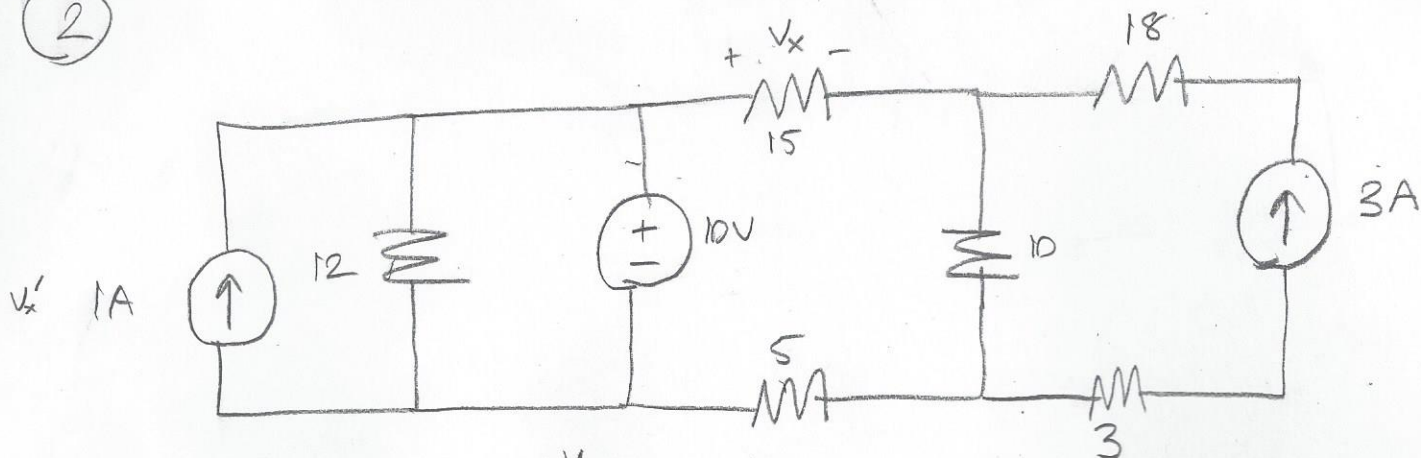
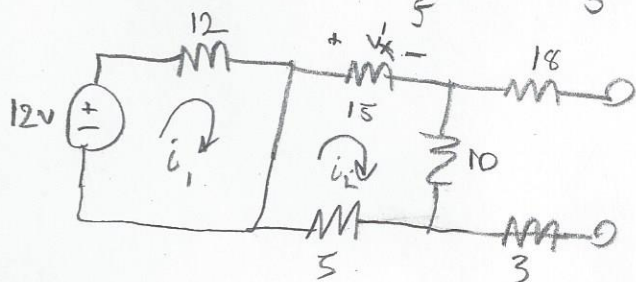
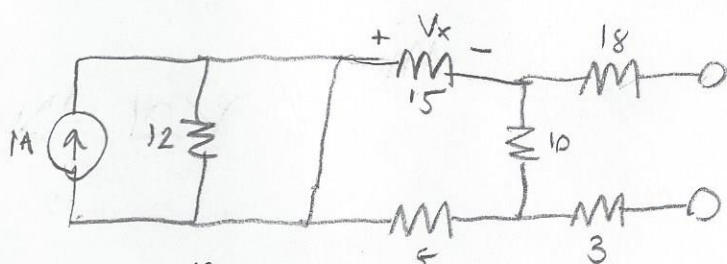


2



a)



$$d) V_x = V_x' + V_x'' + V_x'''$$

$$V_x = 0 + 5 - 15$$

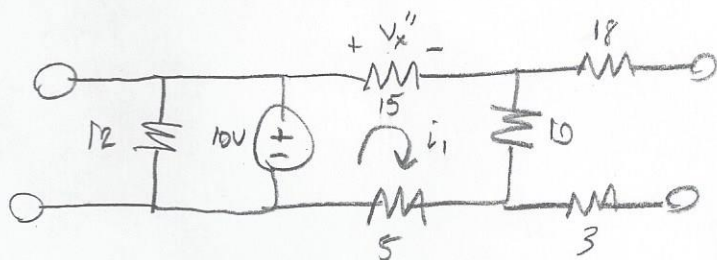
$$V_x = -10V$$

$$-12 + 12i_1 = 0$$

$$V_x' = 0V$$

$$15i_2 + 10i_2 + 5i_2 = 0 \quad i_2 = 0$$

b)



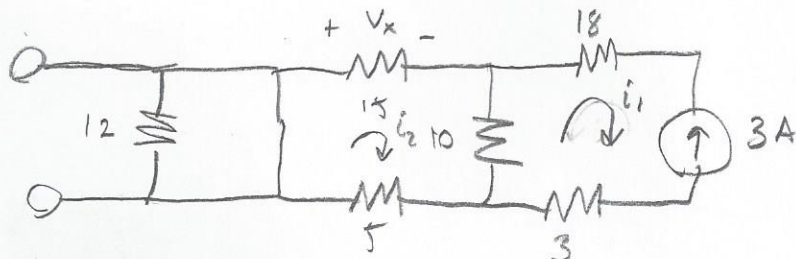
$$-10 + 15i_1 + 10i_1 + 5i_1 = 0$$

$$30i_1 = 10 \quad i_1 = \frac{1}{3}A$$

$$V_x'' = (15\Omega) \left(\frac{1}{3}A\right) = 5V$$

$$V_x'' = 5V$$

c)



$$i_1 = -3A$$

$$15i_2 + 10i_2 + 5i_2 - 10i_1 = 0$$

$$30i_2 = 10(-3)$$

$$i_2 = -1A$$

$$V_x''' = -15V$$

$$15(-1) = -15$$