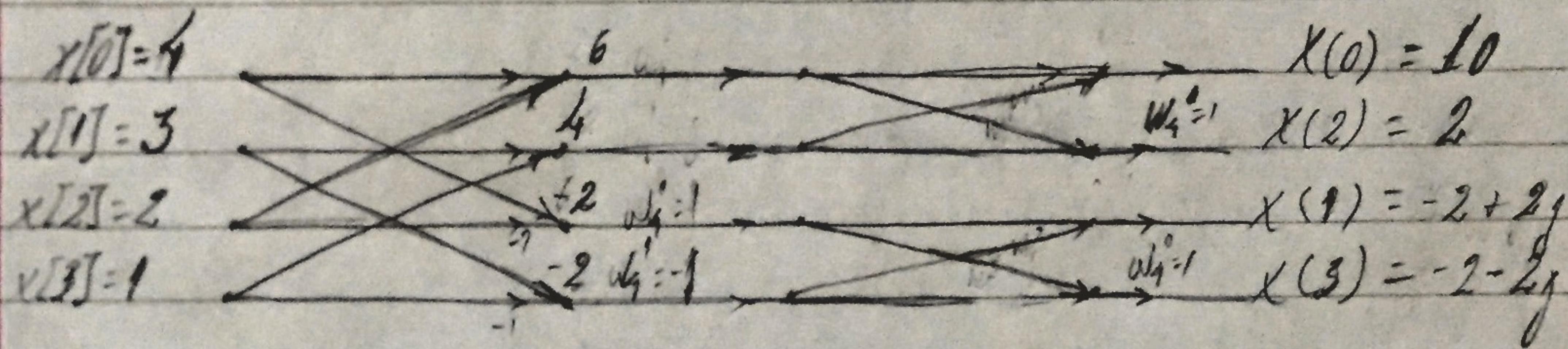


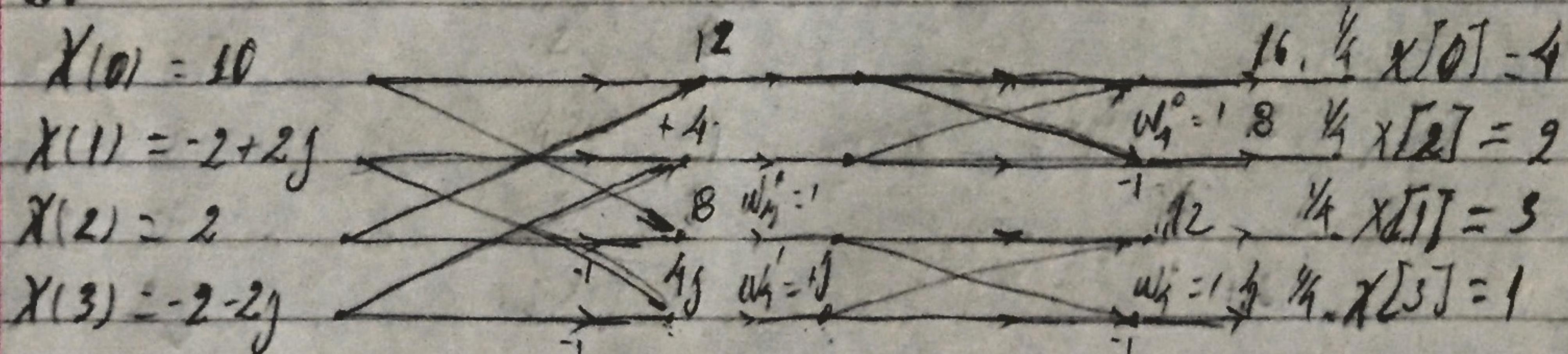
Francisco Carvalho
DSP - HW # 4

1. $X[0] = 4, X[1] = 3, X[2] = 2, X[3] = 1$
 $D \leq n \leq S, N = 4$



$$\frac{N}{2} \log_2(N) = \frac{1}{2} \log_2(4) = 2$$

2.



