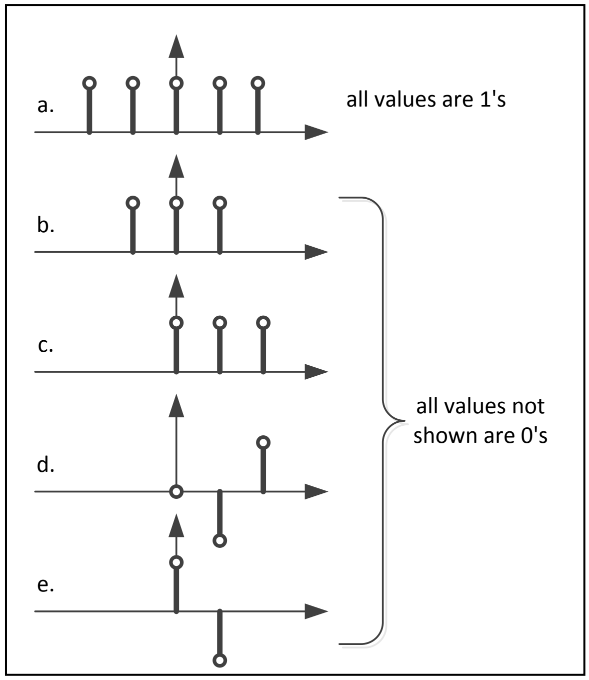
P1 **Find:** Let g[n] be even, h[n] be odd.
a) is x[n] = g[n] g[n] odd or even? Prove.
b) is y[n] = h[n] h[n] odd or even? Prove.

Hints: • An example is not a proof. A proof works for any function.
• Don't confuse an odd or even *number* with an odd or even *function*.

P2 **Find:** Using the graphs on the right, for the infinite length sequences a and b, state if they are conjugate symmetric or antisymmetric. For the finite length sequences c-e state if they are periodic conjugate symmetric or periodic conjugate antisymmetric.



P3 **Find:** a) For the infinite length sequence $x[n] = 2^n$, find the conj symmetric part $x_{cs}[n]$ and the conjugate anti-symmetric part $x_{ca}[n]$. Simplify for full credit.

b) The finite length sequence $y[n] = [\mathbf{1}\ \ 2\ \ 3\ \ 4\ \ 5]$ where y[0] is bolded, is defined over $0 \le n \le 4$. Find the periodic conjugate symmetric part $y_{pcs}[n]$ and the conjugate antisymmetric part $y_{pca}[n]$. Write the result as a sequence using an arrow to identify n = 0.

c) Redo (b) but using the finite-length sequence $z[n] = [\mathbf{0}\ \ 1{+}j\ \ 1{-}j]$, defined over $0 \le n \le 2$. Remember to identify n=0 with an arrow.

Hints: a) the only digits used are 1 and 2
b) 0.5, 1.5, and 3.5 will feature prominently
c) does the given sequence z[n] have a symmetry?

P4 **Find:** Are the following sequences bounded?
a) $x[n] = A\alpha^n$ where A and α are complex and $|\alpha| < 1$
b) $x[n] = A\alpha^n$ **u[n]** where A and α are complex and $|\alpha| < 1$
note: u[n] is a unit step; it is 1 for $n \ge 0$, and 0 otherwise

Hints: for a) consider what happens as n becomes more negative