1. Period of the signal: \( x[n] = \cos\left(\frac{\pi}{8}n^2\right) \)

2. Plot \( x[n] = u[n-1] - u[-n+3] \). Is it an even or odd signal? What kind of signal transformation can make it an even signal? Is this signal an energy or power signal? Find its energy or power.

3. Let 
   \[
   x[n] = \begin{cases} 
   1 & 0 \leq n \leq 9 \\
   0 & \text{otherwise}
   \end{cases}
   \] 
   and 
   \[
   h[n] = \begin{cases} 
   1 & 0 \leq n \leq N \\
   0 & \text{otherwise}
   \end{cases}
   \]
   where \( N \leq 9 \) is an integer. Determine the value of \( N \), given that \( y[n] = x[n] \ast h[n] \) and \( y[4] = 5, y[14] = 0 \).

4. Determine and sketch the convolution of the following two signals
   \[
   x(t) = \begin{cases} 
   t + 1 & 0 \leq t \leq 1 \\
   2 - t & 1 < t \leq 2 \\
   0 & \text{otherwise}
   \end{cases}
   \]
   and 
   \[
   h(t) = \delta(t+2) + 2\delta(t+1)
   \]

5. Consider the cascade interconnection of three causal LTI systems, \( x[n] \rightarrow h_1[n] \rightarrow h_2[n] \rightarrow h_2[n] \rightarrow y[n] \). If \( h_2[n] = u[n] - u[n-2] \) and the overall impulse response is 
   \[
   h[n] = \delta[n] + 5\delta[n-1] + 10\delta[n-2] + 11\delta[n-3] + 8\delta[n-4] + 4\delta[n-5] + \delta[n-6].
   \]
   (a) Find the impulse response \( h_1[n] \)
   (b) Find the response of the overall system to the input \( x[n] = \delta[n] - \delta[n-1] \)