$$-2-2j + -2+2j$$

$$-2+2j - 2-2j$$

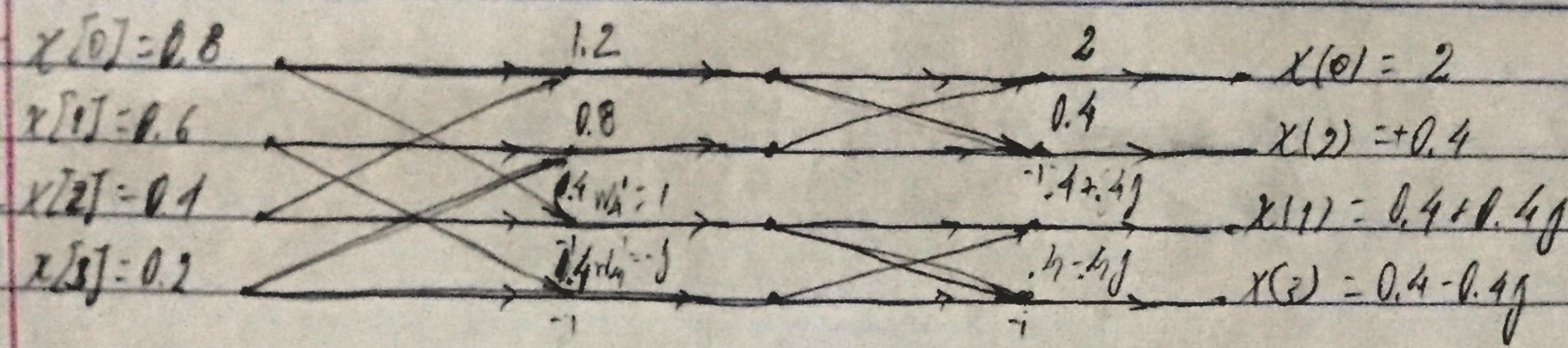
$$\begin{matrix} -2-2j - (-2+2j) \\ -2-2j + 2-2j \end{matrix}$$

