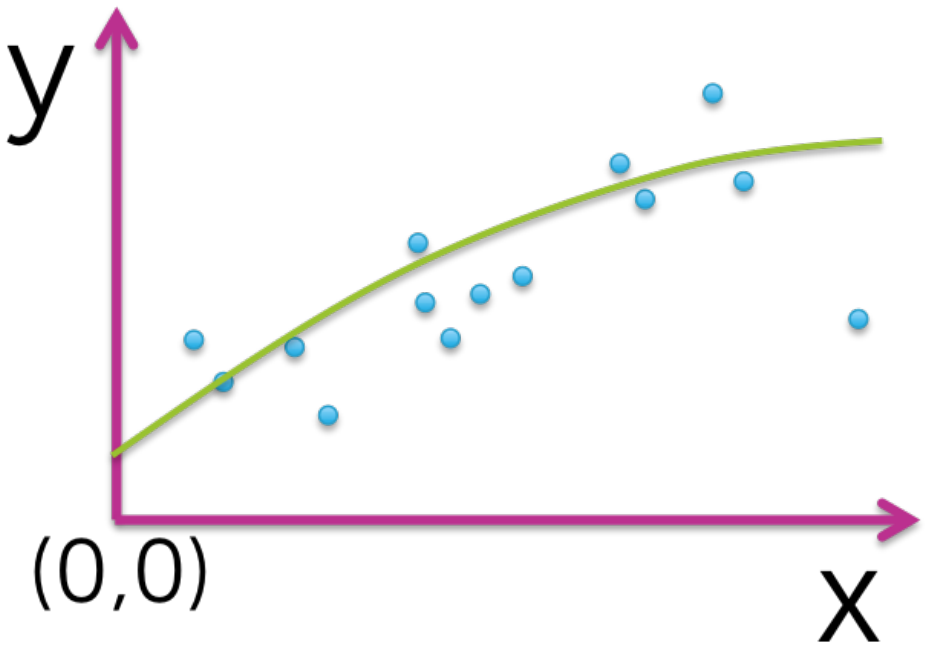
Assume we fit the following quadratic function: f(x) = w0+w1*x+w2*(x^2) to the dataset shown (blue circles). The fitted function is shown by the green curve in the picture below. Out of the 3 parameters of the fitted function (w0, w1, w2), which ones are estimated to be 0? *(Note: you must select all parameters estimated as 0 to get the question correct.)*



- [x] w0
- [ ] w1
- [x] w2
- [ ] none of the above

6.

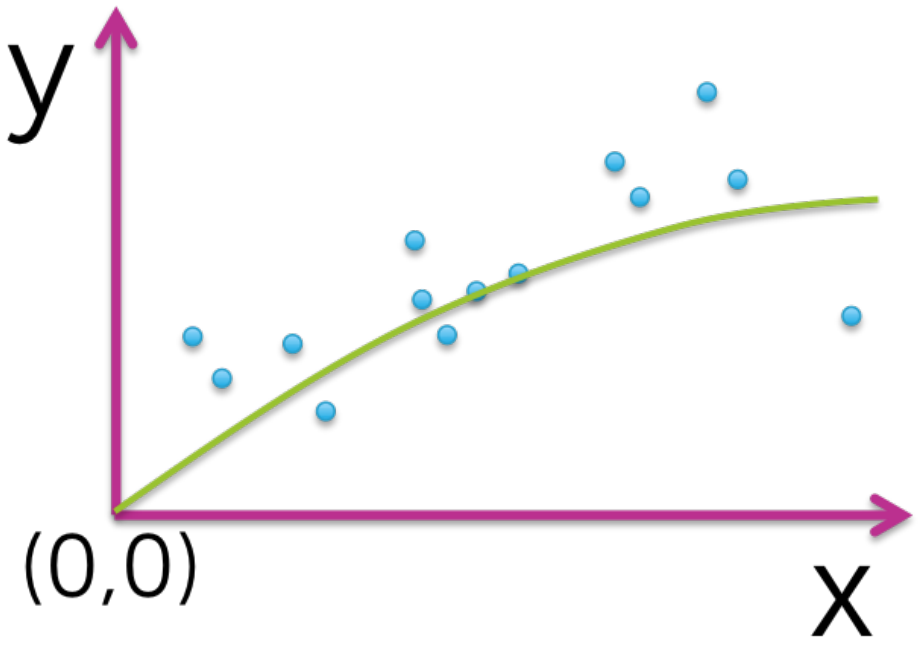
Assume we fit the following quadratic function: f(x) = w0+w1*x+w2*(x^2) to the dataset shown (blue circles). The fitted function is shown by the green curve in the picture below. Out of the 3 parameters of the fitted function (w0, w1, w2), which ones are estimated to be 0? *(Note: you must select all parameters estimated as 0 to get the question correct.)*



- ☐ w0
- ☐ w1
- ☐ w2
- ☐ none of the above

7.

