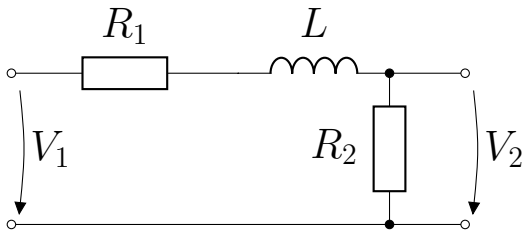
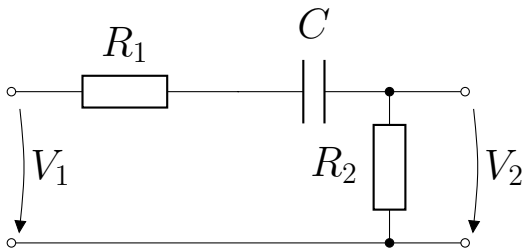
Seminar - 8th week

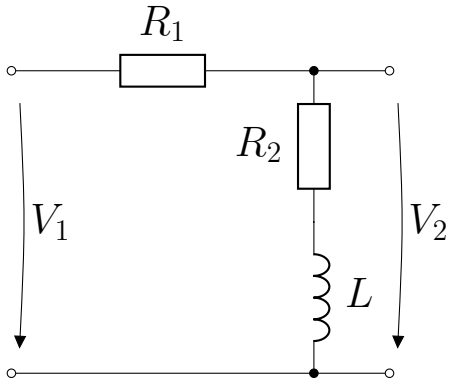
1. For circuit in the figure draw magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V}_2}{\mathbf{V}_1}$. $R_1 = 9\,\mathrm{k}\Omega$, $R_2 = 1\,\mathrm{k}\Omega$, $L = 10\,\mathrm{mH}$.



2. For circuit in the figure draw magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V}_2}{\mathbf{V}_1}$. $R_1 = 4\,\mathrm{k}\Omega$, $R_2 = 6\,\mathrm{k}\Omega$, $C = 2\,\mu\mathrm{F}$.

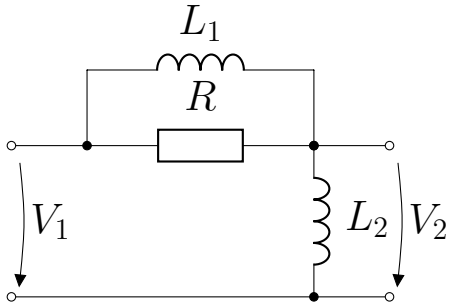


3. For circuit in the figure draw magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V}_2}{\mathbf{V}_1}$. $R_1 = 9\,\mathrm{k}\Omega$, $R_2 = 1\,\mathrm{k}\Omega$, $L = 10\,\mathrm{mH}$.



4. For circuit in the figure draw magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V}_2}{\mathbf{V}_1}$. $R = 2400\,\Omega$,

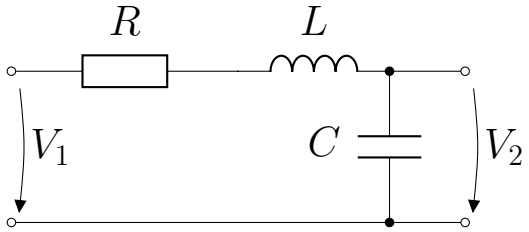
L_1 = 0.4 H, L_2 = 0.6 H.



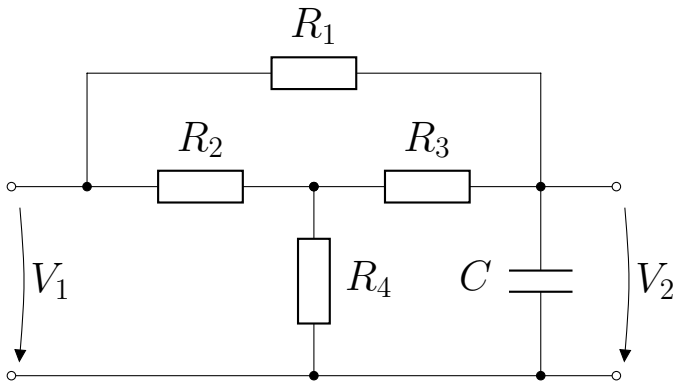
5. For circuit in the figure draw magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V}_2}{\mathbf{V}_1}$. L = 0.2 H, C = 5 µF,

   a) R = 10 kΩ,
   b) R = 400 Ω,
   c) R = 1 Ω.

   What is a difference between Bode approximation and true frequency response at breaking frequency?



6. For circuit in the figure draw magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V}_2}{\mathbf{V}_1}$. R_1 = 1 kΩ, R_2 = 2 kΩ, R_3 = 5 kΩ, R_4 = 1 kΩ, C = 1 µF.
   In Microcap, draw waveforms of input and output voltage, if circuit is supplied from three series connected AC sources with frequencies f_1 = 150 Hz, f_2 = 1500 Hz, f_3 = 15 kHz.



7. For circuit in the figure draw in Microcap magnitude and phase frequency response (Bode plot) of the voltage transfer function $\mathbf{H} = \frac{\mathbf{V_2}}{\mathbf{V_1}}$. L_1 = 2.39 mH, L_2 = 0.796 mH, C = 33.16 µF, R = 8 Ω.
   In Microcap, draw waveforms of input and output voltage, if circuit is supplied from three series connected AC sources with frequencies f_1 = 800 Hz, f_2 = 8 kHz, f_3 = 80 kHz.
   In Microcap, draw waveforms of input and output voltage, if circuit is supplied from voltage source of rectangular waveform with period T = 1.25 ms