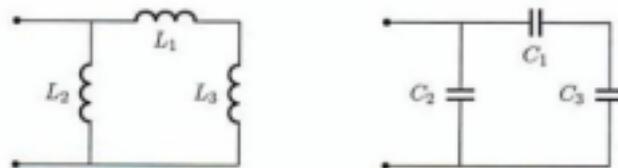


Homework1 Circuits and DC analysis methods (Review)

NB : Prendre soin de faire un schéma clair avec les indications utiles de courants et tensions avant d'écrire toute équation !
Be sure to make the polarity of voltages and currents clear!

Exercise 1

Find the inductance of all inductor network, and the capacitance of the all-capacitor network, shown below:



Exercise 2

1 Analyze the circuit in figure 1 and find I_0/I_S

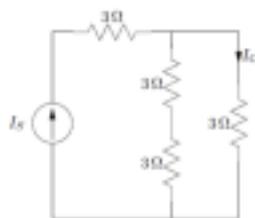


Figure 1

2 Analyze the circuit in figure 2 and find V_0/V_S

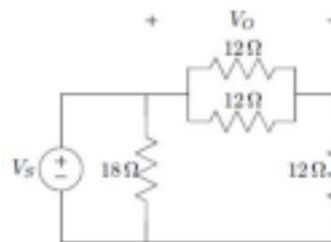


Figure 2

Exercise 3

Find the values of v and i in the figure 3.

Before rushing in writing equations please think about the best approach!

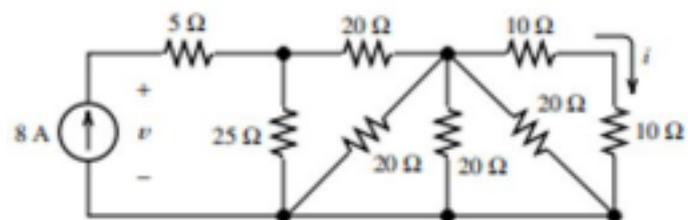


Figure 3

Exercise 4

Determine the Thevenin equivalent of the following circuit (figure 4). Note that it contains a dependent voltage source, and that the parameter α has units of Ohms.

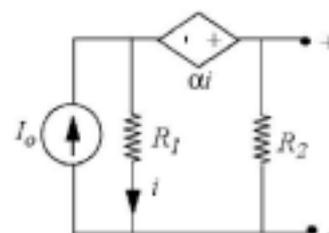


Figure 4

Exercise 5

Find the voltages v_1 and v_2 for the circuit shown in fig 5 by combining resistances in series and parallel.

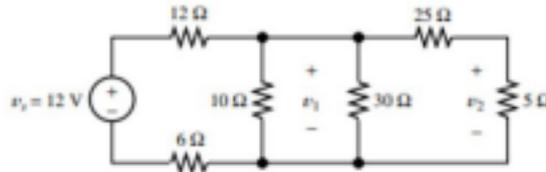
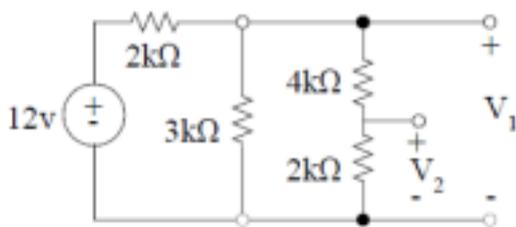


Figure 5

Exercise 6



Determine the voltages V_1 and V_2 in the network in Fig. 6 using voltage divider rule (VDR).

Figure 6



(Head scratcher)

Exercise 7

This exercise is little bit difficult. If you succeed you will have 2 bonus points.

Calculate the equivalent resistance R_{eq} seen between the nodes A and B in the circuit shown in figure 7. Assume that all resistors have a value of 1Ω , and that 1 A flows into node A and out of node B. (Note : this problem can be solved without writing any node equations!).

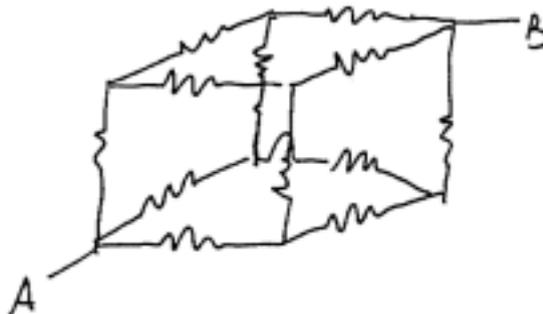


Figure 7

