ENEE 434 Homework 2
Due Tu 02/15/05
The pages for problems #1 and #2 below are those of the textbook
#1. 25 points (perceptron)
Problem E4.7 page 4-37

#2. 25 points (vector space concepts)
Problem E5.9 page 5.29

#3. 50 points (curve approximation)
Using newff set up a feedforward network with an input layer (with 5 neurons and 2 inputs), one hidden layer (with 3 neurons) and an output layer (with one neuron) and with all activation functions being tansig except for the output neuron which uses purelin. Do this to approximate the differential pair output current function, a(n), given in problem 2 of the first homework set using n and IT as inputs. Train on the inputs P having −3:0.5:+3 for n for each of IT in 0.5:1.0:+2.5 and T as the corresponding a(n) as the outputs. Test it on each Ptest having IT= +0.2, +1.2 each for −3:0.1:+3 for n. Calculate for each of these latter IT the mean squared error between the neural net output and the desired true differential pair current a(n), called Ttest.
a) Give the training pairs P, T.
b) Set up the network, calling it netan, and print out the Matlab command line codes.
c) Give the test vectors Ptest, netan on Ptest and the desired outputs, Ttest, as well as the mean squared error between the neural net output and the desired true differential pair current a(n).