PCM problems:

1. A compression characteristic is approximated in 4 segments identified by the following sequence of points: (0, 0)-(0.125, 0.25)-(0.25, 0.5)-(0.5, 0.75)-(1, 1). Each segment is divided in 8 intervals. At the input of the coder it is applied a voltage of 0.557V and the dynamic range of the input signal is [-2, 2] V.
   a. Which is the voltage obtained at the output of the compressor?
   b. Which is the binary code associated to the input voltage?
   c. Calculate the quantization step on each segment.
   d. Calculate the compression rate for each segment.
   e. Which is the power of the quantization noise on each segment?
   f. Calculate the mean power of the quantization noise.

2. The dynamic range of a voice signal is [-2, 2] V and a PCM coding employing the μ compression law is used for transmission. The decoder receives the 2Ch hexadecimal code. It is known the coding table of the μ law.
   a. Which is the received binary code?
   b. Which is the binary code at the input of the D/A converter?
   c. Which is the voltage obtained at the output of the PCM decoder?