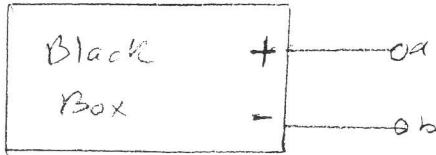
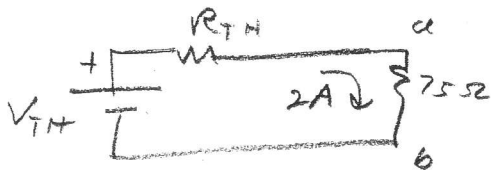


Hint: The answers are integers.

1. (65)

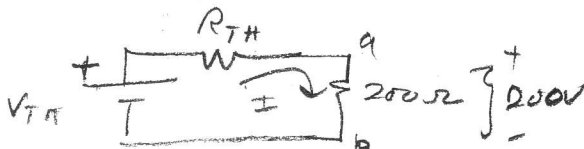


When a  $75\Omega$  resistor is connected, the current is  $2A$ . When a  $200\Omega$  resistor is connected, the voltage is  $200V$ . a) How much current will flow when a  $12.5\Omega$  resistor is connected? b) What resistor will consume the most power?



$$-V_{TH} + 2R_{TH} + 2(75) = 0$$

$$-V_{TH} + 2R_{TH} + 150 = 0$$



$$I = \frac{200}{200} = 1A$$

$$-V_{TH} + 1(R_{TH}) + 200 = 0$$

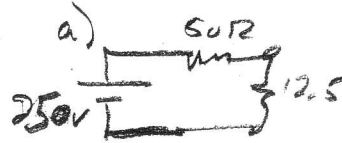
Substitution:

$$R_{TH} + 150 - 200 = 0$$

$$R_{TH} = \underline{\underline{50\Omega}}$$

$$V_{TH} = R_{TH} + 200$$

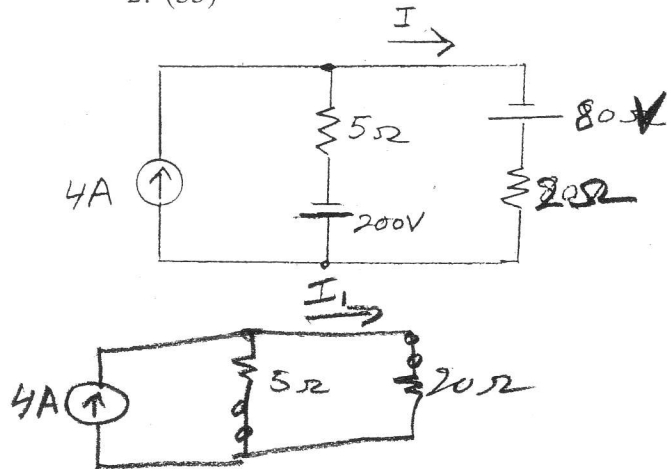
$$= \underline{\underline{250V}}$$



$$I = 250 / 62.5 = \underline{\underline{4A}}$$

b)  $R_L = R_{TH}$   
 $= \underline{\underline{50\Omega}}$

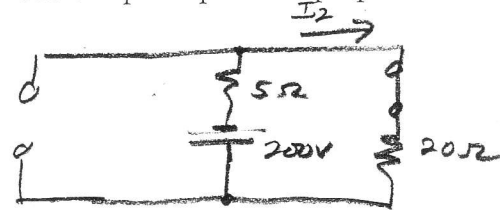
2. (35)



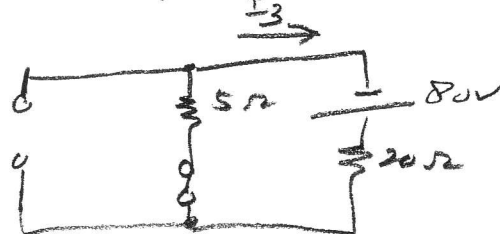
Current divider

$$I_1 = \frac{4(5)}{20+5} = \underline{\underline{.8A}}$$

Use the principle of superposition to find I.



$$I_2 = -\left(\frac{200}{5+20}\right) = \underline{\underline{-8A}}$$



$$I_3 = \frac{80}{20} = \underline{\underline{3.2A}}$$

$$I = I_1 + I_2 + I_3$$

$$= .8 - 8 + 3.2 = \underline{\underline{-4A}}$$