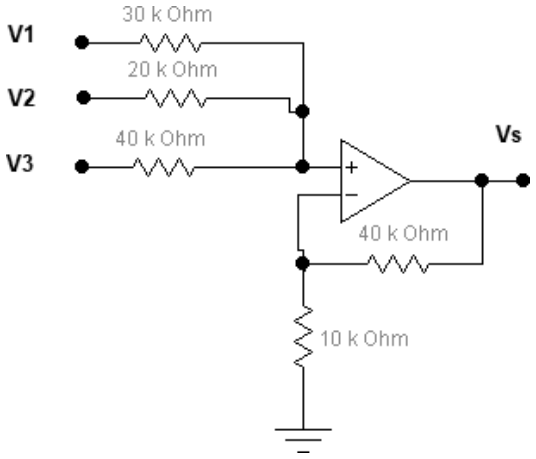
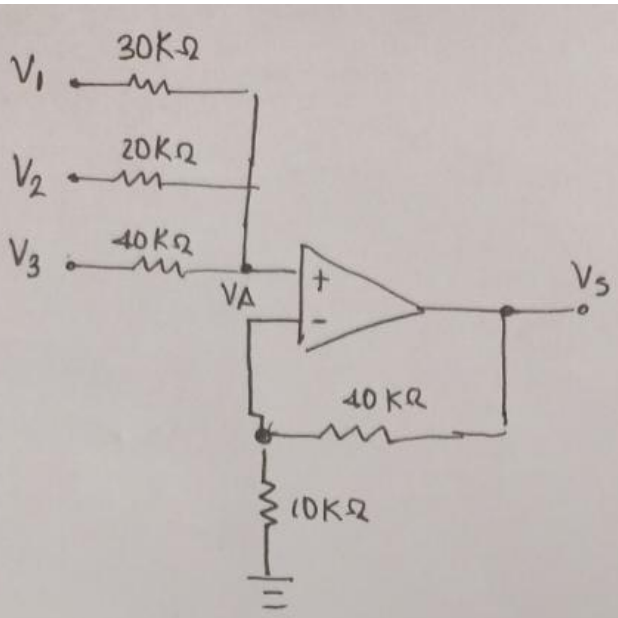
SEGUNDO EXAMEN ELECTROTECNIA 1

1. CALCULE LA EXPRESION PARA Vs





$$\frac{V_3 - V_A}{40K\Omega} + \frac{V_2 - V_A}{20K\Omega} + \frac{V_1 - V_A}{30K\Omega} = 0$$

Para V_B

$$V_B = V_S\left(\frac{10K\Omega}{50K\Omega}\right) = \frac{1}{5}V_S$$

Consideremos que $V_A = V_B$

$$\frac{V_3 - V_B}{40K\Omega} + \frac{V_2 - V_B}{20K\Omega} + \frac{V_1 - V_B}{30K\Omega} = 0$$

$$\frac{V_3}{4} - \frac{V_B}{4} + \frac{V_2}{2} - \frac{V_B}{2} + \frac{V_1}{3} - \frac{V_B}{3} = 0$$

$$\frac{V_3}{4} + \frac{V_2}{2} + \frac{V_1}{3} = \frac{V_B}{3} + \frac{V_B}{4} + \frac{V_B}{2}$$

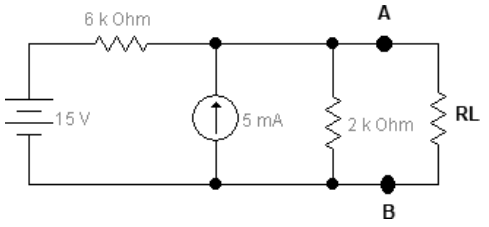
$$V_B\left(\frac{1}{3} + \frac{1}{4} + \frac{1}{2}\right) = \frac{V_3}{4} + \frac{V_2}{2} + \frac{V_1}{3}$$

$$\frac{1}{5}V_S\left(\frac{1}{3} + \frac{1}{4} + \frac{1}{2}\right) = \frac{V_3}{4} + \frac{V_2}{2} + \frac{V_1}{3}$$

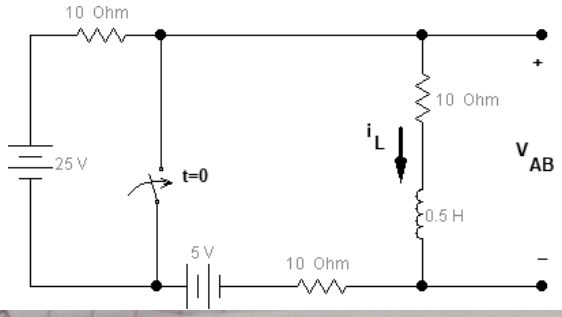
$$\frac{13}{60}\cdot V_S = \frac{V_3}{4} + \frac{V_2}{2} + \frac{V_1}{3}$$

