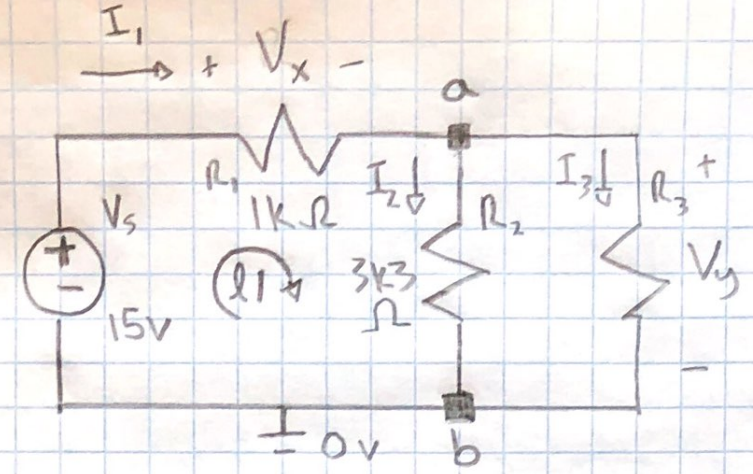

Variables

$R_1 = 1k\Omega$ $V_s = 15V$

$R_2 = 3k\Omega$ $V_x = Dep.$

$R_3 = Ind.$ $V_y = Dep.$

$I_1 = Dep.$ $I_2 = Dep.$ $I_3 = Dep.$

$$R_{tot} = R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}$$

KCL:

a) $I_1 = I_2 + I_3$

KVL:

l1) $V_s = V_x + V_y$

Find $V_x(R_3)$ using Ohm's Law:

$$I_1 = \frac{V_s}{R_{tot}} = \frac{V_x}{R_1} \Rightarrow \frac{V_x}{R_1} = \frac{V_s}{R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}} = \boxed{V_x(R_3) = \frac{V_s \cdot R_1}{R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}}}$$

Find $V_y(R_3)$ using KVL and substitution:

$$V_s = V_x + V_y \Rightarrow V_y = V_s - V_x \Rightarrow \boxed{V_y(R_3) = V_s - \frac{V_s \cdot R_1}{R_1 + \frac{R_2 \cdot R_3}{R_2 + R_3}}}$$

Find $I_1(R_3)$, $I_2(R_3)$, and $I_3(R_3)$ using KCL and substitution:

$$I_1 = I_2 + I_3 \Rightarrow \boxed{I_1(R_3) = \frac{V_y(R_3)}{R_2} + \frac{V_y(R_3)}{R_3}}$$

$$I_2 = I_1 - I_3 \Rightarrow \boxed{I_2(R_3) = \frac{V_x(R_3)}{R_1} - \frac{V_y(R_3)}{R_3}}$$

$$I_3 = I_1 - I_2 \Rightarrow \boxed{I_3(R_3) = \frac{V_x(R_3)}{R_1} - \frac{V_y(R_3)}{R_2}}$$