Tuesday Feb 4, 2025

Name:

Discuss and complete the following questions with the person nearest you. You **may** be asked to share your thoughts with the class.

For the following questions, determine which model (linear regression, logistic regression, or SVMs) is the most appropriate. Justify your answer.

1. A light bulb company is trying to find a way of making their light bulbs last longer. Based on the bulb lifespan duration of different types of bulbs, their R&D team has identified 12 different factors that might influence how long a bulb lives for. They now want to know the relative importance of each of these different factors.

2. An investment company wants to design a system, which given a house, can advise landlords about whether or not to buy that house. They want to tailor the recommendation based on customers' risk taking setting. For example, in a low-risk setting, the system should advise them to buy houses only if there is a very high probability that the value will appreciate, whereas in a high-risk setting the probability of appreciation could be lower.

3. Given photos of cat faces, a researcher wants to categorize whether the face is hungry or grumpy. There are 15 different features of photos that the researcher hypothesizes can be relevant. From a quick exploratory analysis, they notice that the faces are not linearly separable in this 15-dimensional feature space. However, based on prior experience working with photos of faces, they suspect that certain transformations could help make them linearly separable.