U kolu na slici primenom Kirhofovih zakona pronaći struje $\underline{I_1},\underline{I_2}$ i $\underline{I_3}$
poznato je:
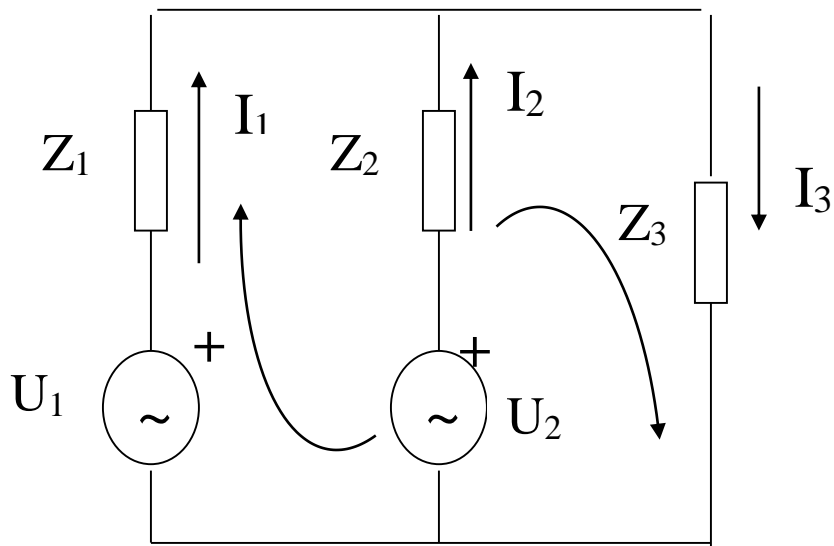
$\underline{Z_1}$=2+j3
$\underline{Z_3}$=2-j3
$\underline{Z_2}$=2
$\underline{U_1}$=84
$\underline{U_2}$=42

Smerove kontura kao i struja proizvoljno odredjujemo.

$\underline{I_1} + \underline{I_2} = \underline{I_3}$

$\underline{I_1}\underline{Z_1} - \underline{I_2}\underline{Z_2} = \underline{U_1} - \underline{U_2}$

$\underline{I_2}\underline{Z_2} + \underline{I_3}\underline{Z_3} = \underline{U_2}$

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$\underline{I_1} + \underline{I_2} = \underline{I_3}$ struju $\underline{I_3}$ uvrstićemo u ostale dve

jednačine

$(2+j3)\,\underline{I_1} - 2\,\underline{I_2} = 84 - 42$

$2\,\underline{I_2} + (2 - j3)\,\underline{I_3} = 42$

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$(2+j3)\,\underline{I_1} - 2\,\underline{I_2} = 42$ prvu jednačinu prepišemo a drugu sredimo

$2\,\underline{I_2} + (2 - j3)\,(\underline{I_1} + \underline{I_2}) = 42$

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$(2+j3)\,\underline{I_1} - 2\,\underline{I_2} = 42$

$2 \underline{I_2} + (2 - j3)\underline{I_1} + (2-j3)\underline{I_2} = 42$

$(2+j3)\underline{I_1} - 2\underline{I_2} = 42$

$(2 - j3)\underline{I_1} + (2 + 2 - j3)\underline{I_2} = 42$

$(2+j3)\underline{I_1} - 2\underline{I_2} = 42 \quad / * (4 - j3)$

$(2 - j3)\underline{I_1} + (4 - j3)\underline{I_2} = 42 \quad / * 2$

$(4 - j3)*(2+j3)\underline{I_1} - 2*(4 - j3)\underline{I_2} = 42*(4 - j3)$

$\qquad 2*(2 - j3)\underline{I_1} + 2*(4 - j3)\underline{I_2} = 42 *2 \qquad$ sada saberemo

jednačine

$\underline{I_1}*2*(2 - j3) + (2 + j3)*(4 - j3)\underline{I_1} = 42*(4 - j3) + 84$

$\underline{I_1}(4 - j6 + 8 - j6 + j12 + 9) = 42(2 + 4 - j3)$

$\underline{I_1}*21 = 42(6 - j3)$

$\underline{I_1} * 21 = 42(6 - j3)/ :21$

$\underline{I_1} = 2*(6 - j3)$

$\boxed{\underline{I_1} = 12 - j6}$

$(2+j3)\underline{I_1} - 2\underline{I_2} = 42$

$(2+j3)(12 - j6) - 2\underline{I_2} = 42$

$24 - j12 + j36 + 18 - 2\underline{I}_2 = 42$

$- 2\underline{I}_2 + 4\cancel{2} + j24 = \cancel{42}$

$- 2\underline{I}_2 = - j24$

$\boxed{\underline{I}_2 = j12}$

$\underline{I}_1 + \underline{I}_2 = \underline{I}_3$

$\underline{I}_3 = \mathbf{12 - j6 + j12}$

$\boxed{\underline{I}_3 = \mathbf{12 + j6}}$