$$\begin{matrix} -2+2j + 2+2j = 4j \\ -2+2j + 2-2j \end{matrix}$$

$$2+2j - 2+2j$$

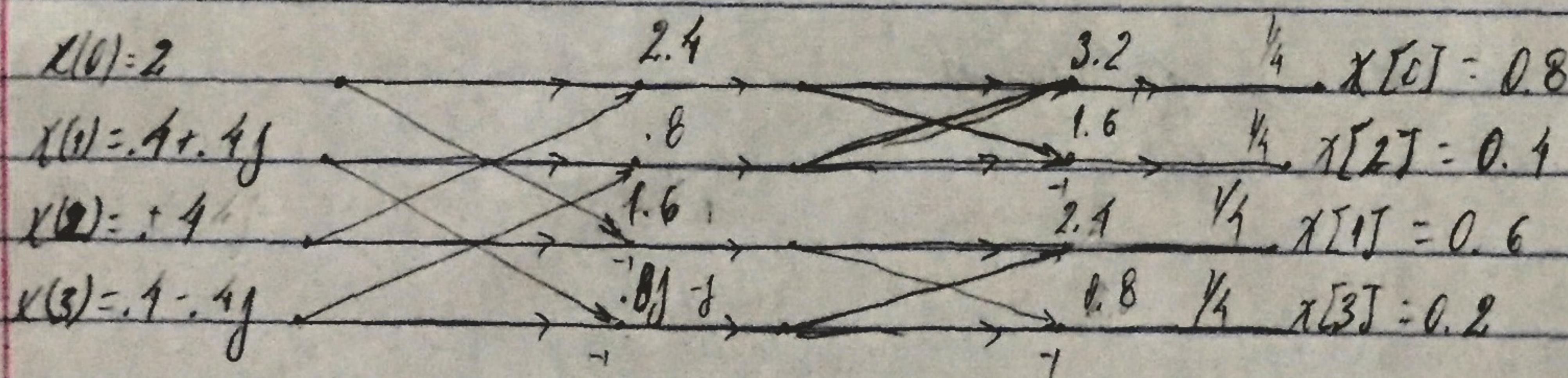
$$2+2j + -2+2j$$

$$3. X[0] = 0.8, X[1] = 0.6, X[2] = 0.4, X[3] = 0.2$$



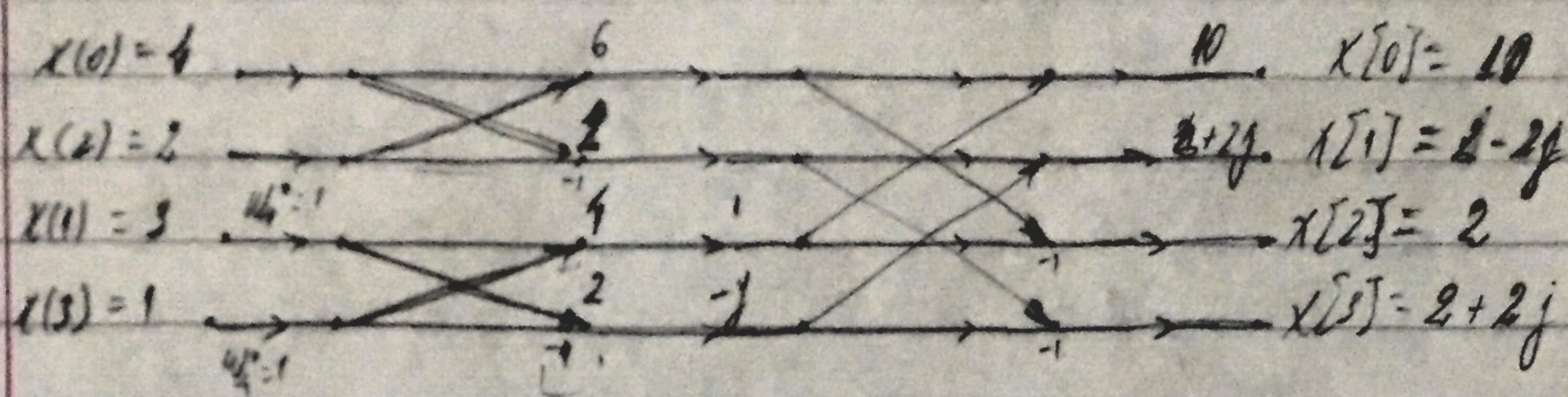
$$\frac{1}{2} \log(0.4) - \frac{1}{2} \log(1) = 1$$

4.



