

Problem Set 10

Spring 2003

Issued: Wednesday, April 23, 2003**Due:** Tuesday, April 29, 2003Reading in *Oppenheim and Schaffer with Buck*

4/21/03 — Sections 6.0-6.9

4/29/03 — Sections 10.0-10.8

Problem 6.25 in *Oppenheim/Schafer/Buck*

Note that there is small typo in the upper section of the parallel flowgraph. In that section (the one with coefficients $3/8$, $-7/8$, $-1/2$), all of the delay branch arrows should point downwards.

Problem 6.29 in *Oppenheim/Schafer/Buck***Problem 6.44** in *Oppenheim/Schafer/Buck***Problem ECE535-11**

The signal flow graph of System A, shown in Figure 1, represents a causal LTI system.

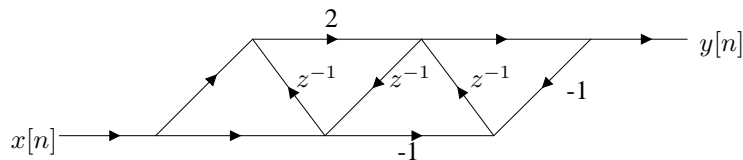


Figure 1: System A

- Determine the system function and difference equation represented by this flow graph.
- Is it possible to implement the same input/output relationship using fewer delays? If it is possible, state the minimum number of delays required to implement the system and sketch a new flowgraph implementation. If it is not possible, explain why not.