Exercises 05
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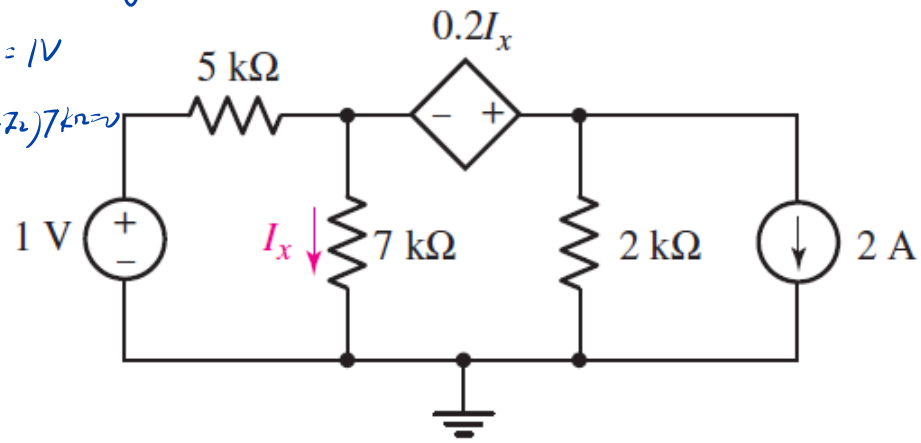
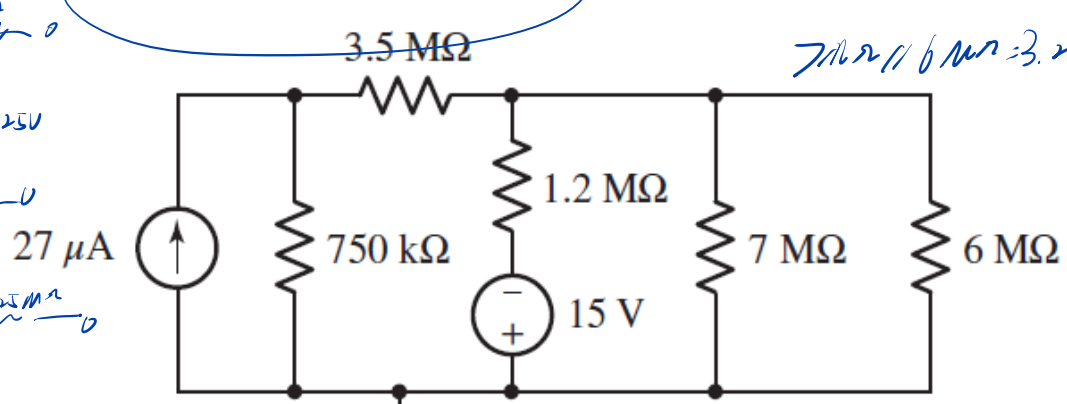
Superposition and Source Transformation

Exercise 1 - Superposition



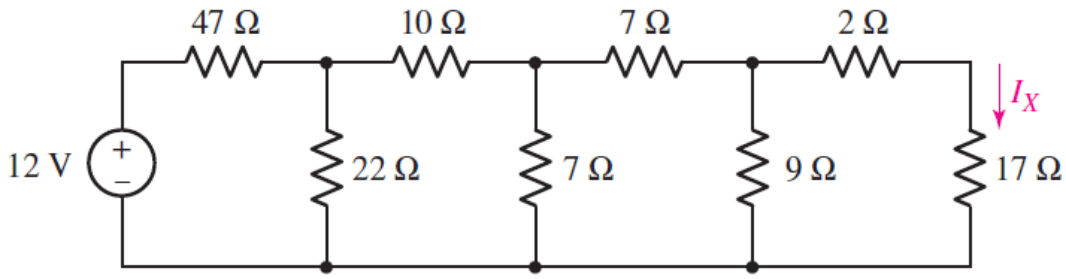
Employ superposition principles to obtain a value for the current I_x.

Exercise 2 - Source Transformations

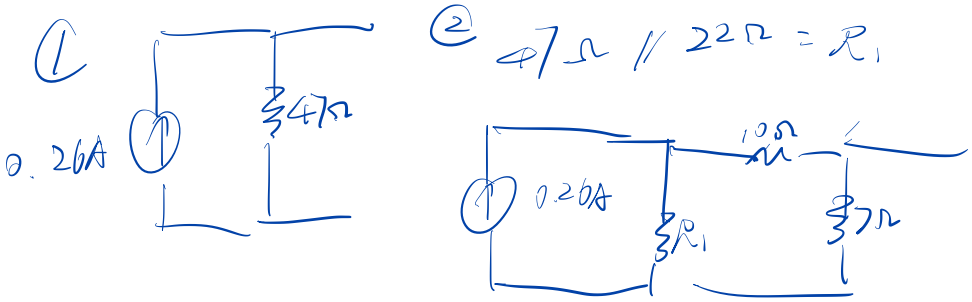


Using repeated source transformation, reduce the circuit to a voltage sources in series with a resistor.

