Intro To ML – HW4

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**Theory Questions**

**Question 1:**

**Question 2:**

**Question 3:**

**Question 4:**

Consider the optimization problem:

Where is a matrix of the variables, is a column vector of size , and is a column vector of size of coefficients.

Consider the SVD of , we get the constraint:

We want now to recover , so from the recitation: . By multiplying both members with from left, we get: . Denote this solution by .

Suppose other solution to the optimization problem: . The minimum value we can get from is , hence . From the pseudo -inverse formula from the recitation, we get that . We will show that :

Suppose . So, and

**Programming Questions**

**The code source files stay under /specific/a/home/cc/students/cs/avicaciularu/ML/HW4/:**

**Q5- Q5.py**

**Q6- Q6.py**

**Question 5:**

**Question 6:**