1. (Haykin Problem 6.22) Equations (6.77), (6.78), and (6.79) describe three important properties of the inner product $\langle f, g \rangle$ defined in Eq. (6.75). Prove the properties described in those three equations.

2. (Haykin Problem 7.16)
   a. Derive the cost functional of Eq. (7.124). Then use this functional to derive the optimized $\mathbf{a}^*$ of Eq. (7.125).
   b. Show the details of how this minimizer include that of Eq. (7.74) for labeled examples as a special case.

3. Write a formula describing the function defined by a one-hidden-layer (already trained) MLP with a single output. Write the formula describing the function defined a RBFN with a single output. How do they differ?

4. (Haykin Problem 7.17) Compare the computational complexity of the Laplacian regularized least-squares algorithm with that of the regularized least-squares algorithm using labeled examples only.

5. Consider the three data sets used with Program 3. Construct a histogram of the distances between all the points in each data set and display it using the Matlab `hist` function with at least 100 bins. Discuss how you might be able to choose a value for ϵ for spectral graph construction using data set 2. Discuss the challenges presented by data sets 1 and 3.