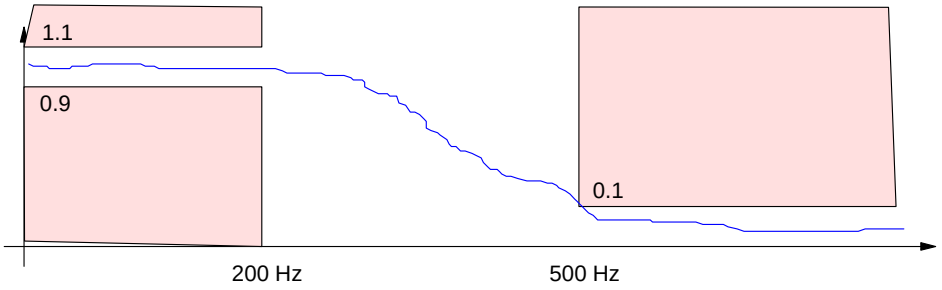
ECE 321 - Homework #3

Filter Design, Analog Computers. Due Monday, November 20th, 2017

Problem 1-3) Design a low-pass filter to meet the following requirements:

- Input: +/- 10V, capable of 20mA
- Output: +/- 10V capable of 20mA
- Relationship:
  - 1.1 < Gain < 0.9 f < 200 Hz
  - Gain < 0.1 f > 600 Hz



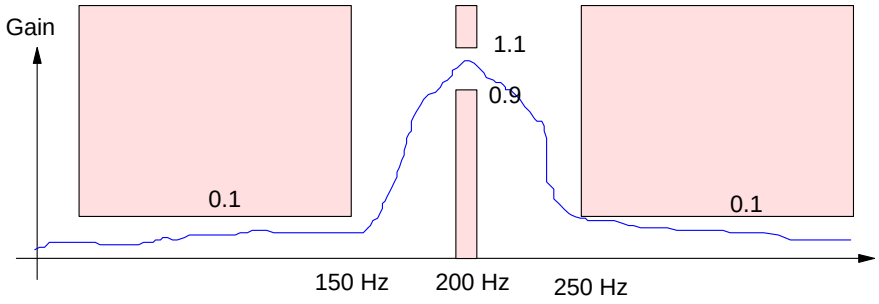
1) Give a filter, G(s), which meets these requirements. Plot the gain vs. frequency for your G(s) in Matlab.

2) Design a circuit to implement this circuit

3) Test your design in PartSim

2) Design a band-pass filter to meet the following requirements:

- Input: +/- 10V, capable of 20mA
- Output: +/- 10V capable of 20mA
- Relationship:
  - 1.1 < Gain < 0.9 f = 200 Hz
  - Gain < 0.1 f > 250 Hz
  - Gain < 0.1 f < 150 Hz



a) Give a filter, G(s), which meets these requirements. Plot the gain vs. frequency for your G(s) in Matlab.

b) Design a circuit to implement this circuit

c) Test your design in PartSim

3) Build one of these circuits and check that it meets the requirements