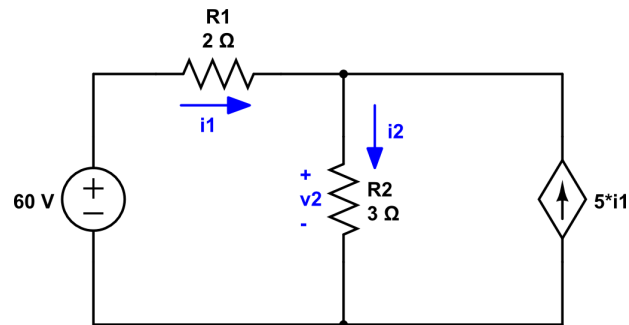


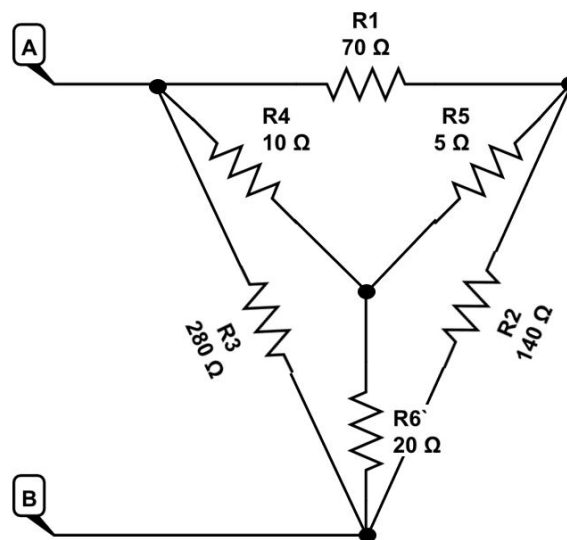
Please show all your work and circle your answers to each question.

Question 1 [10]

What is the value of v_2 ?

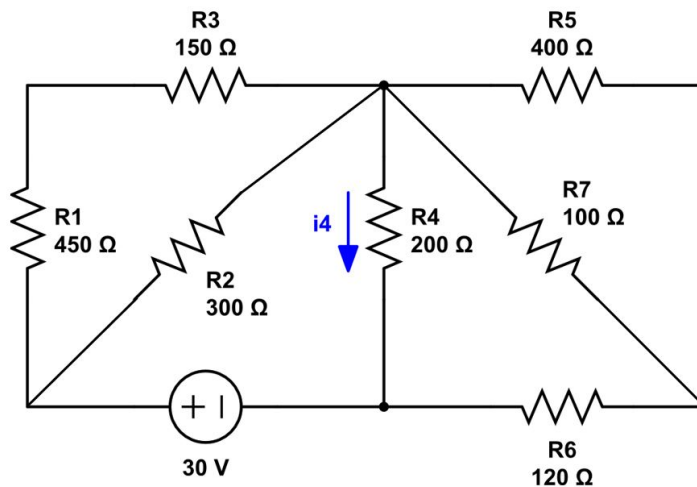
**Question 2** [10]

What is the equivalent resistance between A and B ?



Question 3 [20]

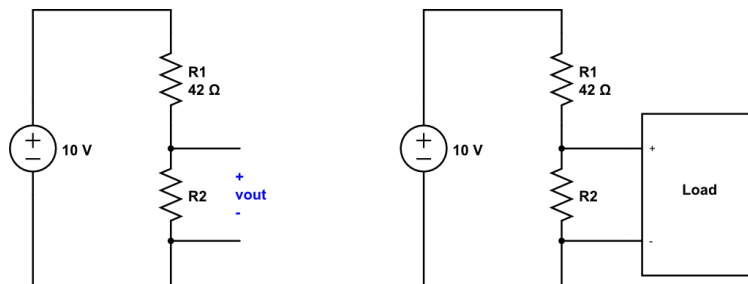
For the below circuit:



- (a) What is the equivalent resistance seen by the voltage source (30V)?
- (b) What is the current i_4 ?

Question 4 [20]

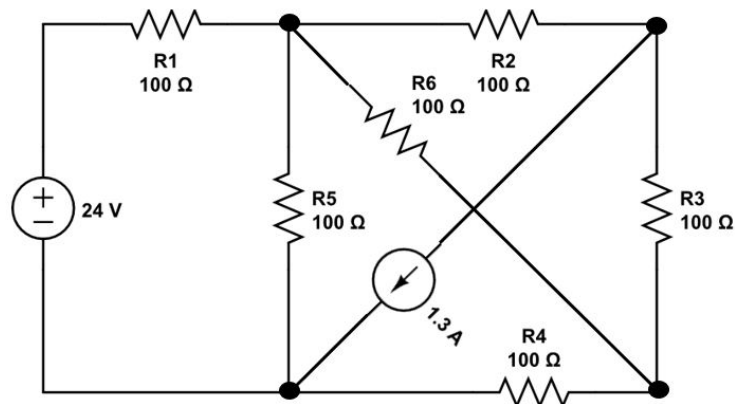
Consider the voltage divider below (both with and without a load):



- (a) Without a load, what value of R_2 will provide a v_{out} of 3V?
- (b) If the load has a resistance of 9Ω:
 - (i) For the R_2 above, how does R_1 need to change to maintain providing 3V to the load?
 - (ii) How much Power is being absorbed by the load?
 - (iii) How much Power is being provided by the 10V source?

Question 5 [40]

For the following circuit:



- (a) How many essential nodes (n_e)?
- (b) How many essential branches (b_e)?
- (c) List the essential branches.
- (d) Using the Node-Voltage Method, how many KCL equations are needed?
- (e) How many KVL equations are needed?
- (f) Write out the Node-Voltage Matrix (DO NOT SOLVE IT).

Extra Credit

What was the Max Salazar building named after?