ECE130B Home Work 3

One page **Due date:** January 28, 2008.

Any problem marked as a "Reading assignment" doesn't have to be turned in. Write your name and your TA's name clearly on the assignment and make sure all pages are stapled together. Answers must be written clearly and legibly. Illegible answers will be ignored. Your answers must be justified by complete and clear sentences.

1. **Reading assignment.** The following problems from the text book are typical of the problems you will see in the midterm and finals.

   A) Problems 2.1—2.7, 2.13, 2.15, 2.16.(a), 2.16.(b), 2.18, 2.19.

   B) Problems 2.21, 2.24—2.26, 2.28, 2.30—2.32, 2.36, 2.38.

   C) Problems 2.41, 2.43.(b), 2.43.(c), 2.44.(b), 2.44.(c), 2.48.(b)—2.48.(f), 2.48.(h), 2.49, 2.51, 2.52, 2.54.

   D) Problems 2.64.(d), 2.65, 2.70, 2.71.(c).

2. Find all solutions of the following difference equations:

   A) $y[n] - 4\,y[n-1] + 3\,y[n-2] = 0$.

   B) $y[n] - 4\,y[n-2] = 0$.

   C) $2\,y[n] - 7\,y[n-1] + 3\,y[n-2] = 0$.

   D) $3\,y[n-1] - 7\,y[n] + 2\,y[n+1] = 0$.

   E) $2\,y[n] + 3\,y[n-2] = 0$.

   F) $j\,y[n+1] - 2\,e^{j\frac{\pi}{6}}\,y[n] + y[n-1] = 0$.

3. Find the solution $y[n]$, with the auxiliary condition $y[0] = y[-1] = 2$, that satisfies the following difference equations,

   A) $y[n] - 2\,y[n-2] = u[n+1]$.

   B) $2\,y[n] - 3\,y[n-2] = u[-n]$.