Lecture 7: Practice Problems

1) K-means is not deterministic
   a) True
   b) False

2) K-means works:
   a) better with data where clusters have similar variance
   b) better with data where each cluster has its own variance
   c) Equally as well with both.

3) What do you do with the knowledge that K-means can get stuck in a local minima?

4) It would be helpful to normalize all features in the dataset to have the same variance (or unit variance) before running k-means.
   a) True
   b) False

5) K-Nearest Neighbors, a model that assigns a data point to its K nearest neighbors, will often work better than softmax classification for highly nonlinear data.
   a) True
   b) False

6) A K-Nearest Neighbors model will often work better than softmax classification for data with many features
   a) True
   b) False

7) If we run PCA on a set of data it forms linear combinations of the features allowing us to run linear regression with weights of just one and negative one
   a) True
   b) False

8) What would happen if you run PCA without normalizing the dataset?

9) What does it mean if you get zero eigenvalues when you are running PCA
10) A principal components analysis was run and the following eigenvalue results were obtained: 2.731, 2.218, 1.442, 0.009, 0.00183, 0.00085. How many components would you retain?
   a) 2
   b) 3
   c) 4
   d) 5

11) When do you decide to employ an unsupervised anomaly detection algorithm instead of utilizing a supervised learning algorithm?

12) Collaborative filtering is most useful in cases where users' tastes can change and evolve over time.
   a) True
   b) False