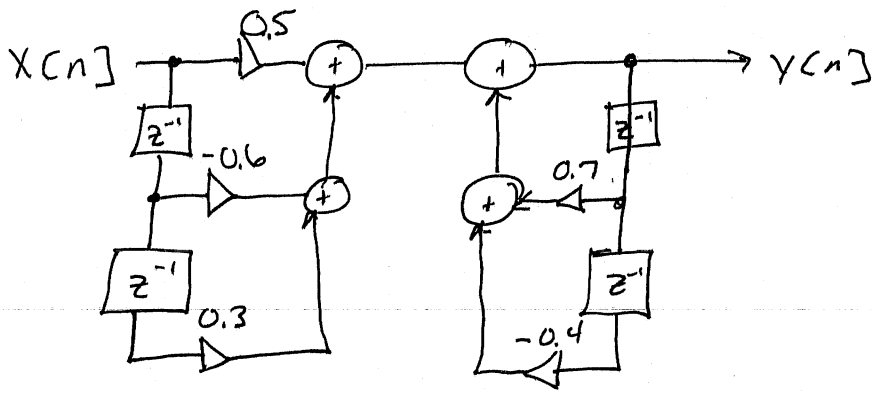
EX

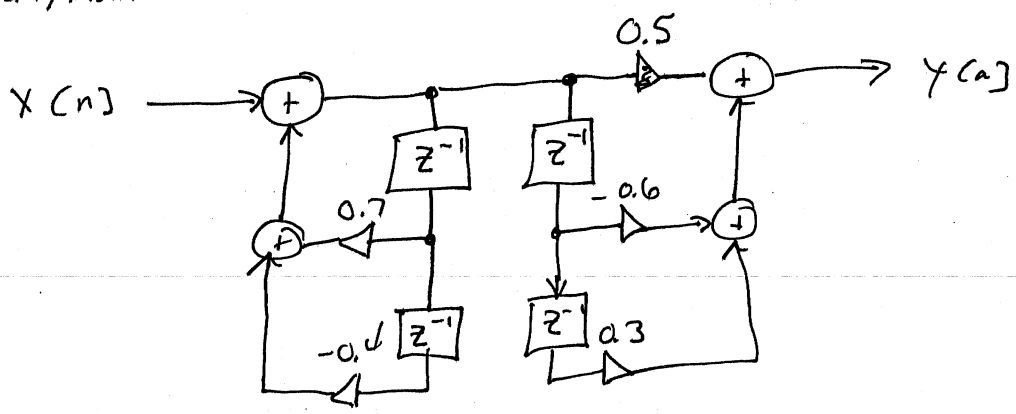
GIVEN: $y[n] = -0.4y[n-2] + 0.7y[n-1] + 0.3x[n-2] - 0.6x[n-1] + 0.5x[n]$

FIND: (A.) DF II^T (B.) $H(z)$, poles/zeros, plots, freqz

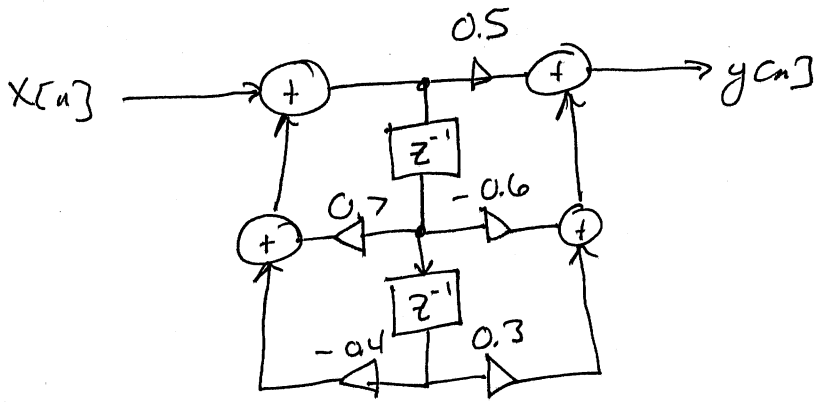
1ST DF I:



FLIP LEFT/RIGHT

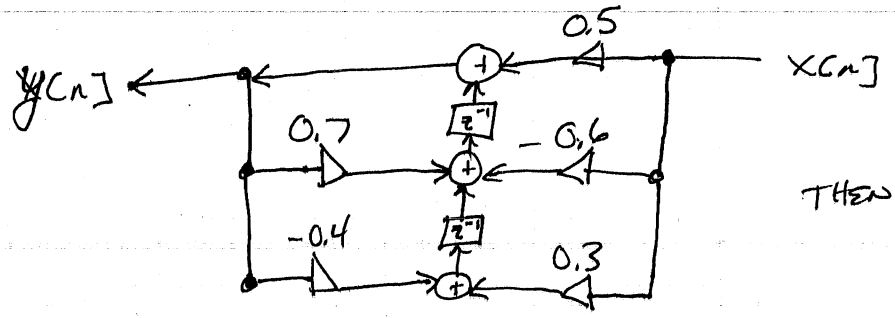


DF II



→

DF $\underline{II}^T$



THEN "FLIP"!

FROM DIFF EQ OR DIRECT FROM STRUCTURE

$$H(z) = \frac{0.5 - 0.6z^{-1} + 0.3z^{-2}}{1 - 0.7z^{-1} + 0.4z^{-2}}$$

Poles? ZEROS? How?

IN MATLAB: [z, p, k] = tf2zp(num, den)

TI 89: cZEROS $(z^2 - 1.2z + 0.6)$ (ZEROS)

cZEROS $(z^2 - 0.7z + 0.4)$ (POLES)

>> zplane(B, num, den) WHAT TYPE OF FILTER? HPF

>> freqz(" ")

POLES @ $0.35 \pm j0.5268$

ZEROS @ 0.6 ± 0.4899