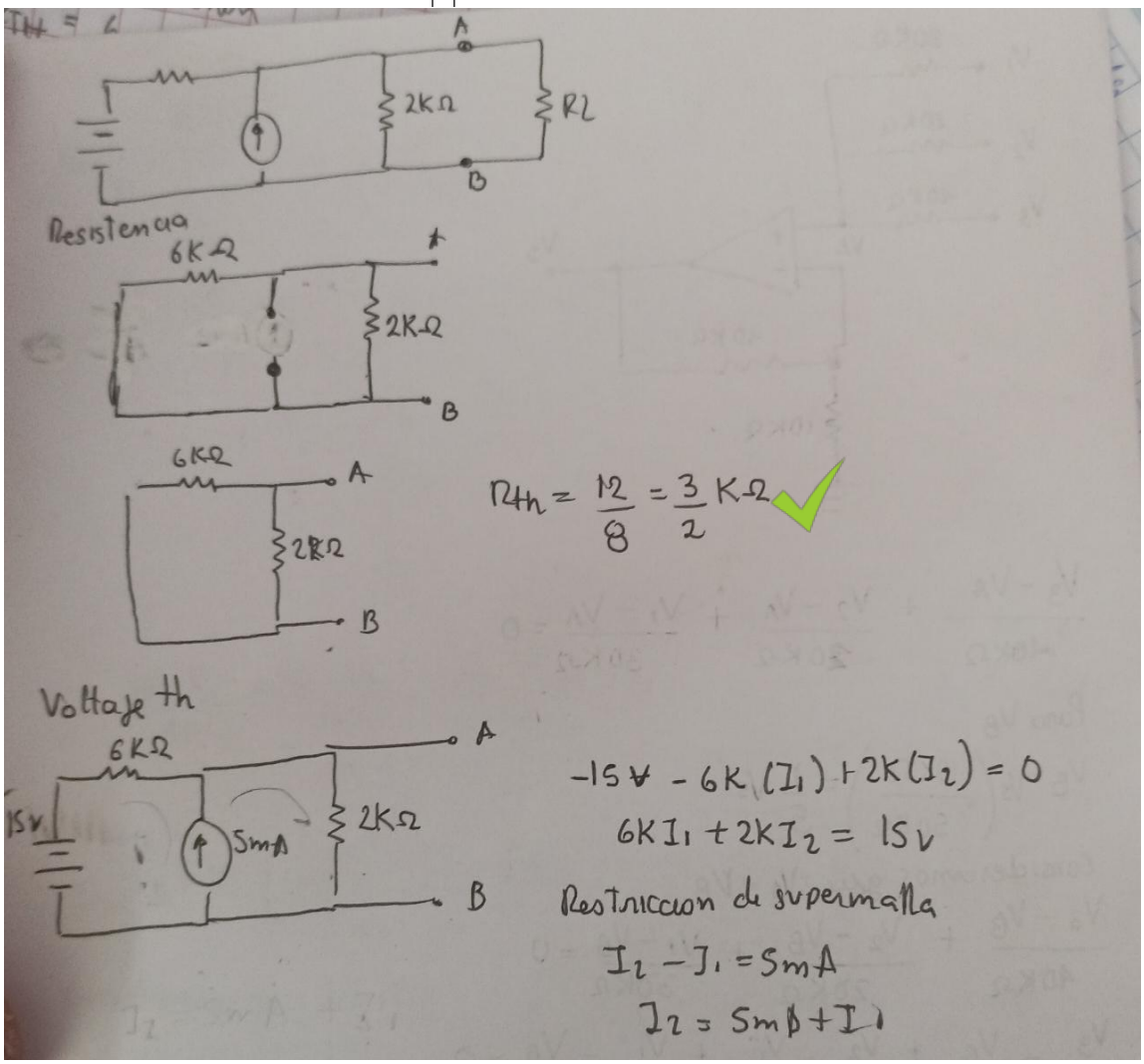
$$V_S = \frac{60}{13}\left(\frac{V_3}{4} + \frac{V_2}{2} + \frac{V_1}{3}\right)$$

