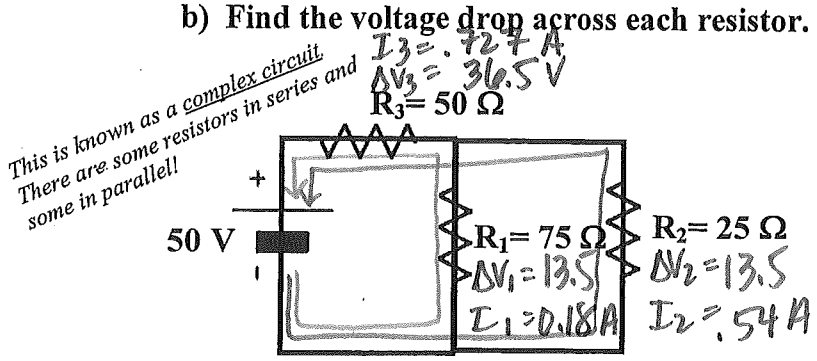
Problem 4 a) Find the current in each resistor.
b) Find the voltage drop across each resistor.



Step #1- Find the total resistance.
(For a complex circuit, use $\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ for those resistors that are in parallel, solve for that R_T, then add those that are in series to that total.)

Step #2- Use Ohm's Law to find the total current.

Step #3- Answer the questions.

$R_{eq} = 68.75\ \Omega$

Current = .727 A

Parallel

(1) $\frac{1}{R_{eq}} = \frac{1}{75} + \frac{1}{25}$ + series $R_{eq} = 18.75 + 50 = 68.75\ \Omega$

(2) Total current
$\Delta V = I R$
$50 = I(68.75)$
$I = .727$ A

(3) All current goes through R_3 so start there
$\Delta V_3 = I_3 R_3$
$\Delta V_3 = (.727)(50) = 36.5$ V

(4) 2 closed loops

(1) $50\ V = \Delta V_1 + \Delta V_3$
$50 = \Delta V_1 + 36.5$ V
$\Delta V_1 = 13.5$ V

(2) $50\ V = \Delta V_2 + \Delta V_3$
$50 = \Delta V_2 + 36.5$
$\Delta V_2 = 13.5$ V

should be same

(5) Now find currents
$\Delta V_1 = I_1 R_1$
$13.5 = I_1(75)$
$I_1 = 0.18$ A

$\Delta V_2 = I_2(R_2)$
$13.5 = I_2(25)$
$I_2 = .54$ A

(6) check answers
total current $.18 + .54 = .72$ ✓
total ΔV $36.5 + 13.5 = 50$ ✓