ELECTRICAL CIRCUITS

2020-2021 FALL SEMESTER

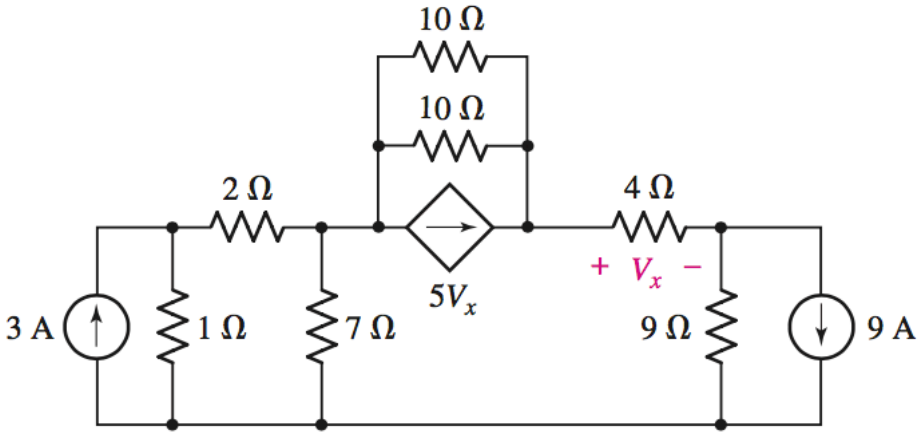
HOMEWORK #6

DUE TO: 02.02.2021 9:00 A.M.

An optional homework. +5 P will be added to the annual average of the students who submit their assignments.

1. a. Use source transformations to find V_x in the following circuit.

   b. Find the power of dependent source and determine if the source absorbs or supplies power.

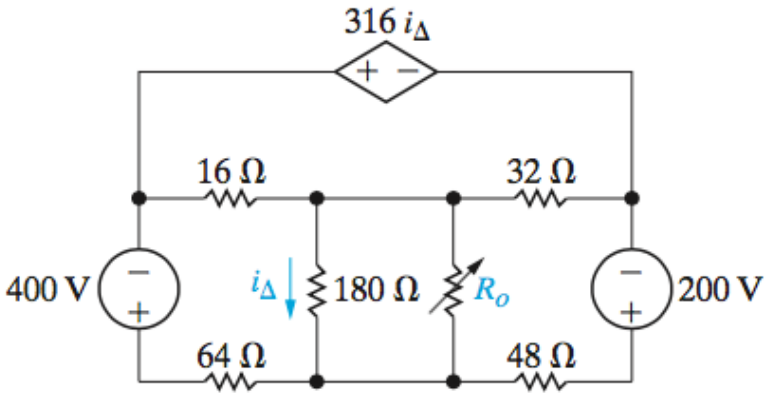


2. The variable resistor R_0 in the circuit below is adjusted for maximum power transfer to R_0.

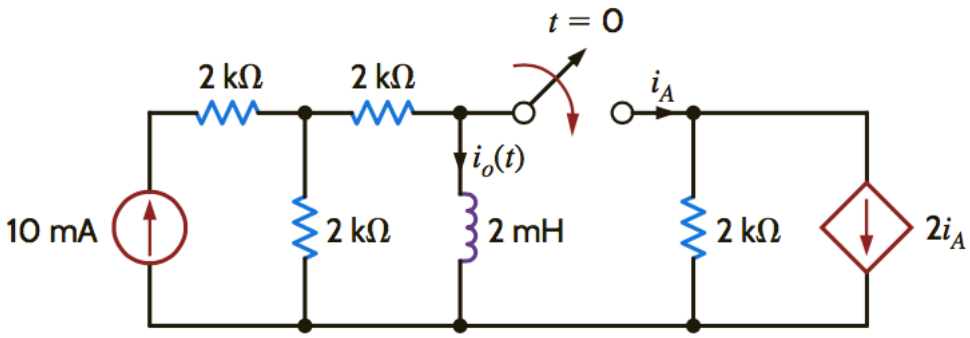
a) Find the value of R_0.

b) Find the maximum power that can be delivered to R_0.

c) What percentage of the total power developed in the circuit is delivered to R_0 found in part(a)?



3. Find i_o(t) for t > 0 in the following circuit.



4. The circuit in the following has been in operation for a long time. At $t = 0$, the voltage source reverses polarity and the current source drops from 3 mA to 2 mA. Find $v_0(t)$ for $t > 0$.