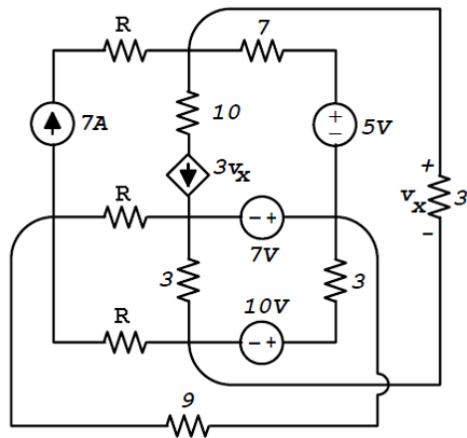


1. (20 points)

Using **MNA** as seen in class, solve the circuit in the figure. All resistances are given in **ohms**. The value of $R = 1$ ohms. What is the power exchanged by the 7 A source. If the source is absorbing power, report it as positive.

Note: In this problem, you may only submit numerical answers. (i.e. If 4 is the correct answer, 4 will be marked as correct, but 2+2 will be marked as incorrect.)

Figure:



The power exchanged by the 7 A source is ____ W

Correct Answers:

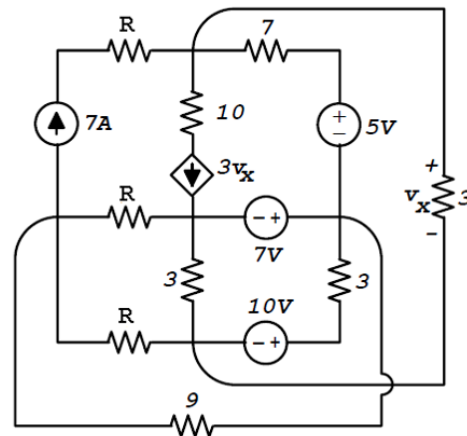
• -78.4206

2. (20 points)

In the figure, $R = 4$ ohms. Replace the 9 ohm resistor at the bottom by a wire. Use **MNA** to determine the current flowing from right to left through that wire, in amps.

Note: In this problem, you may only submit numerical answers. (i.e. If 4 is the correct answer, 4 will be marked as correct, but 2+2 will be marked as incorrect.)

Figure:



The current flowing from right to left through that wire is ____ A

Correct Answers:

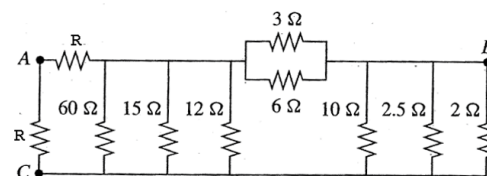
• 10.0739

3. (20 points)

What would be the reading, in ohms, of an ohmmeter connected between A and B, in the figure (all values are in ohms), when $R = 7\Omega$. Answer too, what would be the reading, if the ohmmeter is connected between C and B instead

Note: In this problem, you may only submit numerical answers. (i.e. If 4 is the correct answer, 4 will be marked as correct, but 2+2 will be marked as incorrect.)

Figure:



$R_{ab} =$ ____ Ω

$R_{cb} =$ ____ Ω

Correct Answers:

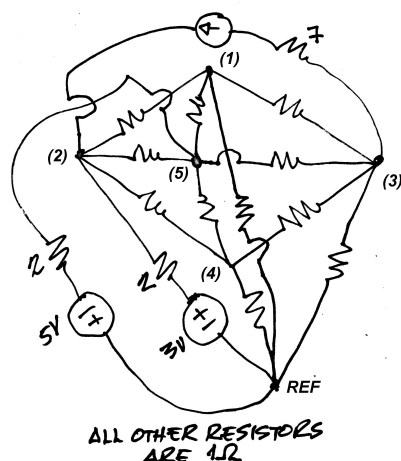
• 4.21528
• 0.861111

4. (20 points)

All resistances are $26\ \Omega$, with the exception of the three resistors in series with the three sources (whose values are also given in ohms, the resistors, not the sources of course!). The current source at the top has a value of 24 amps. (a) How much higher, in volts, is node (3) than node (2). (b) What is the power in the current source, in watts (report this power as positive if the source absorbs power, etc.).

Note: In this problem, you may only submit numerical answers. (i.e. If 4 is the correct answer, 4 will be marked as correct, but 2+2 will be marked as incorrect.)

A Resistive Circuit



and Q5.png

(a) Drop from (3) to (2) ____ V

(b) Power in the current source ____ W

Correct Answers:

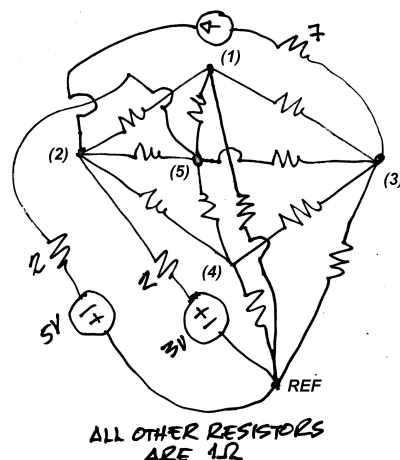
- -215.883
- -9213.19

5. (20 points)

All resistances are $21\ \Omega$, with the exception of the three resistors in series with the three sources (whose values are also given in ohms, the resistors, not the sources of course!). The current source at the top has a value of 27 amps. If you connect nodes (2) and (3) with a wire, a cable, what current flows through that wire from (2) to (3), in amps?

Note: In this problem, you may only submit numerical answers. (i.e. If 4 is the correct answer, 4 will be marked as correct, but 2+2 will be marked as incorrect.)

A Resistive Circuit



and Q5.png

Current from (2) to (3) ____ A

Correct Answers:

- 27.4417