**Question 1**

**Suppose you’ve trained an SVM classifier with an RBF kernel, but it seems to underfit the training set. Should you increase or decrease γ (gamma)? What about C? Explain your reasoning.**

1. **Gamma:**

**Increase:** If the model is overfitting, reducing the gamma value might help make the decision boundary smoother, resulting in a more generalized model. Lower gamma values lead to a more widespread influence of training samples, which might prevent overfitting. Conversely, if the model doesn't learn enough complexity from the data (underfitting), increasing gamma could help in capturing more intricate relationships between data points.

2**. C:**

**Increase**: A smaller C value emphasizes a larger-margin hyperplane, which may oversimplify the decision boundary and lead to underfitting. Increasing C allows the SVM to have more flexibility and fit the training data more accurately. However, excessively high values of C might lead to overfitting by allowing the model to focus too much on individual data points.

It's best to use techniques like cross-validation to find the optimal values that improve the model's performance on unseen data. Other approaches like feature engineering, regularization techniques, or using different kernels might also be beneficial in improving the model's generalization.