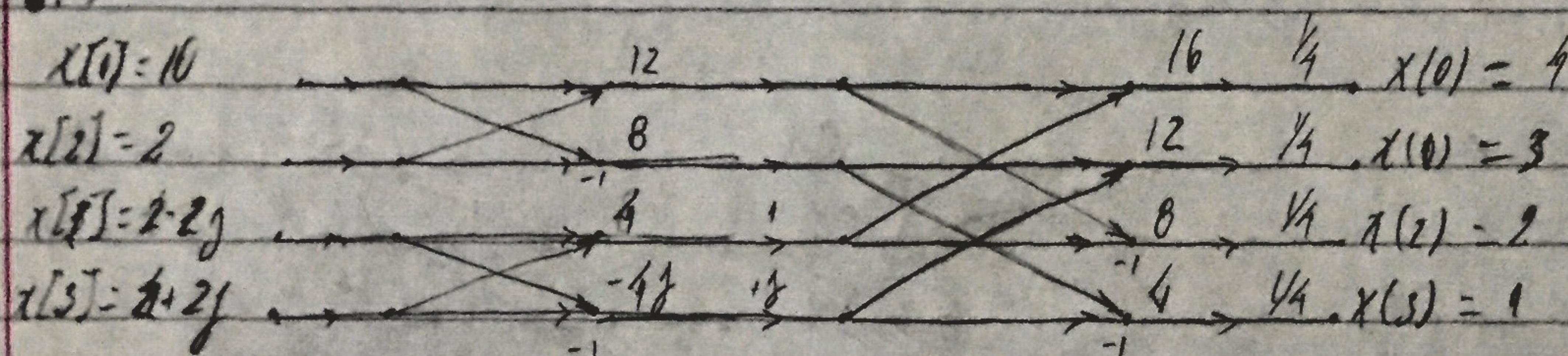
$$.4 + 4j - .4 + 4j$$

$$5. \quad x[0] = 4, \quad x[1] = 3, \quad x[2] = 2, \quad x[3] = 1$$



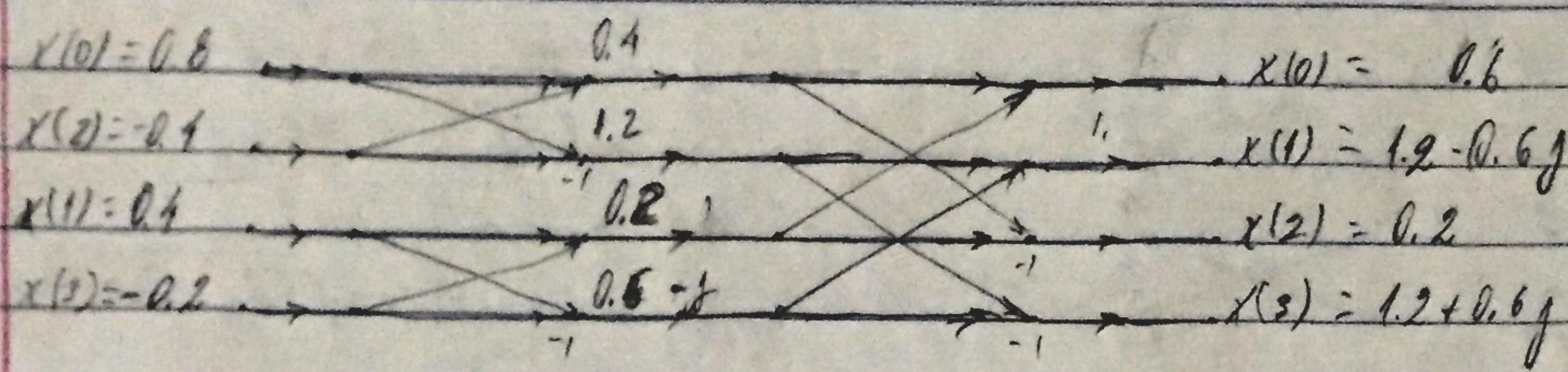
$$\frac{N}{2} \log_2(N) = 4 \quad \log_2(4) = 2$$

6. /



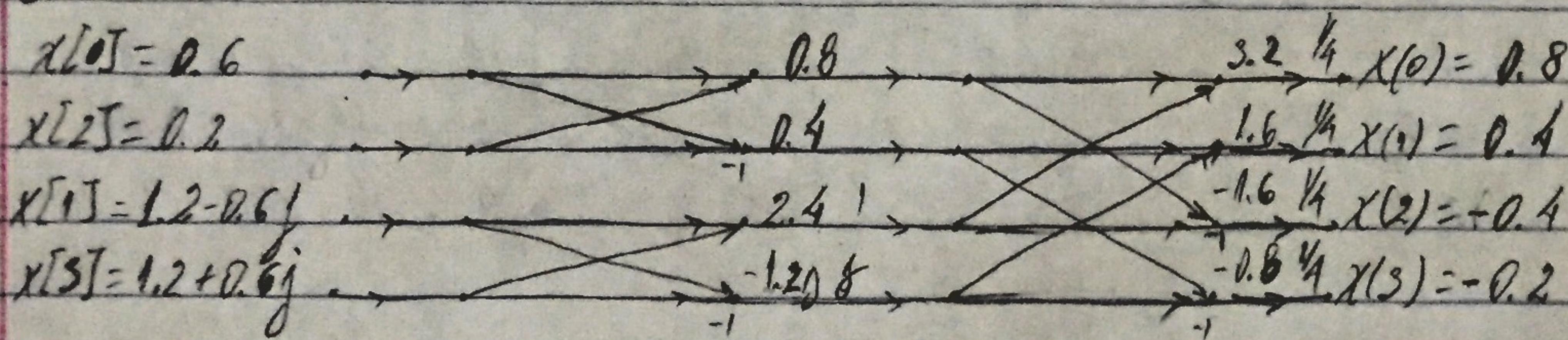
$$2 \cdot 2j - 2 - 2j$$

$$7. x[0] = 0.8, x[1] = 0.4, x[2] = -0.4, x[3] = -0.2$$



$$\frac{N}{2} \log_2(N) = \frac{1}{2} \log_2(4) = 1$$

8.



