Homework 6. Due Thursday Nov. 22.

1. **(10 pts)** Show that the Laplacian eigenmap to $\mathbb{R}^m$ is the solution to the following optimization problem:

$$\sum_{i,j} k_{ij} \|y_i - y_j\|_2^2 = \mathsf{tr}\left(Y^\top L Y\right) \to \min \quad \text{subject to} \quad Y^\top Q Y = I, \quad Y^\top Q 1_{n \times 1} = 0. \quad (1)$$

Here, y_i's are columns of Y, and Y is $n \times m$.