

## Homework 2

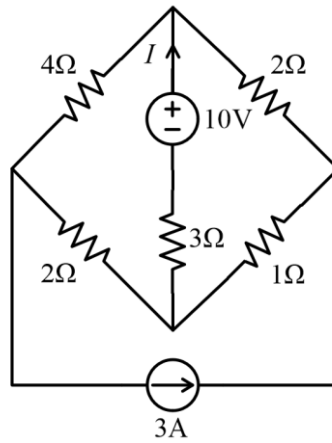
Due time: 10 p.m. Oct. 19<sup>th</sup>, 2024

Turn in your hard-copy hand-writing homework at the entrance of Room 3-324 SIST  
#3 Building.

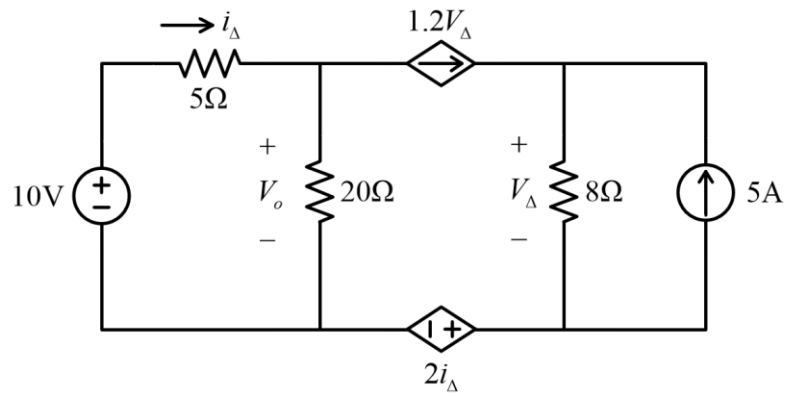
Rules:

- Work on your own. Discussion is permissible, but extremely similar submissions will be judged as plagiarism.
- Please show all intermediate steps: a correct solution without an explanation will get zero credit.
- Please submit on time. No late submission will be accepted.
- Please prepare your submission in English only. No Chinese submission will be accepted.
- All final answers must be rounded to **two decimal places**.

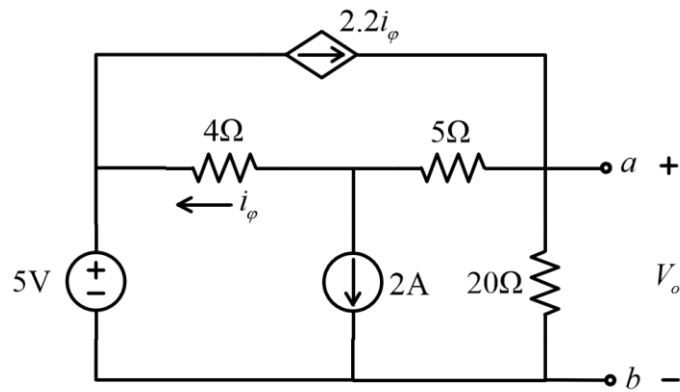
1. Use superposition to find the current  $I$  in the circuit. Draw the corresponding circuit out when using the superposition method.



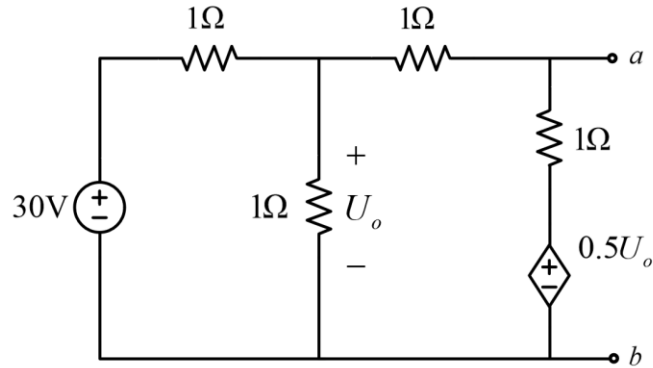
2. Use the principle of superposition to find  $V_o$  in the circuit.



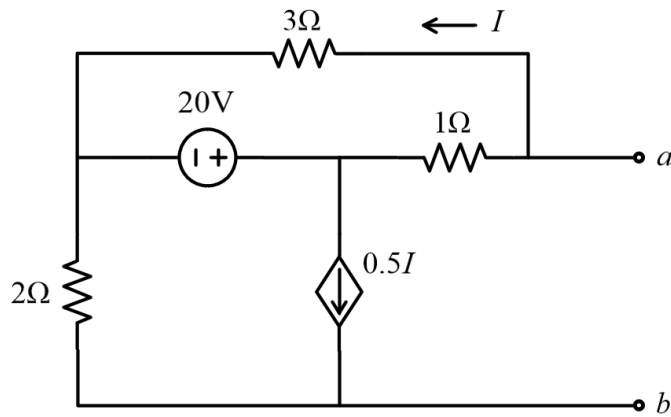
3. Find the Thevenin equivalent circuit between the terminal  $a$  and  $b$ . Draw the equivalent circuit and label the elements.



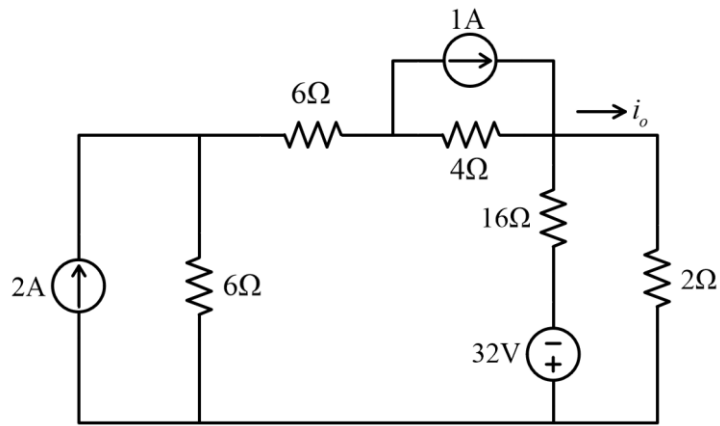
4. (a) Find the Thevenin equivalent circuit between node *a* and *b*.  
(b) Find the Norton equivalent circuit between node *a* and *b*.  
(c) If a load resistor  $R_L = 2\,\Omega$  is connected between node *a* and *b*, find the  $U_L$  on it.



5. Use external source method to find the Thevenin equivalent circuit between node  $a$  and  $b$ .



6. Use source transformation to find  $i_o$  in the circuit. Draw the simplified circuit.



7. The load resistor  $R_L$  in the circuit is adjusted until it absorbs maximum power from the circuit.

- (a) Find the value of  $R_L$ .
- (b) Find the maximum power.
- (c) Find the percentage of the total power developed in the circuit that is delivered to  $R_L$ .

