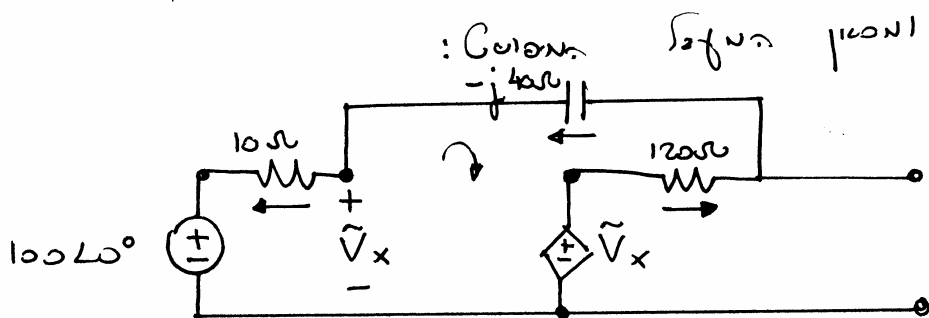
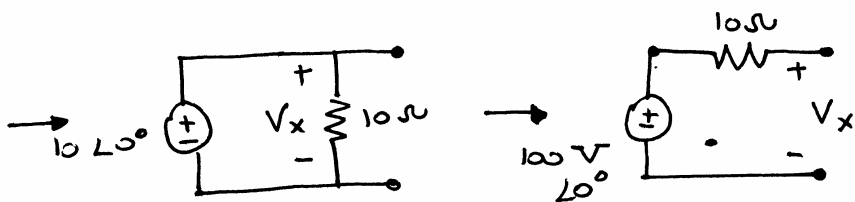
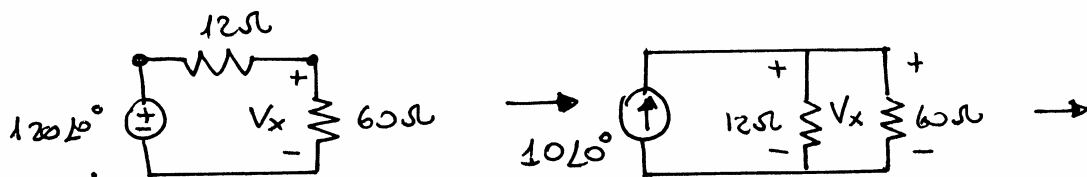
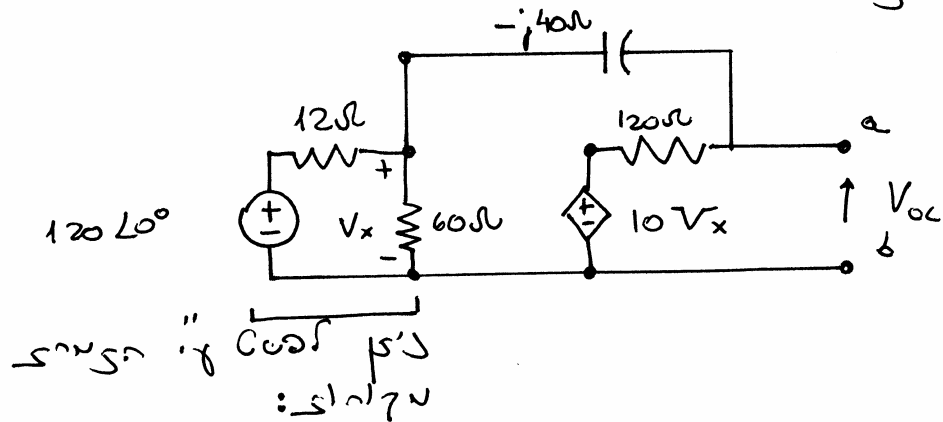


