1. Determine the even and odd parts of the following real sequences:
   (a) \( x_1[n] = e^{jnπ/7} \),
   (b) \( x_2[n] = δ[n − 1] + 3δ[n − 3] − 5δ[n] \),
   (c) \( x_3[n] = \{1 + j2, 5 − j3, 6, 3 − j\}, -1 ≤ n ≤ 2 \),
   (d) \( x_4[n] = \cos(πn/5)μ[n − 3] \)

2. Determine the fundamental period of the following periodic sequences:
   (a) \( x_1[n] = 2 \cos(0.5πn + 0.75π) \),
   (b) \( x_2[n] = e^{0.3πn} \),
   (c) \( x_3[n] = Re(e^{jπn/3}) + Im(e^{jπn/10}) \),
   (d) \( x_4[n] = 4 \cos(2πn/5) + 3 \cos(3πn/5) \)

3. For the following discrete-time system, where \( y[n] \) and \( x[n] \) are, respectively, the output and the input sequences, determine whether or not the system is (1) linear, (2) causal, (3) shift-invariant, (4) stable, (5) passive, (6) lossless:
   \( y[n] = x[n^2 − n] \)

4. Let \( g[n] = x_1[n] * x_2[n] * x_3[n] \) and \( h[n] = x_1[n − 3] * x_2[n − 2] * x_1[n − 1] \). Express \( h[n] \) in terms of \( g[n] \).

5. Determine the expression for the impulse response of each of the LTI systems shown below:

6. Determine the overall impulse response of the system of the following figure, where the impulse responses of the component systems are: \( h_1[n] = 2δ[n−2]−3δ[n+1], h_2[n] = δ[n−1]+4δ[n+2] \), and \( h_3[n] = 5δ[n−4] + 6δ[n − 1] − δ[n] + 2δ[n + 1] \).