Practice Questions

Question 1

The signal x[n] is processed by passing it through a linear time invariant filter to produce the waveform y[n]. The impulse response of the filter is
h[n] = [2 -2 -2 4] for n = 0 to 3, and h[n] = 0, otherwise.
The input signal is x[n] = [4 -2 -2 2] for n = -4 to -1, and x[n] = 0, otherwise.

(a) Find the energy of x[n]
(b) Plot x[n-5] as a function of n
(c) Find the energy of y[n]
(d) Plot |y[n]| as a function of n

Question 2

Two signals x[n] and y[n] are cross correlated to give a third signal
z[k] = Rxy[k]. The first waveform is x[n] = [-4 5 -2 -1] for n = 0 to 3,
and x[n] = 0, otherwise. The second waveform is y[n] = x[n-3].

(a) Find the energy of x[n]
(b) Plot x[n+2] as a function of n
(c) Find the energy of z[k]
(d) Plot |z[k]| as a function of k