Problem #9

Using the Figure 1 below calculate $X[m]$ values. Check your results with MATLAB.

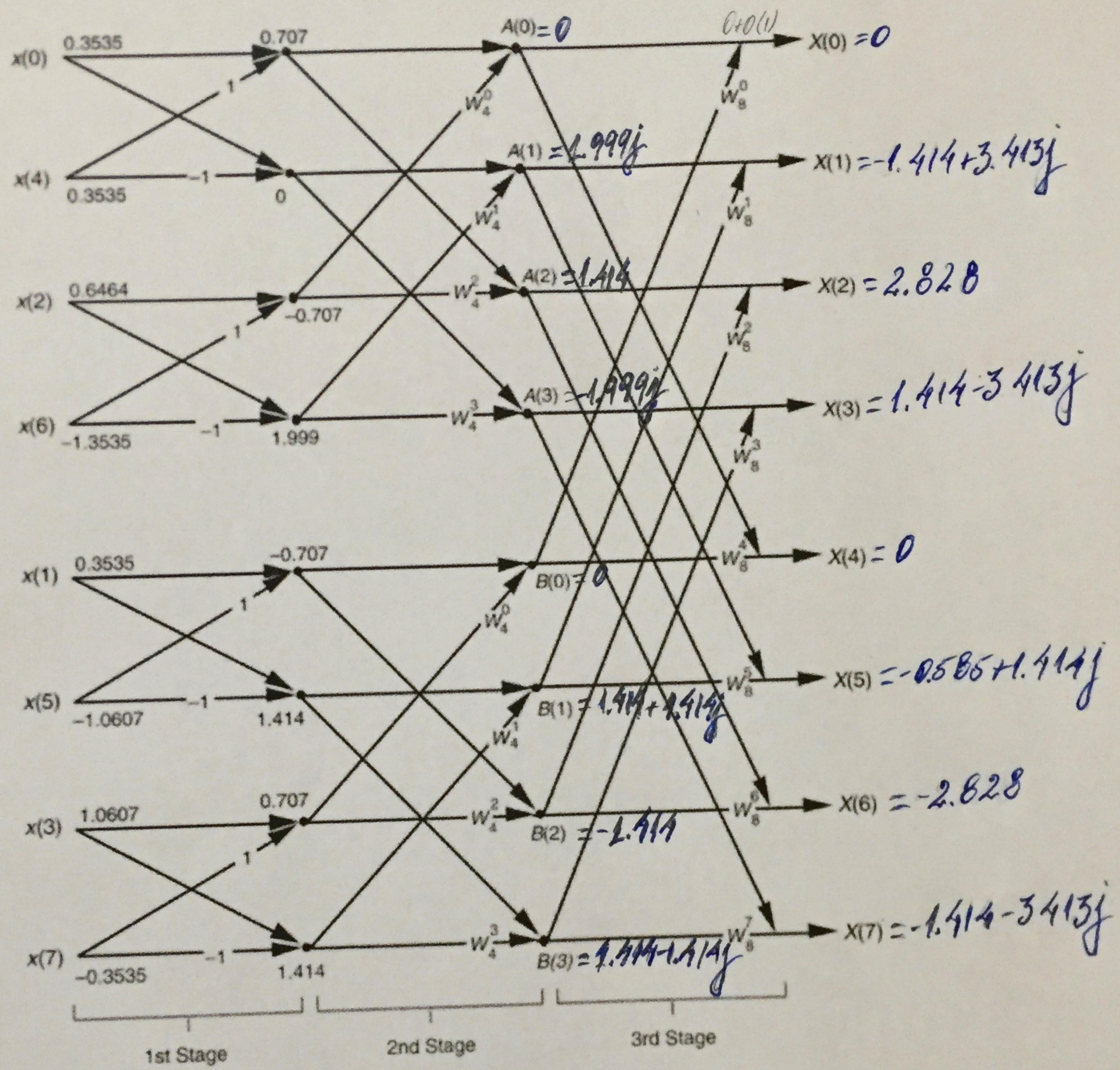


Figure 1: Figure for question 9

Problem #10

Using the Figure 2 below calculate $X[m]$ values for $x[n] = \{0, 1, 2, -1, -2, 0, 2, 1\}$. Check your results with MATLAB.

