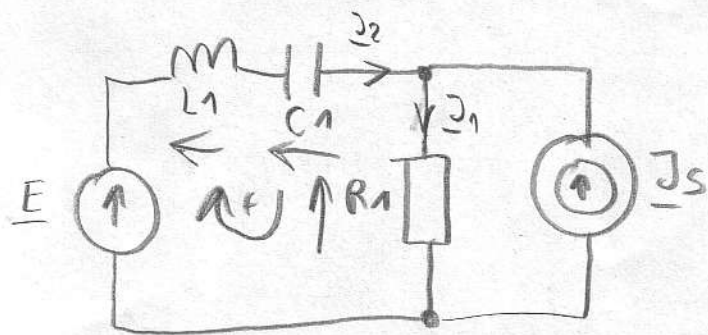


BRANCH CURRENT METHOD



$$\underline{E} = 10V = 10 \cdot e^{j0} [V]$$

$$\underline{J}_S = 0,25(1-j) [A]$$

$$\underline{Z}_{L1} = j \cdot \omega \cdot L1 =$$

$$\underline{Z}_{C1} = -j \cdot \frac{1}{\omega C1} =$$

$$\underline{Z}_{R1} = R1 =$$

$$\omega = 2 \cdot \pi \cdot f$$

KCL

$$\underline{J}_2 + \underline{J}_S - \underline{J}_1 = 0$$

KVL

$$\underline{E} - \underline{J}_2 \cdot \underline{Z}_{L1} - \underline{J}_2 \cdot \underline{Z}_{C1} - \underline{J}_1 \cdot \underline{Z}_{R1} = 0$$

$$\underline{J}_1 = \underline{J}_2 + \underline{J}_S$$

$$\underline{E} - \underline{J}_2 \cdot \underline{Z}_{L1} - \underline{J}_2 \cdot \underline{Z}_{C1} - (\underline{J}_2 + \underline{J}_S) \cdot \underline{Z}_{R1} = 0$$

$$\underline{J}_2 = \frac{\underline{E} - \underline{J}_S \cdot \underline{Z}_{R1}}{\underline{Z}_{L1} + \underline{Z}_{C1} + \underline{Z}_{R1}}$$

$$\underline{J}_2 = \frac{10 - (0,25 \cdot (1-j) \cdot R1)}{j \cdot \omega \cdot L1 - j \cdot \frac{1}{\omega \cdot C1} + R1} = \frac{10 - \sqrt{0,25^2 + 0,25^2} \cdot e^{-j\frac{\pi}{4}} \cdot R1}{R1 + j \cdot (\omega L1 - \frac{1}{\omega C1})}$$

$$\underline{J}_2 = \frac{10 - \sqrt{\frac{1}{8}} \cdot e^{-j\frac{\pi}{4}} \cdot R1}{R1 + j \cdot (\omega \cdot L1 - \frac{1}{\omega C1})} = \frac{10 - \sqrt{\frac{1}{8}} \cdot e^{-j\frac{\pi}{4}} \cdot R1}{R1 + j \cdot (\omega \cdot L1 - \frac{1}{\omega C1})} \cdot \frac{R1 - j \cdot (\omega L1 - \frac{1}{\omega C1})}{R1 - j \cdot (\omega L1 - \frac{1}{\omega C1})}$$

$$\underline{J}_2 = \frac{(10 - \sqrt{\frac{1}{8}} \cdot e^{-j\frac{\pi}{4}} \cdot R1) \cdot (R1 - j \cdot (\omega \cdot L1 - \frac{1}{\omega C1}))}{(R1)^2 + (\omega \cdot L1 - \frac{1}{\omega C1})^2}$$