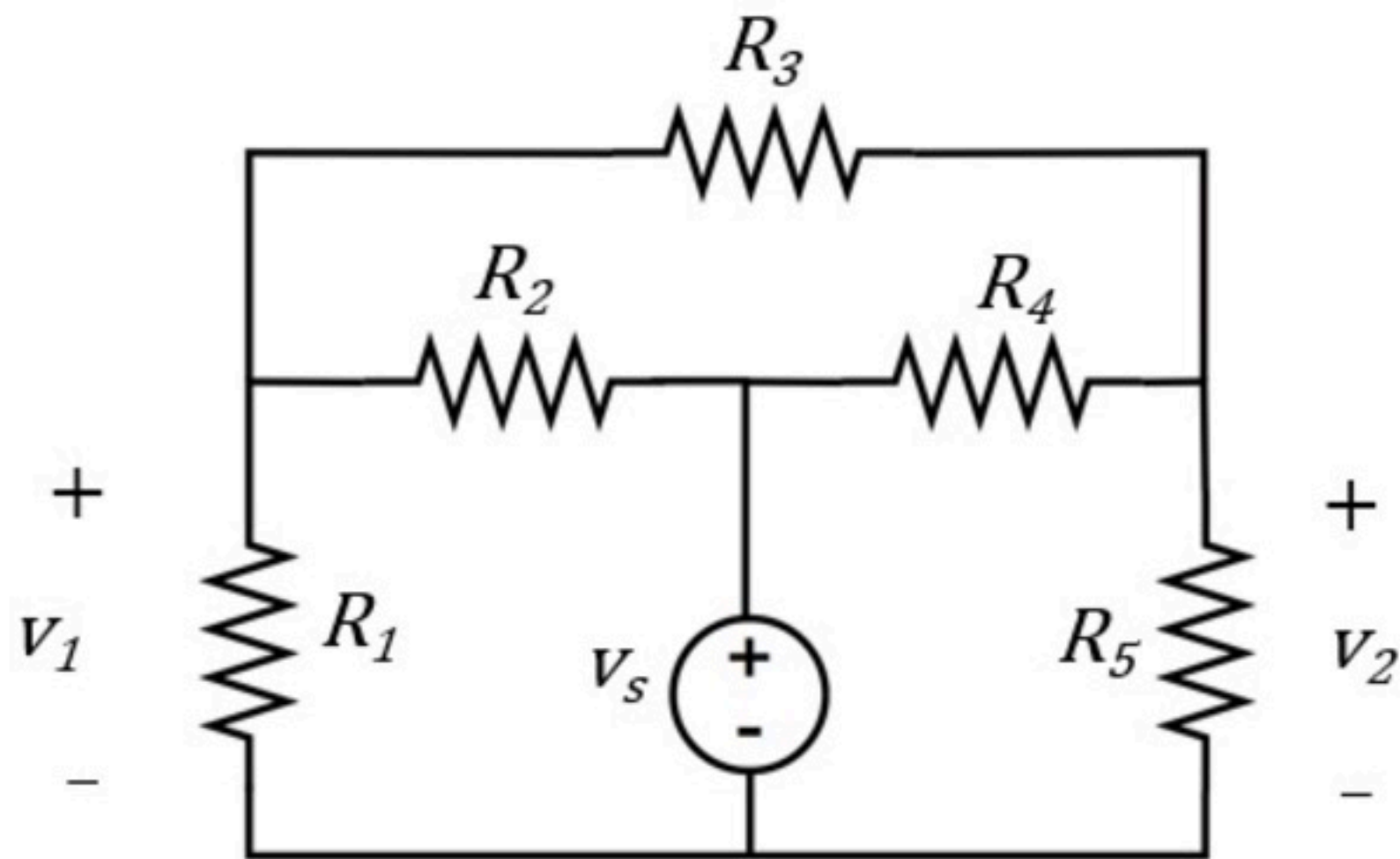# Basic Analysis 001b

Problem has been graded.

We measure v_1 and v_2.
Determine the values of resistances R_2 and R_3.

Given Variables:

R1 : 12 ohm

R4 : 12 ohm

R5 : 2 ohm

vs : 30 V

v1 : 12 V

v2 : 6 V

Calculate the following:

R2 (ohm) :

R3 (ohm) :

We measure v_1 and v_2.
Determine the values of resistances R_2 and R_3.

R1 = 12 Ω

R4 = 9 Ω

R5 = 2 Ω

vs = 24 V

v1 = 12 V

v2 = 6 V
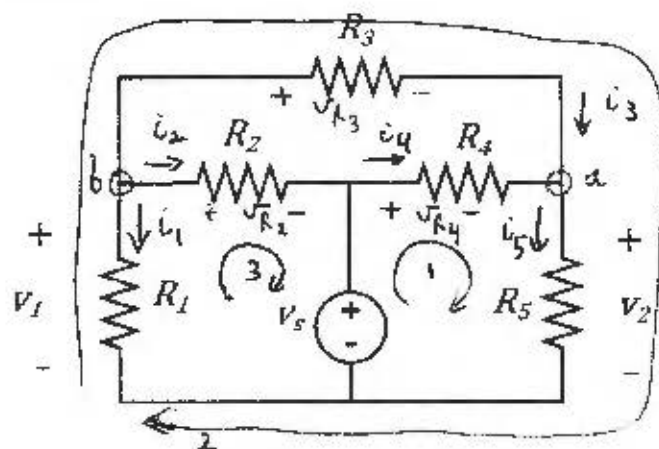
$$c_1 = \frac{v_1}{R_1} = \frac{12}{12} = 1 \qquad i_5 = \frac{v_2}{R_5} = \frac{6}{2} = 3$$

$$\text{KVL 1:} \quad v_s = v_{R_4} + v_2 \implies v_{R_4} = v_s - v_2 = 24 - 6 = 18$$

$$L_4 = \frac{v_{R_4}}{R_4} = \frac{18}{9} = 2$$

$$\text{KCL a:} \quad i_3 + i_4 = i_5 \implies i_3 = i_5 - i_4 = 3 - 2 = 1$$

$$\text{KVL 2:} \quad v_1 = v_{R_3} + v_2 \implies v_{R_3} = v_1 - v_2 = 6$$

$$R_3 = \frac{v_{R_3}}{i_3} = \frac{6}{1} \implies \boxed{R_3 = 6\,\Omega}$$

$$\text{KCL b:} \quad i_1 + i_2 + i_3 = 0 \implies i_2 = -i_1 - i_3 = -1 - 1 = -2$$

$$\text{KVL 3:} \quad v_1 = v_{R_2} + v_s \implies v_{R_2} = v_1 - v_s = 12 - 24 = -12$$

$$R_2 = \frac{v_{R_2}}{i_2} = \frac{-12}{-2} \implies \boxed{R_2 = 6\,\Omega}$$