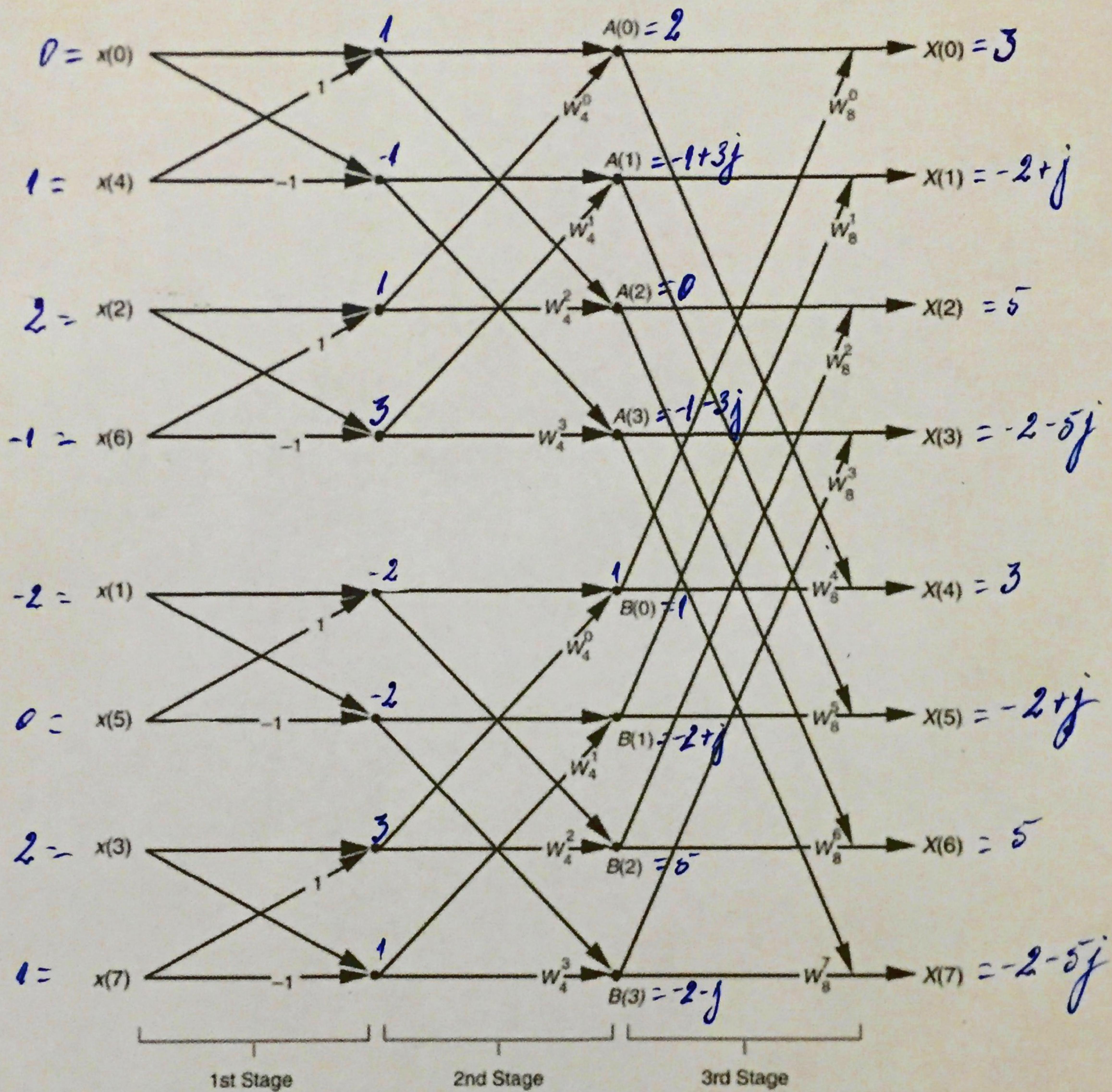


Figure 2: Figure for question 10