9

9. ON $5\angle 0^\circ - 1\angle 5^\circ$: V_{oc} $103\angle 3^\circ$. 1



: kvl $\sum V = 0$ $\sum I = 0$ $\sum P = 0$

$$100 - 10\tilde{I} + j40\tilde{I} - 10\tilde{V}_x - 120\tilde{I} = 0$$

$$\tilde{V}_x = 100 - 10\tilde{I}$$

د 3م پای (2) د مسمومیت (1) د نښو پای : I

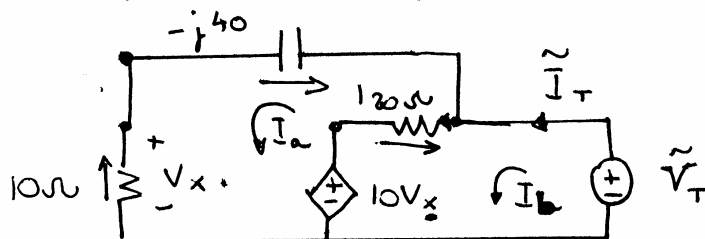


3

$$V_{oc} = 10\tilde{V}_x + 120\tilde{I} = 835.22 \angle -20.17^\circ$$

: 2eq 51c 1c3uJ

מכיוון שיש מקרה מחקר, טיפוס מזהה
במקרה בלתי ידוע שניתן לבצע חישוב
זאת מקרה בלתי ידוע, טיפוס מזהה (כאן).



$\therefore k \vee l \quad f(3, y) \quad \tilde{I}_a, \tilde{I}_b \quad r'21n, \quad t'wz \quad r'22y$

→ Since in: $10 \tilde{I}_a - 40 \tilde{I}_a - (\tilde{I}_b - \tilde{I}_a) \cdot 120 - 10 \tilde{V}_x = 0$

$$y_{21} : 10\tilde{V}_x + (\tilde{I}_b - \tilde{I}_a)120 - \tilde{V}_x = 0$$

$$\tilde{V}_x = 10 \cdot \tilde{I}_a^2 \quad P''(S \sim 1)$$

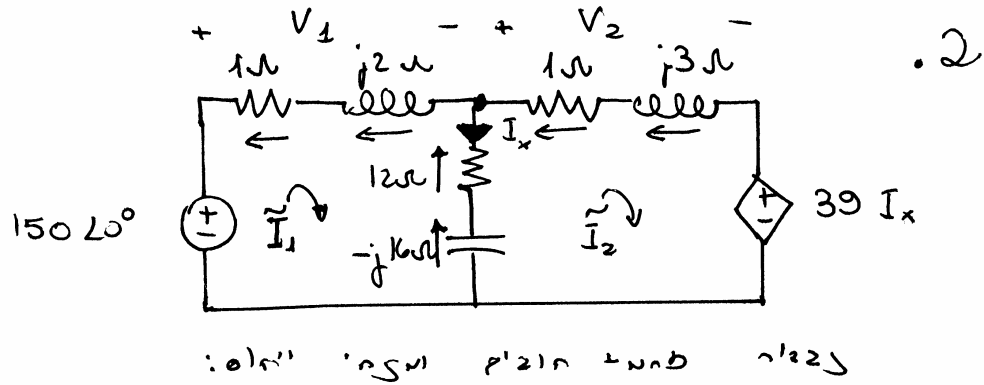
צ"ע המעורבות: 15%

$$I_2 = \frac{V_T}{10 - j40}$$

$$\underline{I}_0 = \underline{I}_1 = \frac{V_T(3-4j)}{120 - j480}$$

$$\Rightarrow Z_{TH} = \frac{\tilde{V}_T}{\tilde{I}_T} = 91.2 - j38.4$$

③



kvl
zin
+f kvl

$$: 150 - (1 + j2) \tilde{I}_1 - (12 - j16) (\tilde{I}_1 - \tilde{I}_2) = 0$$

kvl
zin
+f kvl

$$: (12 - j16) (\tilde{I}_1 - \tilde{I}_2) - (1 + j3) \tilde{I}_2 - 39 \tilde{I}_x = 0$$

$$\tilde{I}_x = \tilde{I}_1 - \tilde{I}_2$$

from 25

from 25 and 26

$$\tilde{I}_1 = -26 - j52$$

$$\tilde{I}_2 = -24 - j58$$

$$\tilde{I}_x = -2 + j6$$

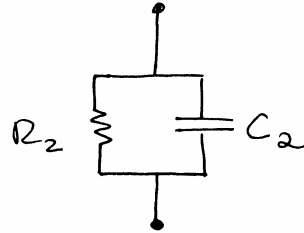
$$\tilde{V}_1 = \tilde{I}_1 (1 + j2) = 78 - j104$$

from 25

$$\tilde{V}_2 = \tilde{I}_2 (1 + j3) = 150 - j30$$

④

ל Y_2 : סימן רגיל
 3. סימן של 12345



$$Y_{eq} = Y_1 + Y_2 = \frac{1}{R_2} + j\omega C_2 =$$

$$= \frac{1 + j\omega R_2 C_2}{R_2}$$

\Downarrow

$$Z_{eq} = \frac{1}{Y_{eq}} = \frac{R_2}{1 + j\omega R_2 C_2}$$

: סימן 12345

$$Z_{eq} = \frac{R_2 (1 - j\omega R_2 C_2)}{(1 + j\omega R_2 C_2)(1 - j\omega R_2 C_2)} =$$

$$= \frac{R_2}{1 + \omega^2 R_2^2 C_2^2} - j\omega \frac{R_2^2 C_2}{1 + \omega^2 R_2^2 C_2^2}$$