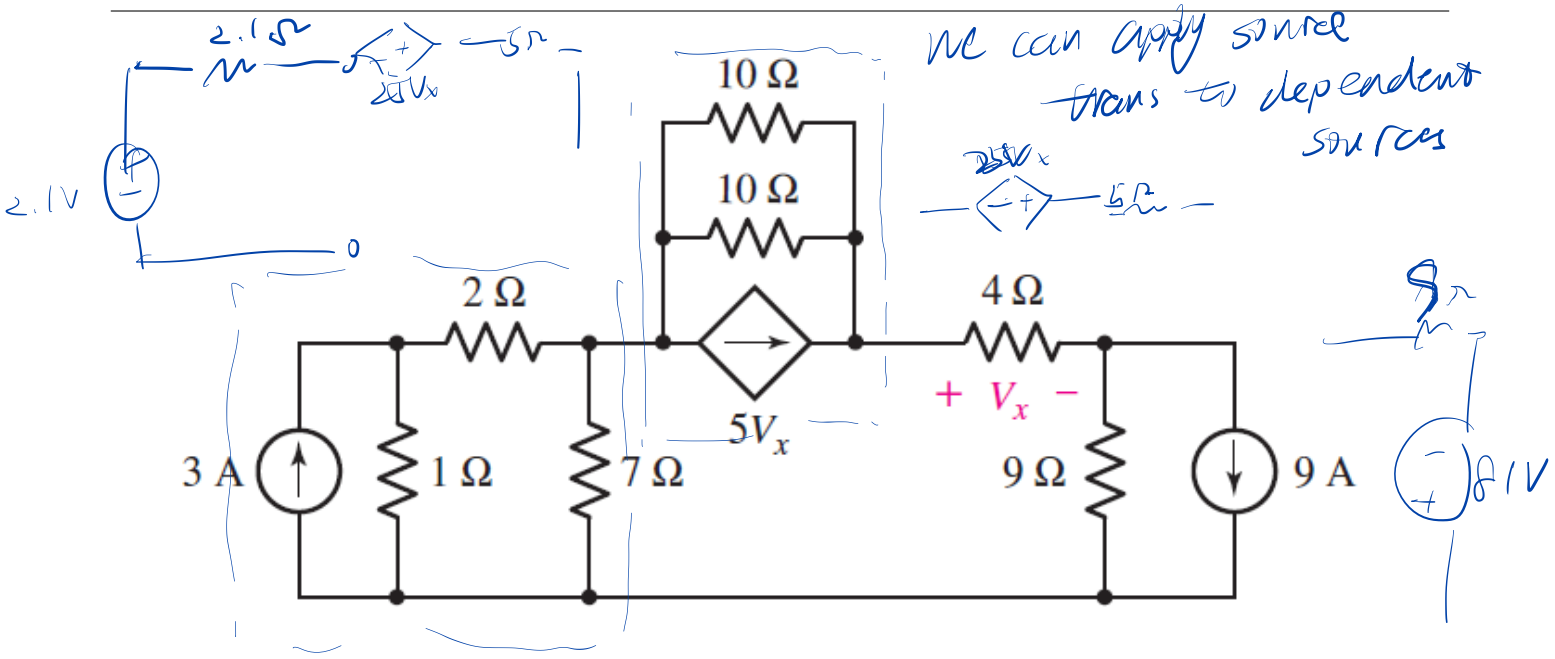
Exercise 3 - Source Transformations



Making use of repeated source transformations, reduce the circuit such that it contains a single voltage source, the 17 Ω resistor, and one other resistor.
Calculate the power dissipated by the 17 Ω resistor.



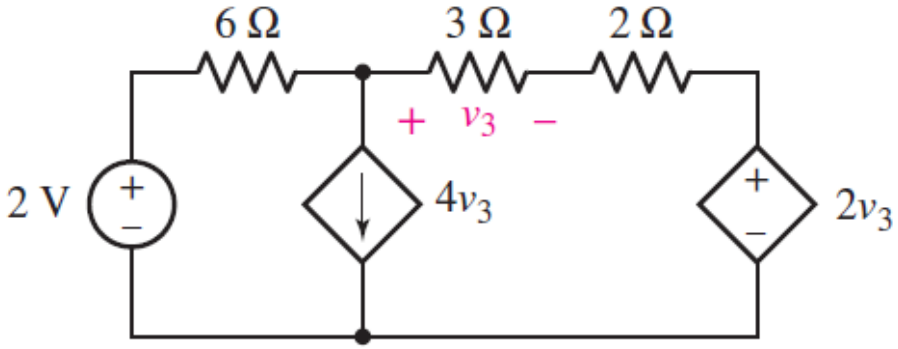
Exercise 4 - Source Transformations



First convert all three sources to voltage sources, then simplify the circuit as much as possible and calculate the voltage V_x.

$$\oint 3.1\,U = \left(\frac{V_x}{4\Omega}\cdot 10.1\Omega\right) - 25V_x + V_0$$

Exercise 5 - Source Transformations



First transform both voltage sources to current sources and reduce the number of elements as much as possible, and determine the voltage v_3.