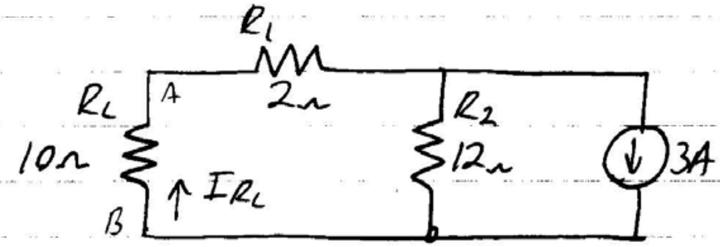
FIND P_{R_L} FOR $R_L = 10\,\Omega$:

ORIGINAL CIRCUIT

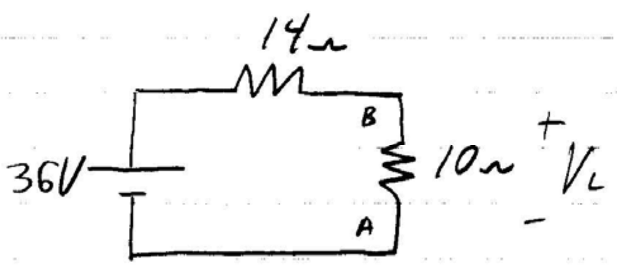


$$I_{R_L} = 3A\left(\frac{R_2}{R_2+R_1+R_L}\right) = 3A\left(\frac{12}{12+12}\right) = \underline{1.5A}$$

$$\therefore P_{R_L} = (I_{R_L})^2 R_L = (1.5A)^2(10\,\Omega) = \boxed{22.5W}$$

EQUIVALENT

THÉVENIN EQUIVALENT

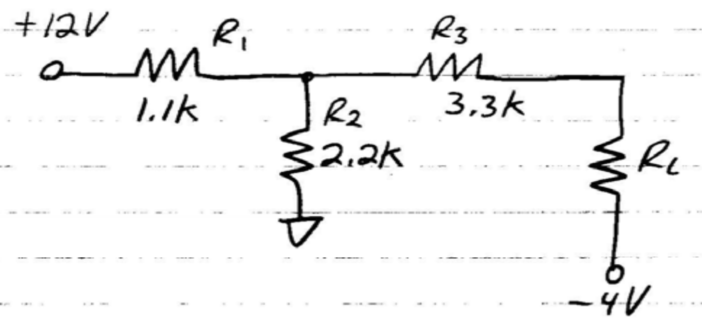


$$V_L = 36V\left(\frac{10}{10+14}\right) = \underline{15V}$$

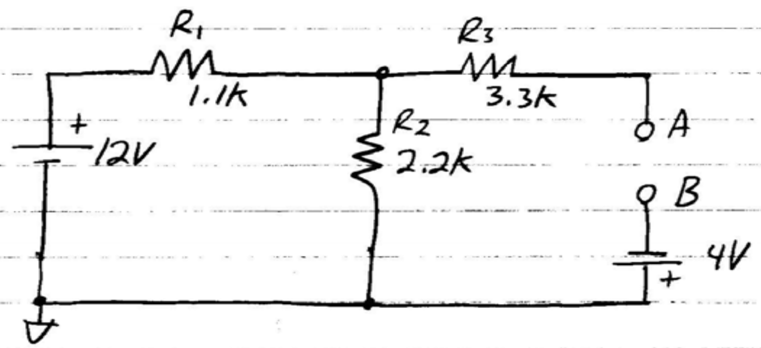
$$\therefore P_{R_L} = \frac{V_L^2}{R_L} = \frac{(15V)^2}{10\,\Omega} = \boxed{22.5W}$$

FOR MORE COMPLICATED CIRCUITS, IT WOULD BE EASIER TO ANALYZE THE THÉVENIN EQUIVALENT CIRCUIT (REPEATEDLY) INSTEAD OF THE ORIGINAL

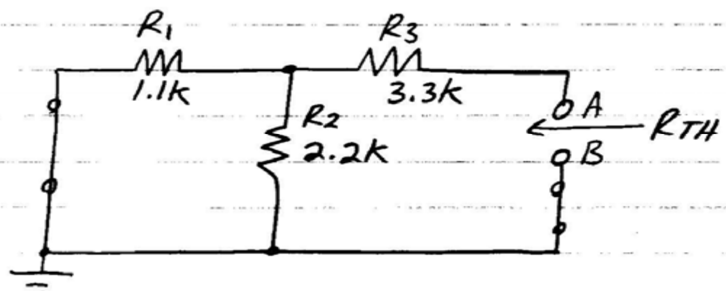
(EXAMPLE) DETERMINE THE THÉVENIN EQUIVALENT CIRCUIT AS SEEN BY R_L.



REDRAW, REMOVE R_L, LABEL A-B:



R_{TH}:

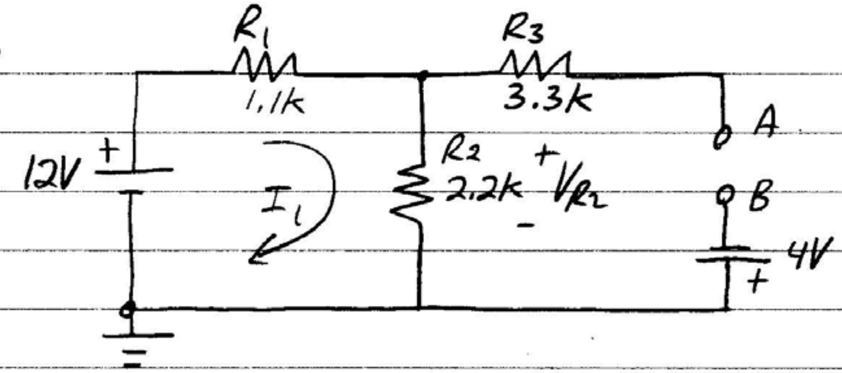


$$R_{TH} = [R_1 // R_2] + R_3$$

$$R_{TH} = (1.1k // 2.2k) + 3.3k$$

$$\therefore R_{TH} = 733.33\Omega + 3.3k\Omega = \boxed{4.03k\Omega}$$

V_{TH}:



$V_{AB} = V_{TH}$

$$I_1 = \frac{12V}{R_1 + R_2} = \frac{12V}{3.3k\Omega} = \underline{3.636mA}$$

$$\therefore V_{R2} = I_1 R_2 = (3.636mA)(2.2k\Omega)$$

$$\underline{V_{R2} = 8V}$$

KVL: $+V_{R2} - V_{AB} + 4 = 0$, NO CURRENT THROUGH R_3

$$\therefore V_{AB} = V_{R2} + 4 = \boxed{12V \Rightarrow V_{TH}}$$

THÉVENIN EQUIV. CKT