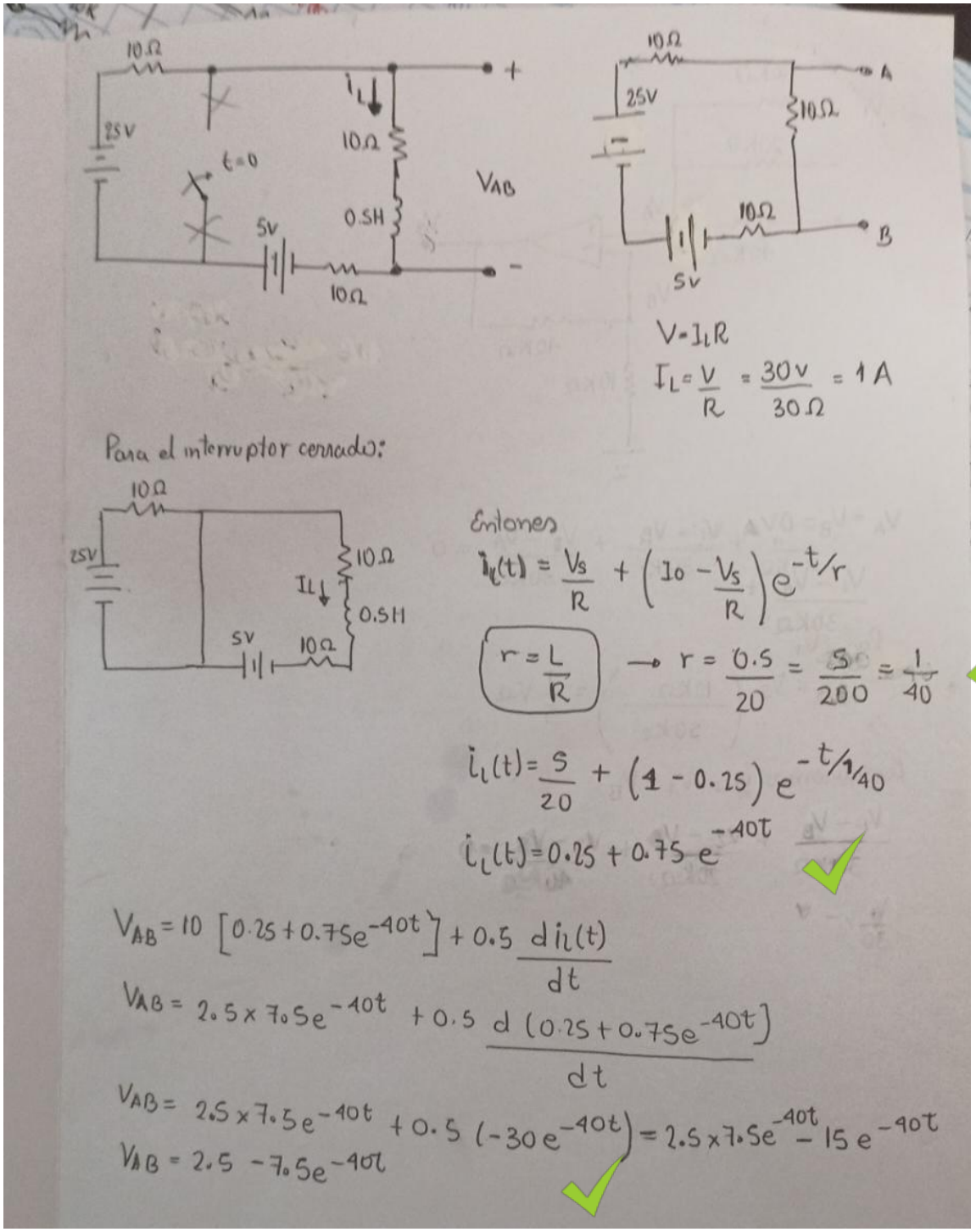
2. ENCUENTRE EL EQUIVALENTE THEVENIN DE LA SECCION AB, CALCULE EL VALOR DE RL PARA LA MAXIMA TRANSFERENCIA DE POTENCIA Y LA POTENCIA CONSUMIDA POR LA CARGA RL



3. EN EL CIRCUITO DE LA FIGURA EL INTERRUPTOR LLEVA MUCHO TIEMPO ABIERTO Y SE CIERRA EN EL INSTANTE t=0. CALCULE $I_L(t)$ Y $V_{AB}(t)$







4. EN EL CIRCUITO, SI Is(t)=8 cos 200000t (A) CALCULE I1(t), I2(t), I3(t) Y V(t)