

## EEE311: Signals and Systems

### Lab # 6: Bode Plots

## 1 Experimental Work:

1. Build the circuit of figure 1.
2. Connect:
  - $v_{in}(t)$  on scope channel 1 (orange wire) and waveform generator 1 (yellow wire) of the *Digilent Analog Discovery* Gizmo,
  - $v_{out}(t)$  on scope channel 2 (blue wire), and
  - *Digilent Analog Discovery* Gizmo ground (black wire) to circuit ground.
3. Use the network analyzer tool of the *Digilent Analog Discovery* Gizmo to measure its frequency response from 1 kHz to 50 kHz with an input amplitude of 500 mV (1 V peak-to-peak) and 0 V offset.

## 2 Report:

1. Show that the transfer function of the circuit in figure 1 is:

$$\frac{s^2}{s^2 + \frac{s}{R_2(C_1 \parallel C_2)} + \frac{1}{R_1 R_2 C_1 C_2}}$$

2. On the same graph, sketch:
  - the (experimental) Bode plots of the circuit from the measurements taken with the *Digilent Analog Discovery* Gizmo, and
  - the (theoretical) Bode plots obtained from the transfer function.

Compare the theoretical and experimental Bode plots.

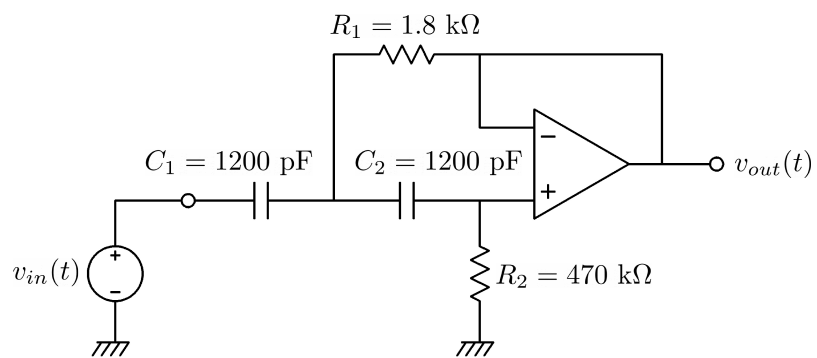


Figure 1: