Homework – DC2016 （due April 7）

#1 (Wiener filter)

- Given the observations y(0), y(1),…,y(k) , $k \geqq 0$,

  with Rxx (0) = ¾, Rxx (1) = ½, Rxx (2) = ¼ , and Rxx (k) = 0, k> 2 .

  $$y = x + n$$

  where x is unknown signal to be estimated , and n is additive noise.

  x and n are assumed to be uncorrelated .

  $$Rnn \ (0) = \quad ¼ \ , \text{ and } Rnn \ (k) = \quad o \quad \text{for } \ k \neq 0$$

  Find an FIR Wiener filter to estimate x .

#2 Computer simulation (making use of MATLAB)

a. Generate a PN sequence of length 10 using MATLAB routine.

b. Generate white noise and computes its autocorrelation and power
    spectral density.

c. Generate White Gaussian noise (sequence) and Rayleigh distributed
    random sequence .