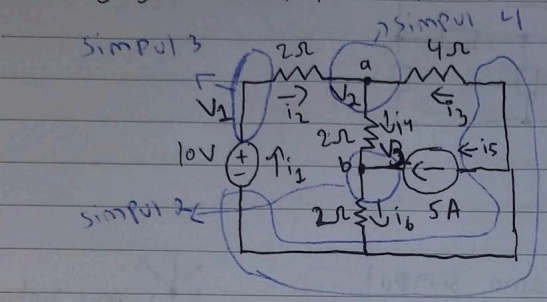
Date

Latihan

a.) Gambar ulang rangkaian di bawah, lalu beri arus cabang, tegangan nodal, dan nodal referensi



simpul = 4
$V_2 = V_a$
$V_3 = V_b$

b.) Tentukan tegangan nodal titik a dan b, menggunakan analisis nodal

$$\begin{pmatrix} 1 & 0 & 0 \\ -1/2 & (1/2+1/2+1/4) & -1/2 \\ 0 & -1/2 & (1/2+1/2) \end{pmatrix} \begin{pmatrix} V_1 \\ V_a \\ V_b \end{pmatrix} = \begin{pmatrix} 10 \\ 0 \\ 5 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 0 \\ -1/2 & 5/4 & -1/2 \\ 0 & -1/2 & 1 \end{pmatrix} \begin{pmatrix} V_1 \\ V_a \\ V_b \end{pmatrix} = \begin{pmatrix} 10 \\ 0 \\ 5 \end{pmatrix}$$

$$\begin{pmatrix} V_1 \\ V_a \\ V_b \end{pmatrix} = \begin{pmatrix} 10 \\ 15/2 \\ 35/4 \end{pmatrix} V$$

$V_a = 15/2$ V ; $V_b = 35/4$

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c.) Tentukan tegangan & arus di resistor 4 Ω

:) $V_{R4\Omega} = V_a - 0 = 15/2\ V$

:) $I_3 = \frac{0 - V_a}{4} = \frac{0 - 15/2}{4} = -15/8\ V$

Nama : Rafif Reinhart .A
Nim : 16523235