CIS 3715 Spring 2020: Quiz 9 STUDENT NAME: _____

1. (1 point) Give two examples why low-rank approximation of matrices is important for data science

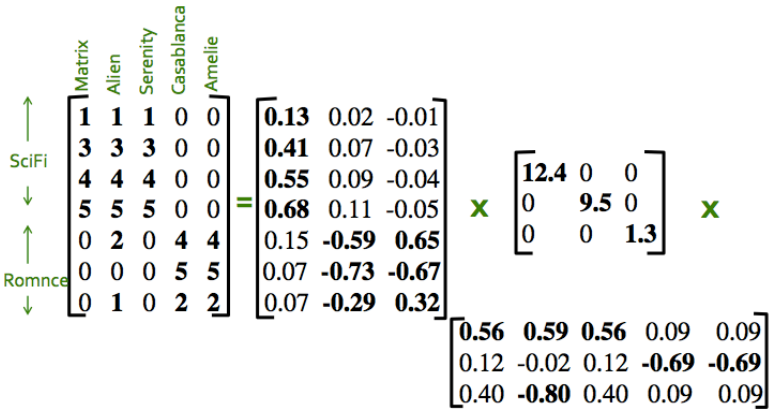
2. (1 point) What is singular value decomposition?

3. (1 point) State one difference between the non-negative matrix factorization and singular value decomposition.

4. (1 point) What is biclustering?

5. (1 point) What is the similarity between histograms and kernel density estimation?

6. The following is an outcome of applying SVD on a small data set D of movie ratings of 7 people on 5 movies, to approximate D as $U_k * S_k * V_k^T$.



a) (1 point) What is the value of k in this example?

b) (3 points) What can you conclude by looking at the first column of U and V? What can you conclude by looking at the second column?

c) (1 point) How important is the third column of U and V?