Batuhan ökmen
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1. öğretim
mekatronik mühendisliği

V_1, V_2, V_3 bulunması isteniyor

$$\underline{\underline{V_1}} = \frac{2(V_2 - V_3)}{50\Omega} - \frac{V_1}{100\Omega} - \frac{V_1 - V_2}{25\Omega} =$$
$$\quad\quad\quad (2) \quad\quad\quad (1) \quad\quad\quad (4)$$

$$\frac{4V_2 - 4V_3 - (V_1) - (4V_1 - 4V_2)}{100} = \frac{-5V_1 + 8V_2 - 4V_3}{100} = 0$$

$$\underline{\underline{V_2}} = \frac{V_1 - V_2}{25} - \frac{V_2 - V_3}{50} - \frac{V_2}{200} = \frac{8V_1 - 8V_2}{200} - \frac{4V_2 - 4V_3}{200} - \frac{V_2}{200}$$

$$\frac{-8V_2 + 8V_1 + 4V_3 - 4V_2 - V_2}{200\Omega} = \frac{-13V_2 + 4V_3 + 8V_1}{200\Omega} = 0$$

$$\underline{\underline{V_3}} = \frac{V_2 - V_3}{50\Omega} - \frac{V_3 - 5i_o}{5\Omega} - \frac{V_3 - 38,5V}{20} = 0$$
$$\quad\quad (2) \quad\quad\quad (20) \quad\quad\quad (5)$$

$$\frac{2V_2 - 2V_3 - 20V_c - (100 \cdot i_o) - 5V_c - 192,5}{100} = 0 \quad \text{Devamı} \downarrow\downarrow$$

$$= \frac{2V_2 - 2V_3 - 5V_3 + 192,5V + 2V_2 - 2V_3 - 20V_3 = 0}{1000 - 2}$$
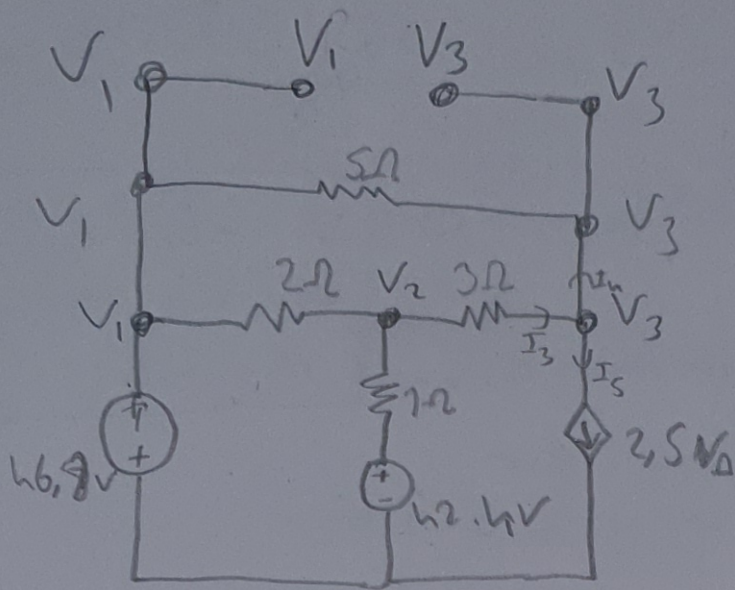
$$= 192,5V + 4V_2 - 29V_3 = 0$$

Sonuç olarak

$V_1:\ -5V_1 + 8V_2 - 4V_3 = 0$

$V_2:\ 8V_1 - 13V_2 + 4V_3 = 0$

$V_3:\ 4V_2 - 29V_3 + 192,5V = 0$

$$\boxed{V_1 = -50v \quad V_2 = -30v}$$
$$V_3 = 2,5v$$

Soru 2

$$V_{th} = V_1 = V_3$$

$$V_\Delta = 46,8 - V_2$$

$$V_1 = 46,8 \text{ v}$$

$$V_2 = \frac{V_2 - 46,8}{2} + \frac{V_2 - 42,4}{1} + \frac{V_3 - V_2}{3} = 0$$
$$\quad\quad (3) \quad\quad\quad (6) \quad\quad\quad (2)$$

$$= \frac{3V_2 - 140.4 + V_2 - 42,4 + 2V_3 - 2V_2}{6} = 0$$

$$V_2 : \quad 2V_2 - 98 + 2V_3 = 0$$

$$V_3 = -I_3 + I_s + 2,5 V_\Delta = 0$$

$$= \frac{-V_2 + V_3}{3} + \frac{46,8 - V_3}{5} + \frac{2,5 \cdot V_D}{(15)}$$
$$\quad\quad (5) \quad\quad\quad (3)$$

$V_0 = 46,8 - V_2$

$$\frac{-5V_2 + 5V_3}{15} + \frac{140.4 - 3V_3}{15} + \frac{1755 - 37.5V_2}{15}$$

$-42.5V_2 + 2V_3 + 1895.4 = 0$

$\boxed{\begin{array}{l} V_1 = 46,8 v \\ V_2 = 40,39 \\ V_3 = 8.61 \end{array}}$

$R_{th} = X$ Başımsız olanlar dovroden çıkar

✓ akımlar açık devre sapılır

✓ gerilim boşnatları ise düz başlanır

$U_{th} = U_1 - V_3$

$V_{th} = 46,8v - 8,61 = 38,19$

$R_{TH} = 8,66$

V_{th}
$38,19$

V_{th}
$38,19$
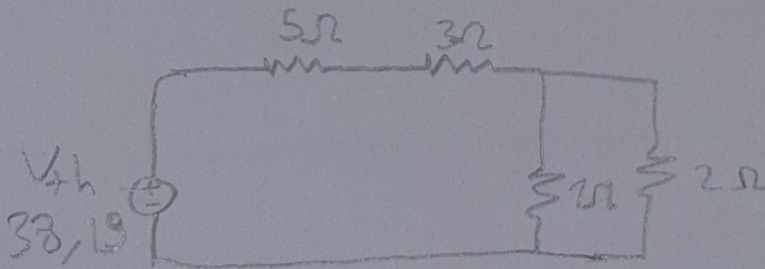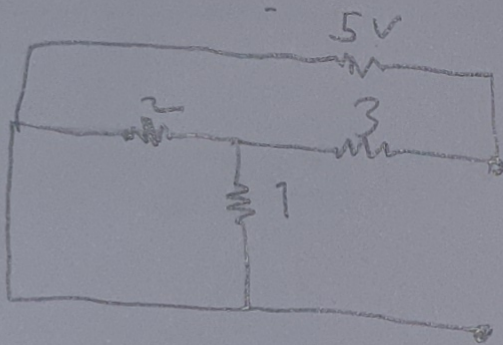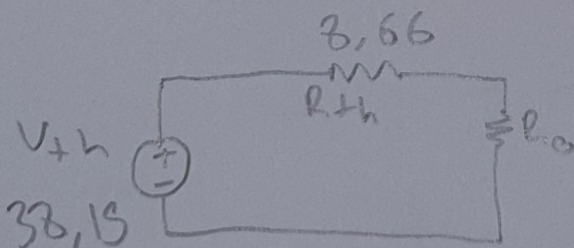
Sonuç olarak

$R_{TH} = R_0 = 8.66 \Omega$

max süco blmak için

R_0 R_{th}'n eşit olmalıdır. Teşekkürler