Exercises Week 3

DSP

1. Characterize the following systems with respect to:

   - Memory
   - Linearity
   - Time invariance
   - Causality
   - Stability

   a. $y[n] = n \cdot x[n^2]$
   b. $y[n] = x[n] \cdot cos(\omega_0 n)$
   c. $y[n] = sin(x[n])$
   d. $y[n] = x[n] + n \cdot x[n+1]$

2. Compute the convolution of the signals $x_1[n] = \{..., 0, 1, 2, 3, 4, 0, ...\}$ and $x_2[n] = \{..., 0, 2, 2, 3, 3, 0, ...\}$