NAME:

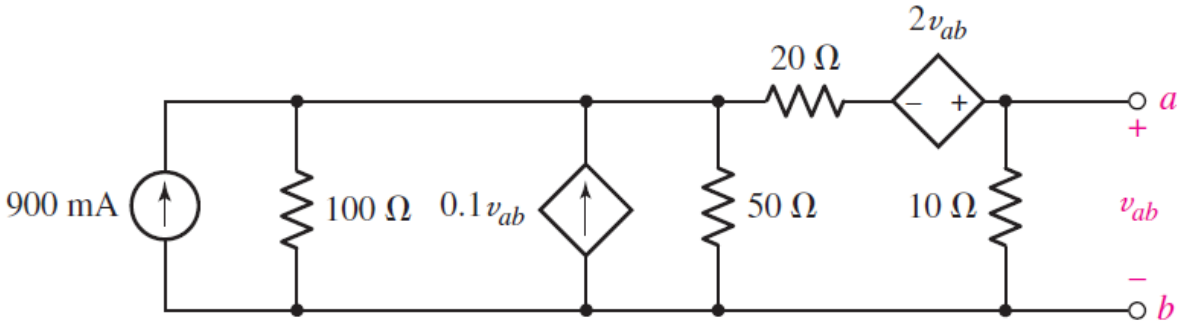
Homework 2
-
DC Circuits & RC & RL

Deadline: Tuesday, 26 April, 2022, 11:55 PM

Please send your solutions in electronic version by NYU Brightspace.

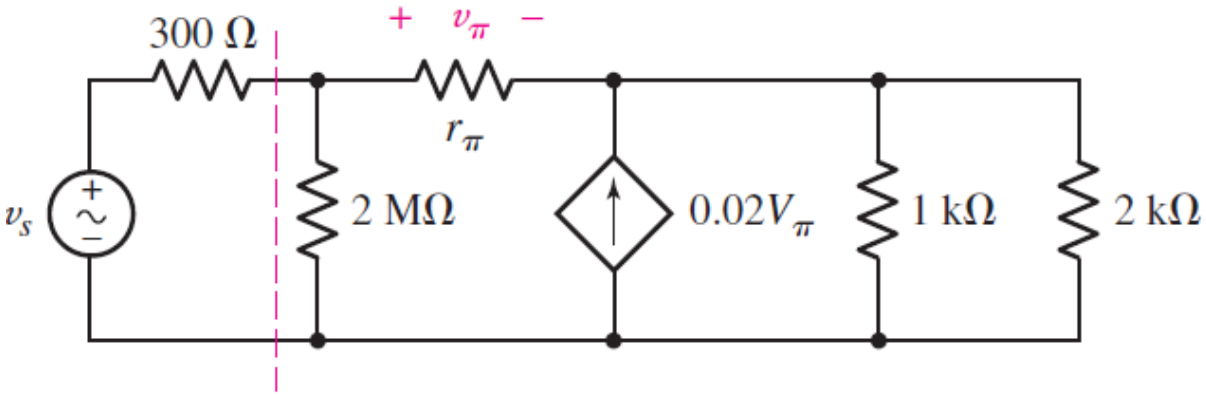
Exercise 1 - Maximum power

Determine what value of resistance would absorb maximum power from the circuit when connected across terminals a and b.



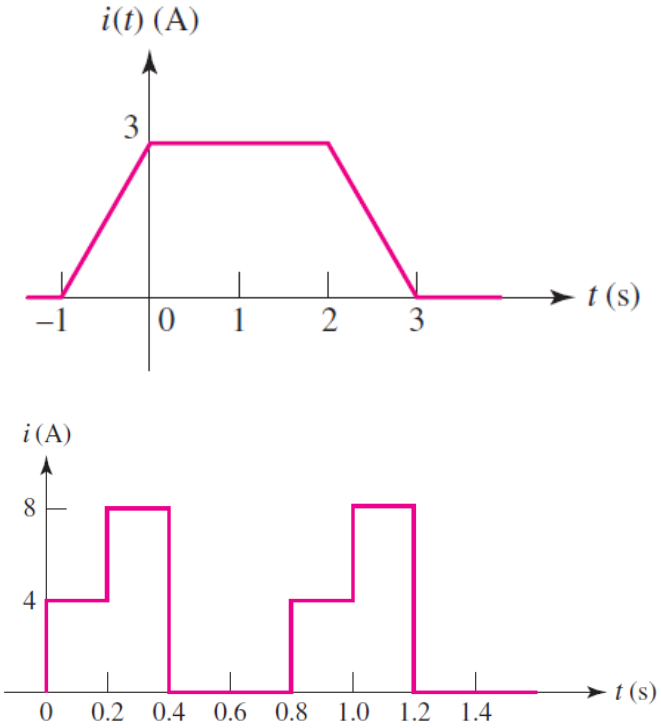
Exercise 2 - Thevenin equivalent

Determine the Thevenin equivalent resistance of the circuit to the right of the dashed line. This circuit is a common-collector transistor amplifier and you are calculating its input resistance.



