

Adı Soyadı:

No:

İmza:

SÜRE: 25 dk.

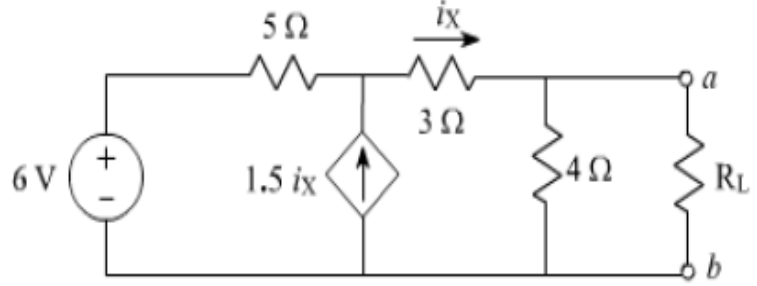
II. ÖĞRT. (A) ve (B) GRUBU

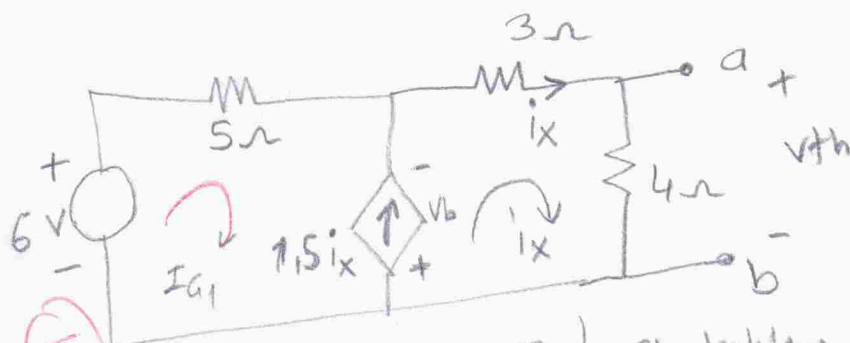
Başarılar Dilerim.

Doç. Dr. İhsan PEHLİVAN

SORU

Şekildeki devrede R_L direncinde harcanabilecek maksimum gücü hesaplayınız.





$$\begin{bmatrix} 5 & 0 \\ 0 & 7 \end{bmatrix} \begin{bmatrix} I_{a1} \\ i_x \end{bmatrix} = \begin{bmatrix} 6 + V_b \\ -V_b \end{bmatrix}$$

Ek denken

$$1) \quad 1,5 i_x = i_x - I_{a1}$$

$$I_{a1} = -0,5 i_x$$

$$-2,5 i_x = 6 + V_b$$

$$-2,5 i_x - V_b = 6 \quad (1)$$

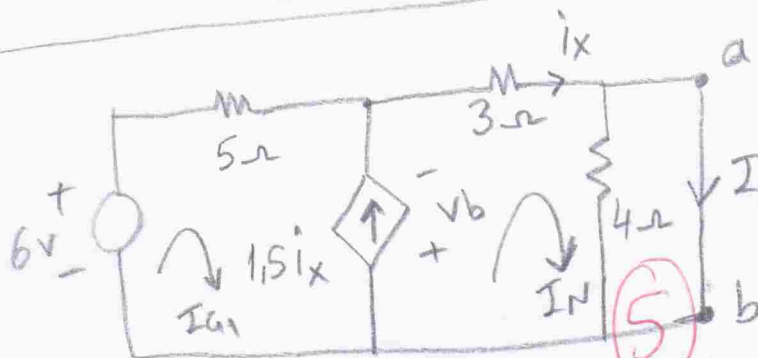
$$7 i_x + V_b = 0 \quad (2)$$

$$4,5 i_x = 6$$

$$i_x = \frac{4}{3} \text{ A}$$

$$V_{th} = V_{ab} = 4 i_x$$

$$V_{th} = 4 \cdot \frac{4}{3} = \frac{16}{3} \text{ V}$$



$$\begin{bmatrix} 5 & 0 \\ 0 & 3 \end{bmatrix} \begin{bmatrix} I_{a1} \\ i_x \end{bmatrix} = \begin{bmatrix} 6 + V_b \\ -V_b \end{bmatrix}$$

Ek denken

$$1) \quad 1,5 i_x = i_x - I_{a1}$$

$$I_{a1} = -0,5 i_x$$

$$-2,5 i_x = 6 + V_b$$

$$-2,5 i_x - V_b = 6 \quad (1)$$

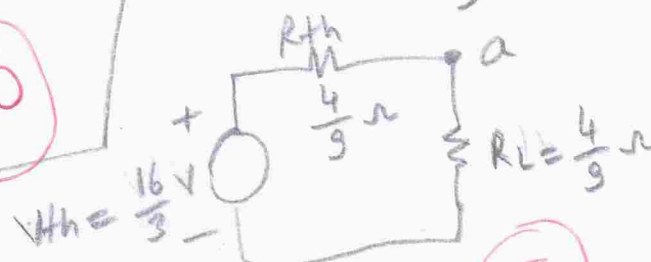
$$3 i_x + V_b = 0 \quad (2)$$

$$0,5 i_x = 6$$

$$i_x = 12 \text{ A}$$

$$R_{th} = \frac{V_{th}}{I_N} = \frac{16}{3} \cdot \frac{1}{12} = \frac{4}{9} \Omega$$

$$R_L = R_{th} = \frac{4}{9} \Omega \text{ olmak}$$



$$P_{Lmax} = \frac{V_{th}^2}{4 R_L} = \left(\frac{16}{3}\right)^2 \cdot \frac{9}{16} = 16 \text{ W bulunur.}$$