R_1 : סימן של 12345

$$R_1 = \frac{R_2}{1 + \omega^2 R_2^2 C_2^2}$$

⑤

$$\frac{1}{j\omega C_1} = -j\omega \frac{R_2^2 C_2}{1 + \omega^2 R_2^2 C_2^2} \quad \text{p. 35}$$

11

$$C_1 = \frac{1 + \omega^2 R_2^2 C_2^2}{\omega^2 R_2^2 \cdot C_2}$$

⑦

$$\text{KVL : } -j10(i_1 - i_3) - j10 \cdot i_3 + 10(i_2 - i_3) = 0$$

: נמצאים הזרמים הנכונים

$$\tilde{I}_1 = 1.58 \angle -71.57^\circ$$

$$\tilde{I}_2 = 1.12 \angle 26.57^\circ$$

$$\tilde{I}_3 = 2.5 \angle 180^\circ$$

$$i_a = \operatorname{Re} \{ 1.58 e^{j108.43^\circ} \cdot e^{j10^6 t} \} =$$

$$= 1.58 \cos(10^6 t + 108.43^\circ).$$

$$i_b = \operatorname{Re} \{ 1.12 e^{j26.57^\circ} \cdot e^{j10^6 t} \} =$$

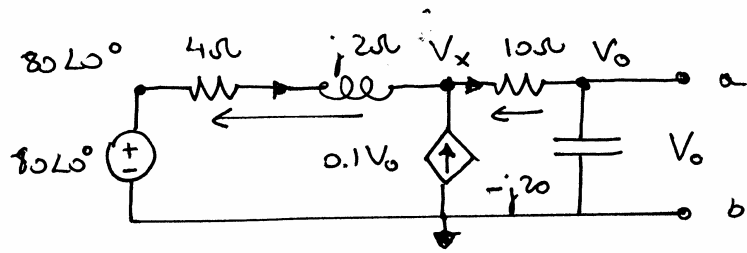
$$= 1.12 \cos(10^6 t + 26.57^\circ).$$

$$i_c = \operatorname{Re} \{ 2.5 e^{j180^\circ} \cdot e^{j10^6 t} \} =$$

$$= 2.5 \cos(10^6 t + 180^\circ)$$

8

\tilde{V}_{oc} 103mV .5



V_x 5mV 3 f kcl f3=

$$\textcircled{1} \quad \frac{80\angle 0^\circ - V_x}{4 + j2} + 0.1V_o = \frac{V_x - V_o}{10}$$

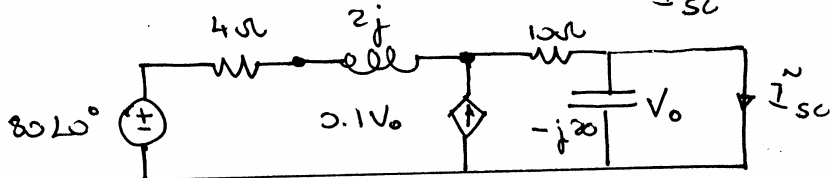
V_x 5mV 3 f kcl f3=

$$\textcircled{2} \quad V_o = V_x \cdot \frac{-j20}{10 - j20}$$

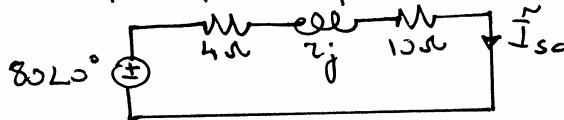
\tilde{V}_{oc} 103mV

$$\tilde{V}_o = \tilde{V}_{oc} = 80 - j80$$

\tilde{I}_{sc} 103mV



for $V_o = 0$ 103mV 155mV 3 f kcl f3=



$$\tilde{I}_{sc} = \frac{80\angle 0^\circ}{14 + 2j} = 5.6 - 0.8j$$

$$Z_{TH} = \frac{\tilde{V}_{oc}}{\tilde{I}_{sc}} = 16 - j12$$