Sampling

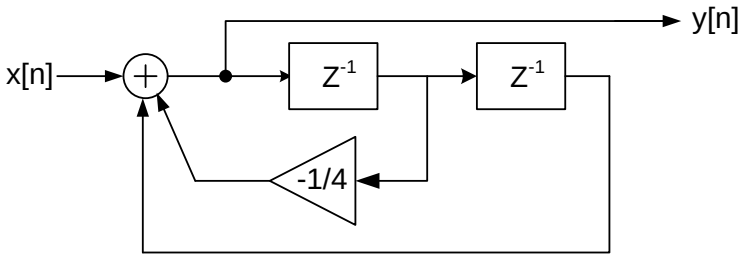
1. Let $y(t) = cos(6\,\pi\,t) + 2\,cos(14\,\pi\,t) - 5\,cos(26\,\pi\,t)$
   a) find the minimum sampling frequency to prevent aliasing

   b) find y[n] if sampled at 10Hz. Keep all discrete frequencies between 0 and π rads/sec.

2. Let $y[n] = 2\,cos(\frac{1}{2}\pi\,n)$. What was the original signal if f_s = 7Hz assuming there was no aliasing?

Block Diagram ↔ DE

3. Given the system on the right

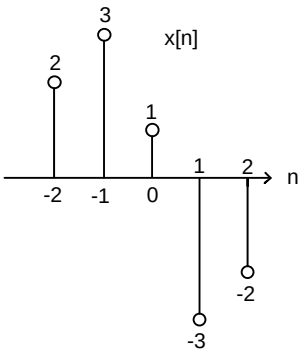


   a) Find the DE

   b) Let x[n] = n^2u[n]. Plot y[n] for 0 ≤ n ≤ 2

Symmetry

4. Find the ca part of x[n]



5. Find k to make the following finite-length sequence w[n] periodic conjugate symmetric:

w[n] = [9 3-j -1 k]

↑

Convolution

6. Given the following x[n] and h[n], graphically convolve to find y[n] = x[n] * h[n]. Both signals are zero outside the graphed regions.