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Phys 222

Homework 8

1. A. The door is closed. The Detergent Dispenser is running.
B. The fill valve will never open and the washer will not use water. This is assuming the valve opens with power and closes without it.
C. No. No power will get to any device in this schematic if the door is open.
2. R1(100 Ohms): 0.81 Watts
R2(133 Ohms): 0.00 Watts
R3(200 Ohms): 0.12 Watts

I setup the equations as follows:

$$100(i_1) + 133(i_2) = 9$$

$$100(i_1) + 200(i_3) = 15$$

$$200(i_3) + 133(i_2) = 6$$

I then setup the equations up in a matrix and solved using gaussian elimination to find the current across each branch. If these answers are correct, the current flows across the middle negate each other such that no current actually flows across R3. I then multiplied the current by the voltage drop of each resistor to find the powers listed above.