Assume we fit the following quadratic function: f(x) = w0+w1*x+w2*(x^2) to the dataset shown (blue circles). The fitted function is shown by the green curve in the picture below. Out of the 3 parameters of the fitted function (w0, w1, w2), which ones are estimated to be 0? *(Note: you must select all parameters estimated as 0 to get the question correct.)*

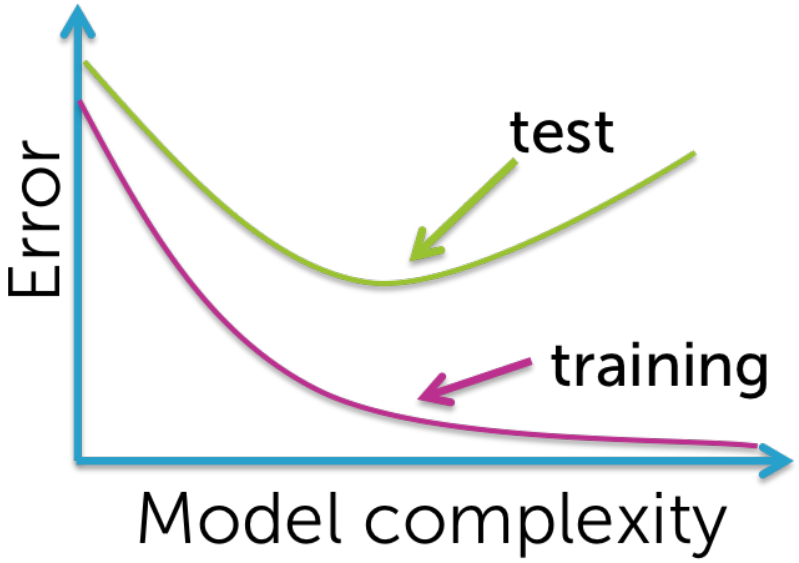


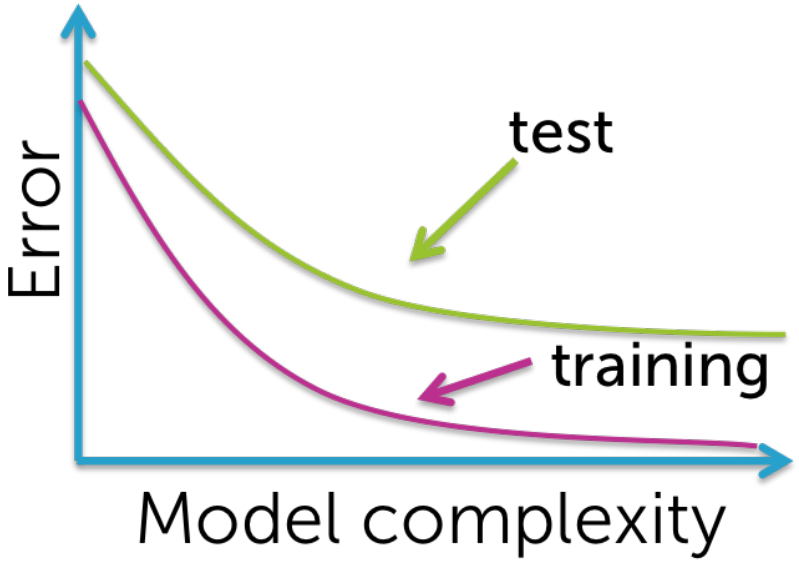
- [x] w0
- [ ] w1
- [ ] w2
- [ ] none of the above

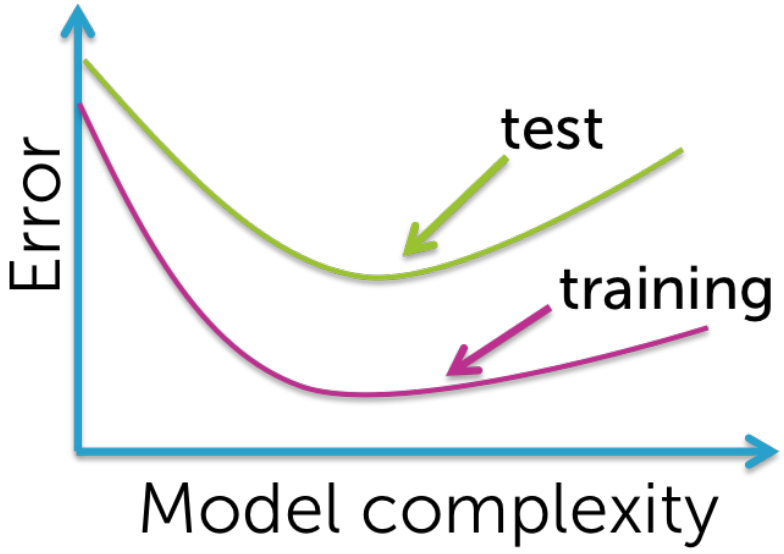
8.

Which of the following plots would you *not* expect to see as a plot of training and test error curves?

- ○


Error
test
training
Model complexity


Error
test
training
Model complexity



9.

True or false: One always prefers to use a model with more features since it better captures the true underlying process.

- True
- False

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