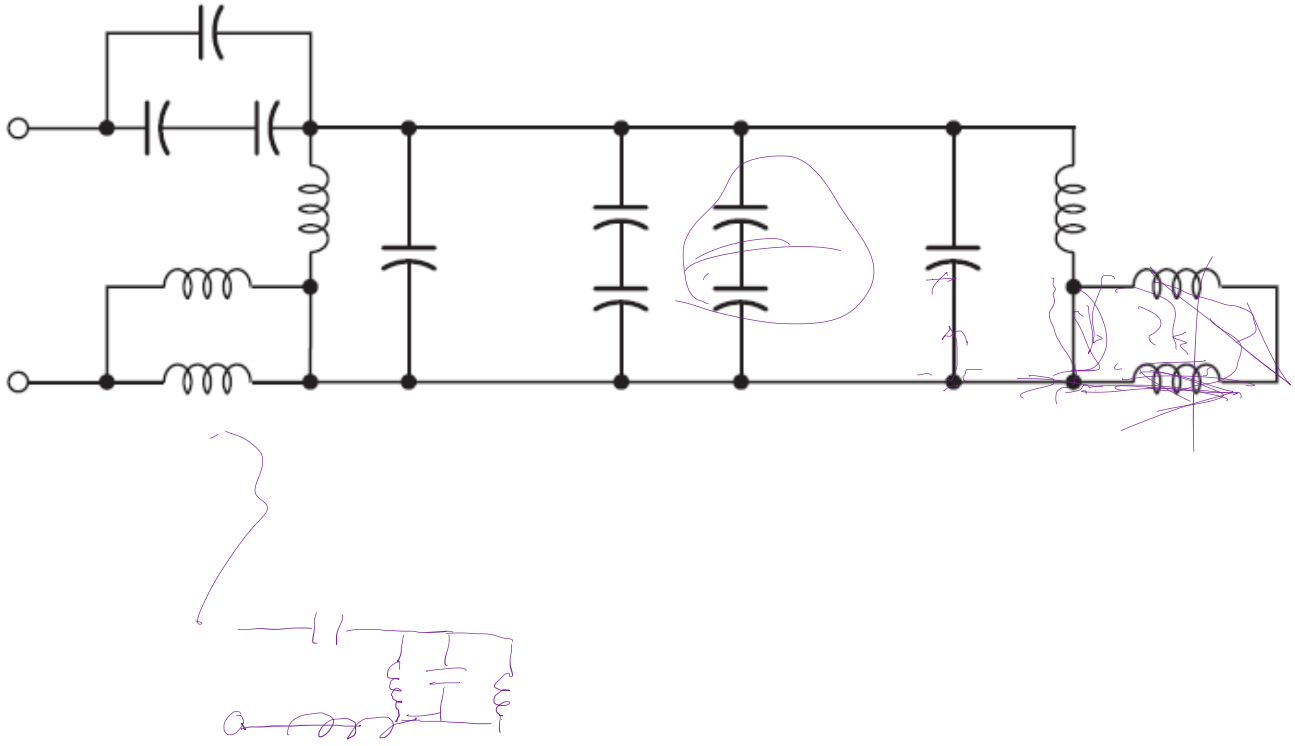
Exercise 3 - Capacitor

Assuming the passive sign convention, sketch the voltage which develops across the terminals of a 2.5 F capacitor in response to the current waveforms shown below.



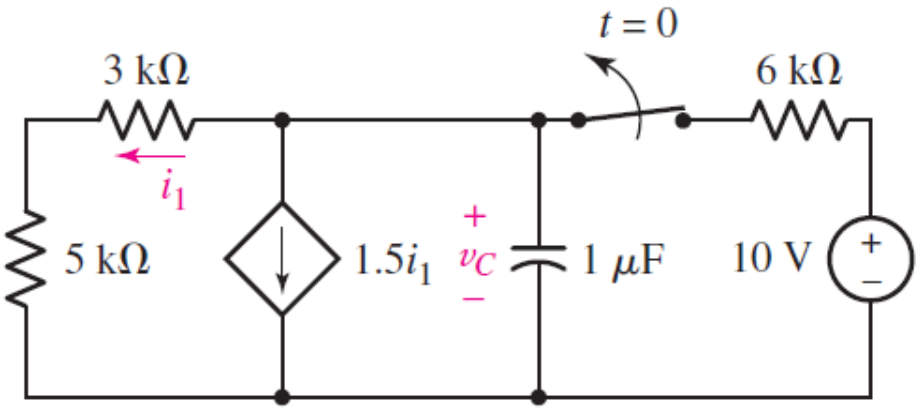
Exercise 4 - Equivalent inductor and capacitor

Reduce the network to the smalled possible number of components if each inductor is 1 nH and each capacitor is 1 mF.



Exercise 5 - RC Circuit

Determine $v_C(0^-)$, $v_C(0^+)$, $v_C(t > 0)$



Exercise 6 - RL Circuit

Find expressions of $i_1(t)$ and $i_L(t)$ for $t > 0$