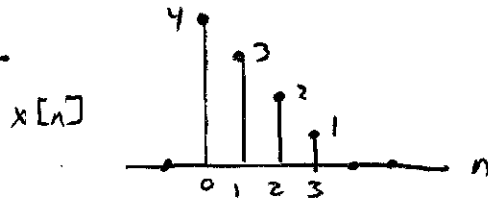


IN-CLASS # 1

$$X[k] = \sum_{n=0}^3 x[n] e^{-j \frac{2\pi k n}{4}} \quad k = 0, \dots, 3$$

$$X[0] = \sum_{n=0}^3 x[n] = 4 + 3 + 2 + 1 = 10$$

$$\begin{aligned} X[1] &= \sum_{n=0}^3 x[n] e^{-j \frac{2\pi}{4} n} = \sum_{n=0}^3 x[n] e^{-j \frac{\pi}{2} n} \\ &= 4 + 3 e^{-j \frac{\pi}{2}} + 2 e^{-j \pi} + 1 e^{-j \frac{3\pi}{2}} \\ &= 4 - 3j - 2 + j = 2 - 2j \end{aligned}$$

$$\begin{aligned} X[2] &= \sum_{n=0}^3 x[n] e^{-j \frac{2\pi(2)}{4} n} = \sum_{n=0}^3 x[n] e^{-j \pi n} \\ &= 4 - 3 + 2 - 1 = 2 \end{aligned}$$

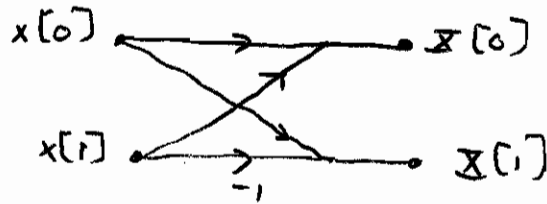
$$\begin{aligned} X[3] &= \sum_{n=0}^3 x[n] e^{-j \frac{2\pi(3)}{4} n} = \sum_{n=0}^3 x[n] e^{-j \frac{3\pi}{2} n} \\ &= 4 + 3 e^{-j \frac{3\pi}{2}} + 2 e^{-j 3\pi} + 1 e^{-j \frac{3\pi}{2} \cdot 3} \\ &= 4 + 3j - 2 - j \\ &= 2 + 2j \end{aligned}$$

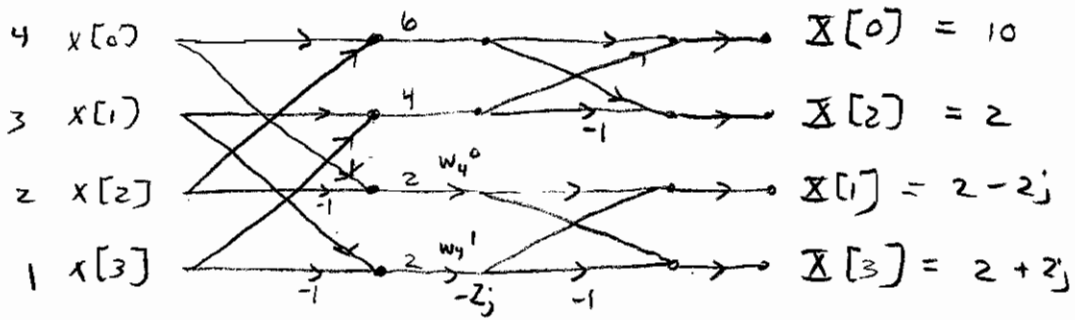
IN-CLASS #2

$$X[k] = \sum_{n=0}^1 x[n] e^{-j\frac{2\pi kn}{2}} = \sum_{n=0}^1 x[n] e^{-j\pi kn}$$

$$X[0] = x[0] + x[1]$$

$$X[1] = x[0] + x[1] e^{-j\pi} = x[0] - x[1]$$

FLOWGRAPH

HW-CLASS # 3

$$w_4^0 = 1$$

$$w_4^1 = e^{-j\frac{2\pi}{4}(1)} = e^{-j\frac{\pi}{2}} = -j$$