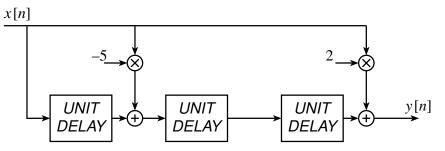


PROBLEM:

The following signal flow graph structure defines a linear time-invariant system:

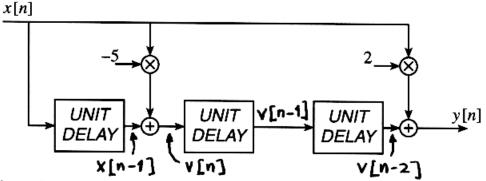


Write a simple formula for the the difference equation defined by the signal flow graph.

McClellan, Schafer and Yoder, Signal Processing First, ISBN 0-13-065562-7. Prentice Hall, Upper Saddle River, NJ 07458. © 2003 Pearson Education, Inc.



The following signal flow graph structure defines a linear time-invariant system:



Write a simple formula for the the difference equation defined by the signal flow graph.

Assign variable
$$V[n]$$
 to input of unit delay
in the middle.
 $V[n] = -5x[n] + x[n-1]$
 $y[n] = 2x[n] + V[n-2]$
 $V[n-2] = -5x[n-2] + x[n-3]$
=>
 $y[n] = 2x[n] - 5x[n-2] + x[n-3]$
Note: this is an FIR Filter of length 4.