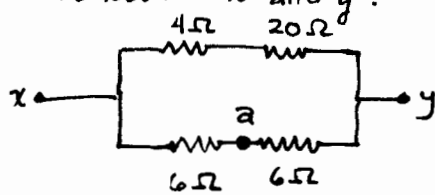
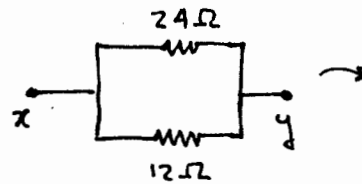


Prob. 54

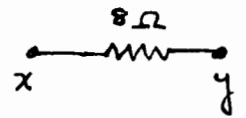
Calculate the equivalent resistance of the circuit Fig. 26.47 between x and y .



(figure 1)



(figure 2)



(figure 3)

a.) From figure 3, we see that the equivalent resistance is 8Ω

b.) Find $V_{xa} = V_x - V_a$?

If there's $2.4A$ in the 8Ω resistor, then

- there's an $19.2V$ drop across the resistor.
- there's $\frac{1}{2} \times 2.4A$ through each of the 16Ω resistors
- there's a total of $4.8A$ going through the "upper leg" of figure 1 and figure 2
- the voltage across x and y is $V = IR = (4.8A)(24\Omega) = 115.2\text{volts}$
- the voltage drop between x and a (assuming x is at the higher voltage) is $\frac{1}{2} V$ between x and y or just 57.6volts

$V_{xa} = 57.6\text{volts}$