CSCI 5525: Machine Learning
Homework 0

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1. **Solution:**

   yes find

2. **Solution:**

   (i) None of them

   (ii) STAT 8051 Advanced Regression Techniques; STAT 8052 Applied Statistical Methods II; STAT 8111 Math Stat I; STAT 8112 Math Stat II.

   (iii) CSCI 5304 Matrix Theory

   (iv) I haven't taken any course on Optimization.

3. **Solution:**

$$\hat{\omega} = (X^T X + \lambda I)^{-1} X^T y$$

4. **Solution:**

   The largest eigenvalue of matrix A. Since A is positive definite, it is also called the Spectral Radius of A.

5. **Solution:**

   (i)

$$p(x; \mu, \Sigma) = (2\pi)^{-\frac{k}{2}} |\Sigma|^{-\frac{1}{2}} \exp(-\frac{1}{2}(x-\mu)^T \Sigma^{-1}(x-\mu))$$

   (ii)

$$p(x; \mu, \Theta^{-1}) = (2\pi)^{-\frac{k}{2}} |\Theta|^{\frac{1}{2}} \exp(-\frac{1}{2}(x-\mu)^T \Theta(x-\mu))$$