Homework 3

Problem 1. (10 points total)

Problem 2. (20 points total)

Problem 4. (30 points total)

Table 1: Parameters of Training BP Network to Fit $f(x) = 1/x$

Network parameters	
Topology	$(1 + 1_{Bias})$ — (10) — 1
Transfer function	tanh with slope of 1
Learning parameters	
Initial weights	drawn from U[-0.1, 0.1]
Learning rate (α)	0.01
Momentum	none
Epoch size ($Epoch$)	200
Stopping criteria	error (Err_{RMSD}) $\leq$ 0.05 OR learn count (t) $> 4,000,000$
Error measure(Err_{RMSD})	Square root of the sum of $(D - y)^2$ that averaged over all training or testing samples (see formula (1) below)
Input / output data, representation, scaling	
# training samples (N_{tr})	200 (x values drawn randomly from U[0.1,1])
# test samples (N_{tst})	100 (x values drawn randomly from U[0.1,1])
Scaling of inputs	no scaling
Scaling of outputs	map [global min, global max] to [-1,1]