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# Week 5 Quiz

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## Multiple Choice

1/1 point (graded)

Logistic regression is a model for regression.

- TRUE
- FALSE ✔

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## Multiple Choice

1/1 point (graded)

A discriminative classifier assumes a distribution on the covariates of a data set.

- TRUE
- FALSE ✔

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## Checkboxes

0/1 point (graded)

Consider the logistic regression model $y_i \,|\, x_i, w \overset{ind}{\sim} Bern\{\sigma(x_i^T w)\}$ for $i = 1, \ldots, n$ where $x_i \in \mathbb{R}^d$ and $y_i \in \{0, 1\}$. Which of the following are FALSE?

- [ ] A probabilistic statement is being made about $x_i$.
- [ ] It is a linear model.
- [ ] The decision boundary for this classifier is linear in $\mathbb{R}^d$.
- [x] Since there is no distribution on $x$, there is no basis for comparison with a Bayes classifier.

✖

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## Multiple Choice

1/1 point (graded)

The decision boundary for the logistic regression model is less sensitive to outliers than the least squares linear regression model.

- (●) TRUE ✔
- ( ) FALSE

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## Multiple Choice

1/1 point (graded)

Which of the following indicates a common use for the Laplace approximation?

- ( ) When we want to reduce our uncertainty in the parameters of a model

- [x] When we want to approximate the posterior of a non-conjugate model ✔
- [ ] When we want to calculate the posterior of a model quickly

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## Multiple Choice

1/1 point (graded)

A feature expansion is useful when we want to

- [x] learn a linear model in an alternate space ✔
- [ ] learn a linear model in the original space
- [ ] learn a linear model that evolves in time

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## Multiple Choice

1/1 point (graded)

A kernel can be represented as dot products between feature-mapped vectors. In order to define a kernel, it is necessary to know this mapping.

- [ ] TRUE
- [x] FALSE ✔

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## Checkboxes

1/1 point (graded)

If I have two vectors $x_1$ and $x_2$, which of the following represent valid kernels?

- [x] $K(x_1, x_2) = \exp(-\|x_1 - x_2\|^2)$
- [x] $K(x_1, x_2) = \exp(x_1^T x_2)$
- [x] $K(x_1, x_2) = x_1^T x_2$
- [x] $K(x_1, x_2) = (1 + x_1^T x_2)^5$

✔

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## Checkboxes

1/1 point (graded)

Which of the following algorithms can be "kernelized"?

- [x] Perceptron
- [x] linear regression
- [x] k-NN

✔

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## Multiple Choice

1/1 point (graded)

For the Gaussian processes, the kernel makes its appearance in the ______ of the Gaussian.

- ( ) mean
- (•) covariance ✔

prior

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