Problem Set 7

1. Design a 6th-order *elliptic* IIR filter which meets the following specifications: (3 *points*)

$$\omega_p = 0.2\pi$$
$$\omega_s = 0.3\pi$$
$$R_p = 0.5 \text{ dB}$$
$$R_s = 60 \text{ dB}.$$

   Quantize the filter coefficients with different number of bits $(8, 12, 14, 16$ etc.). Plot the frequency response and impulse response in each case. What is the minimum number of bits to achieve good enough IIR filter?

2. Design the same IIR filter using `iircoef.m` function. What is the minimum number of bits now? (2 *points*)