EE 355 Analog Electronics Homework 3

1. Solve for the voltage gain for each of the following circuits.



- 2. Design an amplifier with the following specifications.
 - R_{in} = 50Ω
 - |Gain| = 1000

This circuit will be used to amplify a small signal and perform "impedance matching" to maximize the signal transfer (as is typical in RF systems).

3. Using the following circuit,



determine the time-domain output to the following input, and provide a sketch of the output signal.

$$V_{in} = (10mV)\sin(2\pi(100Hz)t)$$

4. Using the following circuit,



with C = 10μ F, find the value of R such that the input and output signals are as follows.



5. A "Device Under Test" (DUT) is being supplied by a battery. You need to determine how much current is flowing into the DUT by using the following circuit and knowing that $V_{out} = -1V$.

